

Masters of Science in Game Design & Development

Degree Proposal

B. Thomas Golisano College of Computing and Information Sciences

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I. Introduction

This document presents a proposal for a Masters of Science degree program in Game Design and Development. This degree is to be offered at the college level within the B. Thomas Golisano College of Computing and Information Sciences (GCCIS). The degree will present unique opportunities for students, as game design and development draws upon expertise from the fields of Information Technology and Computer Science as well as Computer Graphics Design.

A. Computer Game Design and Development Industry Statistics

The computer games industry produces software for home computers, game machines, on-line games, and arcade games as well as console hardware, portable game platforms, and mobile multi-function devices. In 2004, the industry realized sales of between $7.3 billon and $8.2 billion for software in the United States alone (Entertainment Software Association, 2005; PricewaterhouseCoopers, 2005a). The sale of associated hardware brings this figure closer to $18.1 billion, not including the segment of the PC market hardware that is directly tied to games (Plunkett Research, 2005). On a global scale, the sale of video game software reached record levels of $25.4 billion (PricewaterhouseCoopers, 2005a). In addition, the number of game unit sales made to consumers also reflects the strength of the gaming industry. Estimates for 2004 indicate that the industry sold 248 million software units within the United States for both personal computer and console systems (Entertainment Software Association, 2005). Estimates place the number of jobs in the areas of computer game design and development at 100 million employees in North America (Bass, 2005). This figure does not include the number of jobs associated with the distribution, marketing, and sales of computer game technology nor does it include ancillary professions that could be classified in the broader area of entertainment technology production.

B. Breadth and Scope of Game Design and Development Industry

Perhaps, even more important than the size of the industry is its breadth and scope. Computer games in all forms are, in fact, quite complex and serve as a rich and colorful form of entertainment to a variety of audiences. Games come in a variety of genres, including sports titles, educational games, strategic simulations, historical and military reenactment, cooperative games, science fiction and fantasy titles, construction-based games, and social interaction titles, as well as games that allow users to enact traditional war games. For the year 2004, market research indicated that 75% of all American head of households were computer game players, and 43% of those surveyed were women (Entertainment Software Association, 2005). Those surveyed ranged in age from 5 to 65, with an average age of 30 across all game genres. In addition, over 203 million game console units were sold within the United States in 2004 (Entertainment Software Association, 2005). The demand for game console software has also kept pace with hardware sales, with 52 console software titles selling in excess of 500,000 units (Entertainment Software Association, 2005). In all, the average game player will spend between 7.4 hours on average for women and 7.6 hours for men per week playing video games (Entertainment Software Association, 2005). Over 47% of Americans surveyed plan to buy at

least one video game in 2005 (Entertainment Software Association, 2005). The prolific nature of games has even caused Hollywood to take notice since games have become a contender for consumer box office dollars (Holsen, 2004; Wong, 2004).

C. Projected Growth of Game Design and Development Industry

Sales of games and game-related hardware have continued to grow each year, despite economic downturns in nearly every other market segment. Current projections forecast a global growth rate in software sales of 16.5% compounded annually through 2009 (PricewaterhouseCoopers, 2005a). Facets of the game industry with the potential for explosive growth rates include wireless (cell phone, wireless PDA's, etc.) game software sales, projected at 49.3% compounded annually through 2009 (PricewaterhouseCoopers, 2005a) as well as consumer demand for online multi-player gaming experiences, with a projected consumer subscription spending increase of approximately 35% compounded annually through 2009 (PricewaterhouseCoopers, 2005b).

D. Academic Significance of Game Design and Development

Games are becoming the medium of the 21st century. This status is not due to dollars generated alone. Media theorists and academics around the world are evaluating computer games in peer-reviewed journals, such as the *Journal of Game Development* (Charles River Media, 2005) and *IEEE Computer Graphics and Applications* (IEEE Press, 2005), and at internationally recognized peer-reviewed academic conferences, such as ACM's Special Interest Groups in Computer Graphics and Interactive Techniques (SIGGRAPH) (Association for Computing Machinery, 2005b) as well as in Computer Human Interaction (SIGCHI) (Association for Computing Machinery, 2005a), and the Academic Summit that meets annually at the Game Developers Conference (CMP, 2005). Many publishers respected in the academic community, including MIT Press, Addison-Wesley, Morgan-Kaufman, Premier Press and Charles River Publishing, are offering academic-quality textbooks.

The academic study of game design and development as a discipline has also challenged the traditional social, cultural, and psychological roles that games play in daily life. For example, the Serious Games Initiative (Serious Games Initiative, 2005) and its related conference challenge academics and industry leaders to explore the use of games in the fields of health, management, education, social interaction and behavior, training, and public policy. Even the defense industry has acknowledged the opportunity for research collaboration with the game development community (Capps, McDowell, & Zyda, 2001).

The viability of games as an area of academic pursuit is also being explored by the International Game Developers Association (IGDA) (IGDA, 2005). In particular, the IGDA Education Committee has spent the last several years designing a model curriculum for the study of games and games development (IGDA Education Committee, 2003). The resulting document has been refined by the education committee and discussed at such prominent academic conferences as SIGGRAPH. Furthermore, the results of the committee's document were instrumental in the creation of an academic quality textbook on introductory game development (Rabin, 2005).

Other societies and their related conferences, such as the Digital Games Research Association (DiRGA) (DiRGA, 2005), also promote a teaching and research agenda for game theory and its practical application.

The following sections will examine the academic significance of game design and development as games emerge as a mass medium and a catalyst for modern culture. In particular, the next section will focus on the academic analysis of games as a medium as well as the multidisciplinary approach required in academia for understanding and creating entertainment technology systems.

1. The Mass-Medium of Modern Culture

In 1964, Marshall McLuhan speculated that games were an extension of the social self and should truly be considered part of the mass media experience (McLuhan, 1964). Today's game industry has proven McLuhan's prophesy correct. If one considers the breadth and depth of games available today, combined with the fact that games are a nascent medium that began moving from cult entertainment to critical mass only in the last 10 years or so, one could say that games are becoming the mass-medium of modern culture. The game console is already replacing the television as the focal point in many American households, and is also being retooled to serve as an Internet gateway for the family. In a keynote speech at the Consumer Electronics Show in January of 2003, Bill Gates announced that the average XBOX *Live (on-line)* player spends 14 hours a week on the system, sacrificing TV time in favor of game time (Gates, 2003). In a recent interview on the "What The Tech!" radio show, Michael Lustenberger of Sony On-Line Entertainment, the home of a popular multiplayer on-line game, *Everquest*, cited identical figures for *Everquest* players (WXXI Radio, 2003). Games are moving online, because at their core games are a social exercise (Caillois, 2001; Huizinga, 1950; Sutton-Smith, 1997), a way to spend time with friends and family.

The game phenomenon is similar to prior entertainment phenomenon (Johnson, 2005). The rise of games, the stereotypical misunderstanding of their nature, the press coverage, and their use as a scapegoat to explain acts of violence is similar to the rise and criticism afforded the film and television industries, which are both now established fields in academia. If one carefully studies the film medium and its rise both as a technical and artistic academic discipline, as well as a medium of communication, many of these same issues (social acceptance, technical merit, etc.) were (and sometimes still are) very much in the foreground. But the interactivity of games makes them different from both film and television. Film and television are passive, while games through their real-time nature, are interactive. The personalization that players feel when they are immersed in the game world, and the communication that is afforded with other players, makes the gaming experience a unique form of entertainment.

2. Early Academic Analysis of an Emerging Medium

Even though computer games were born and evolved at such renowned academic institutions as MIT, academia, in general, has resisted and ignored the growth of this new medium (Aarseth, 2002). However, some new media theorists and/or game developers have focused or touched on computer games in looking at the computer as a medium. Early important academic examinations of computer games include the following:

Dr. Sherry Turkle's two ground-breaking books on human interaction with and through computers, *The Second Self: Computers and the Human Spirit* (Turkle, 1984) and *Life on the Screen: Identity in the Age of the Internet* (Turkle, 1995), looks at the ways in which people identified with technology and each other through computer mediated environments, including computer games. Dr. Turkle is with MIT's Program in Science, Technology and Society.

Brenda Laurel's doctoral thesis, popularly published in *Computers as Theatre* (Laurel, 1991), discusses the interface (for simulations, scientific visualization, virtual reality, games and even traditional software) as a place where the principles of Aristotle's *Poetics* could be applied. Dr. Laurel writes, lectures and consults on interface design, technology and society.

While not an academic publication, journalist Julian Dibbell's 1993 Village Voice article *A Rape in Cyberspace*, brought computer games and on-line communities to the attention of many in the academic community. The piece is collected in his book *My Tiny Life* (Dibbel, 1999). Though not a Ph.D., Dibbell is currently a visiting fellow at Stanford Law's Center for Internet and Society.

Ms. Celia Pearce's book *The Interactive Book: A Guide To the Interactive Revolution* (Pearce, 1997) explores interactivity as a critical theme to digital media and games. In this work, Ms. Pearce examines social, psychological, and cultural aspects of interactive media. Many of her ideas challenge the linear nature of navigational gameplay. Instead, she promotes experiences based upon communication, construction, and action. Ms. Pearce is the Associate Director of the Laboratory for Game Culture and Technology at the Irvine Division of the California Institute for Telecommunications and Information Technology.

Dr. Espen Aarseth's doctoral thesis, published as *Cybertext: Perspectives on Ergodic Literature* (Aarseth, 1997), examines the balance between text based games, literature, narrative, and discourse. Dr. Aarseth is currently at the Center for Computer Games Research at the University of Copenhagen and also is the co-founder and editor-in-chief of *gamestudies.org*.

Dr. Janet Murray's book *Hamlet on the Holodeck,* (Murray, 1997), looks at classic literature, interactive literature, and games, and defined a series of principles required for the future of narrative in Cyberspace. Dr. Murray heads Georgia Tech's Information Design and Technology program within the School of Literature, Communication, and Culture.

Dr. Henry Jenkins' edited collections of papers, *From Barbie to Mortal Kombat: Gender and Computer Games* (Cassell & Jenkins, 1998) brought a media- and gender-studies focus to

computer games as a popular phenomenon. Dr. Jenkins heads the Comparative Media Study Program at MIT.

While some academics were studying on-line communities, on-line games, video games and their players during the 90's, some of their colleagues in computer science, interactive multimedia, animation and fine arts were putting together courses, curricula and degree programs that experimented with creating games and gaming technology. The best known of these is, of course, MIT's Media Lab (MIT, 2005). Other notable programs that emerged in the late 90's include Carnegie Mellon's Entertainment Technology Center (CMU, 2005), The Interactive Telecommunications Program at the Tisch School for the Arts (NYU, 2005), and the Real-Time Interactive Simulation program at DigiPEN (DigiPEN, 2005).

In the past few years, academic interest both in the study and creation of computer games has grown dramatically. In July 2001, the first peer-reviewed journal on computer games, *Game Studies*, appeared on-line at *www.gamestudies.org* (Game Studies, 2005). Its review board includes faculty from MIT, Georgia Tech, U.C. Irvine, George Mason University, RPI, Swarthmore, and universities across the European Union. In March 2002, the Game Developers Conference held its first *Academic Summit on Computer Games* (IGDA, 2003). This conference was followed in April by *Playing with the Future* (CRIC, 2002), hosted within the city of Manchester. Next, the *Computer Games and Digital Cultures* (University of Tampere, 2002) conference was held in June. The Digital Games Research Association (DiRGA, 2005) was formed in November 2002 and has announced a call for proposals for their first conference. 2004 saw the creation of the International Association for Games Education Research (IAGER) (IAGER, 2005), headed by Tim Landgrell at the University of Southern California. Professor Phelps and Professor Jacobs, co-authors of this document, are currently serving on the advisory board for IAGER.

Clearly, academic interest is emerging and gaining momentum surrounding games and the study thereof. In line with RIT's tradition of innovation and learning, it is appropriate that we be one of the institutions to help define this emerging field.

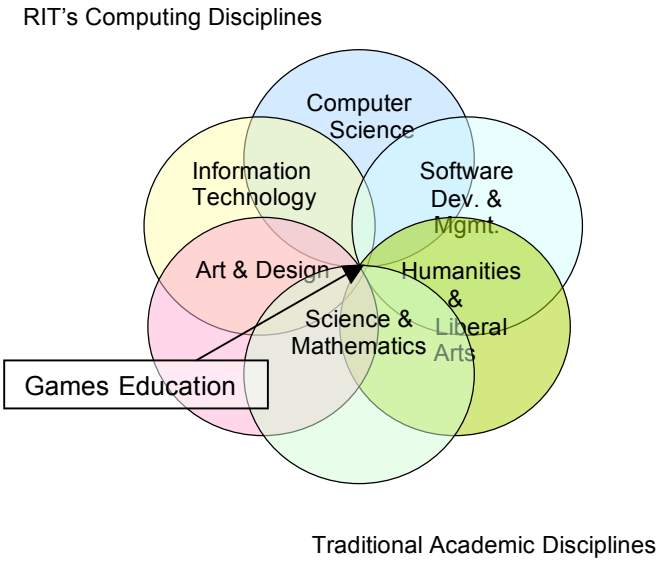


Figure 1: A broad picture of how a number of disciplines could potentially be involved in the work of games education.

3. Multidisciplinary Necessity

As depicted in Figure 1, game design and development is multidisciplinary in nature, not a stand-alone academic discipline. A typical game development team within the industry is composed of artists, designers, storytellers, programmers, play testers, and several other highly specialized roles. Whether Game Design and Development

becomes a recognized discipline informed by many others, like Computer-Human Interaction, or remains a place of intersection amongst other disciplines will take time to determine. However, several established disciplines are clearly involved in defining a comprehensive degree in game design and development.

It is interesting to note that the study of games has succeeded **only in environments where they are separate from traditional computing programs and placed in multi-disciplinary environments with other groups within the academic community**. The longest standing study of games is found at MIT, dating back to the birth of the modern computer game, *Spacewar!*, created by Steve Russell on a PDP-1 computer (Rehak, 2003). Today, the study of games and game development continues at the MIT Media Lab, although not with the industry-centered focus proposed here at RIT. The Media Lab, in comparison to a standard curriculum in computing, is made up of "students with backgrounds ranging from engineering, to physics, to education, to music [who] make up the approximately 190-member graduate student community at the Lab" (MIT Media Lab, 2003). This cross-disciplinary approach has enabled students in many different programs to gain the breadth of understanding necessary for successful entry into the world of game design and development. Several recent graduates from the Media Lab have gone on to take positions in the game design and development industry.

The multidisciplinary nature of this proposed program in Game Design and Development has been reinforced by discussions with the directors of several programs at a variety of academic institutions conducted by the primary author of this document. A careful study has been made of the program emerging at Georgia Tech under Dr. Janet Murray (who, incidentally, was formerly at the MIT Media Lab before leaving to chair the Graduate Studies program at the Georgia Tech School for Literature, Communication and Culture). In talking with Dr. Murray at the Game Developers Conference, the Society for Literature and Science 2002 Conference, and again on a visit to the Georgia Tech campus, she emphasized each time that technology is merely an implementation tool and not the fundamental focus of games and game making.

Similarly, Randy Pausch, Co-Director of the Entertainment Technology program at Carnegie Mellon University, strongly emphasized the need for incorporating a cross-disciplinary approach and not focusing solely on the technology of implementation and the quest for better performance.

Discussions with colleagues at the Game Developers Conference have indicated that while the technical skills from computing programs are highly desirable, a broader set of experiences and a usability (playability) focus is of critical importance to the games industry. In particular, upper level management is **not** impressed solely with a BS or MS in traditional computing. Stephen Beeman, former Director of Technology in Online Services at Electronic Arts/Origin, describes what he believes will be the hot game programmer skills of the future: "The need for older tool programming skills won't just vanish, but game companies will need fewer of those people. They'll need experts in database design and programming (particularly Oracle), Internet protocols (TCP and UDP), scripting languages like Python and JavaScript, application server technologies such as Enterprise JavaBeans or ZOPE, and software engineering methodologies, such as SEI-CMM and UML." (Beeman, 2000) That these skills are found in curricula across

GCCIS speaks to RIT's currency and strengths, as well as the ability of GCCIS to serve as a fertile ground for the growth of a well-respected program.

RIT is one of a handful of institutions to recognize the benefit of multimedia coursework within the context of a computing program as opposed to a program focused solely on the arts. This has enabled our study of games to proceed from a nexus of technology and artistic expression. The GCCIS faculty at RIT is diverse, and includes fine artists, computer animators and media theorists, as well as those with traditional computing and engineering backgrounds. GCCIS is uniquely positioned to offer an MS degree in Game Design and Development that builds on the diversity of skills and programs within GCCIS, while benefiting from the wealth of artistic knowledge and creative power from our partners in the College of Imaging Arts and Sciences.

E. Careers in Game Design and Development as well as Related Fields

There are a wide variety of careers available in the games industry as shown by this partial list, taken from *Get in the Game: Careers in the Games Industry* and other sources (Hoekstra, 2000; Mencher, 2002; Olsen, 2004). Several students who have completed our existing undergraduate curriculum in game programming have gone on to pursue careers such as these, and have been hired by several companies including Microsoft, Sony, Electronic Arts, Linden Labs, and Vicarious Visions.

1. Sample List of Game Design and Development Career Opportunities

- Game Designer
- Level Designer
- Programmer
- Lead Programmer
- 2D/3D/Graphics Programmer
- Artificial Intelligence Programmer
- Audio Programmer
- Artist
- Producer
- Network Engineer
- System Administrator
- Playability Tester
- Quality Assurance Technician
- Narrative Design / Writer

NOTE: This list does not reflect the business and legal side of the industry, as this is not expected to be part of the proposed degree.

2. Sample List of Career Opportunities Related to Game Design and Development

It is interesting to note the relationship that games have to the larger context of multi-user and/or real-time application development. The technology for games currently drives a significant portion of the technology used in scientific and data visualization, from graphics hardware to engine algorithms to technologies for multiple simultaneous users. Games and game technologies are currently used in many environments to support education on topics ranging from high-school science and biology to the study of computer programming. Games in fact overlap with a variety of fields, as shown in part in Figure 2. The technology is related to that used for simulation, visualization, collaborative engineering, and interactive systems. Games are created with building blocks from fields such as artificial intelligence, graphics, mathematics, art and design, and literature. They are similar in some respects to film as an artistic medium, have overlap with traditional painting, drawing, and music, and have direct ramifications on the study of psychology, sociology and popular culture.

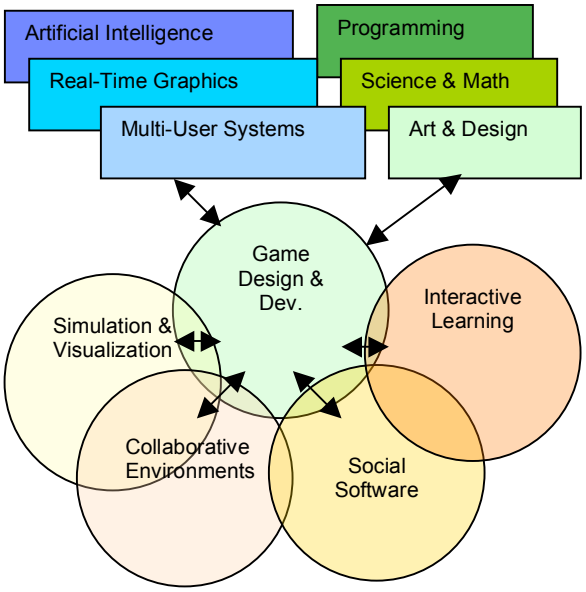


Figure 2: An extremely non-comprehensive list of overlap between Game Design & Development and existing fields of research.

Thus, there are career opportunities that are related to game design and development, and previous students who completed our existing undergraduate game curriculum have gone on to pursue careers in several of these related industries. These related career areas include:

- Scientific Interactive Visualization System Design
- Military Simulation and Training Systems Development
- Educational Systems Development
- Collaborative Software Experience Designer for Social Interactions
- Network Application Developer for Massively Multi-User Interactive Experiences
- Augmented Reality System Developer
- Related Entertainment Technology Disciplines
    - Developer of Applications and Plug-ins for Image, Video, and Audio Experiences
    - Development of Media Kiosks and Game-like Experiences for Physical Entertainment and Commercial Facilities

F. Degree Relevance and Overview

The economic viability of the games industry, the interdisciplinary nature and complexity of the skills required to create good games, as well as the desire of many university students to enter the games industry makes it a timely addition to the RIT curriculum. Programs related to this area are already available at several universities, including Carnegie Mellon, Purdue, Georgia Tech, University of Southern California, and University of California, San Diego.

The proposed Masters of Science in Game Design and Development will be awarded at the college level rather than from any one department. As such, it embodies the original vision of the Golisano College of Computing and Information Sciences (GCCIS) through the synergistic combination of its departments. The degree will involve faculty and courses (most of which already exist) from both the Information Technology and Computer Science Departments in GCCIS, as well as from the Computer Graphics Design Program in the College of Imaging Arts and Sciences (CIAS). As a result of the multidisciplinary nature of the program's faculty, the program can support solid theoretical, technology-based and artistic tracks. Initially, however, for administrative purposes the program will be physically housed within the Information Technology Department, and make use of their administrative support staff and advising offices.

The proposed degree is designed as a **two-year, full-time** cohort program. The cohort program is designed to keep admitted students together as they progress through the degree program. Cohort models are successfully used at institutions such as Carnegie Mellon, University of Central Florida, and even in select graduate programs at RIT (such as the Masters of Science in Product Development). Students will be admitted to the program by demonstrating baseline competence in their intended area of study. Student admittance will be based upon a combination of undergraduate and graduate grades, degrees completed, relevant work experience, and portfolio evaluation. Portfolio evaluations will focus upon individual and group creative works that indicate proficiency for game design and development. The admissions process will be balanced against the requirements of cohort-based education to ensure that each year's entering class has an appropriate diversity in background and experiences.

Students will be required to take five courses from a common core seminar track. In addition, students will select a major track consisting of six courses and a minor track consisting of three courses. The inaugural offerings of the degree program will allow students to select major tracks in game engine development or artificial intelligence and simulation. In addition, students can select from minor tracks such as content authoring for games, human-computer interaction, database architecture and design, as well as asset creation and animation. Furthermore, students are allowed to customize their minor track selection by either sequencing three courses in a major track or by constructing a special topics minor. All selections of major and minor track courses will be determined with the assistance of an academic advisor. The degree program is designed for growth and will be able to adapt for the changing needs of the computer games and entertainment technology industry. Future major and minor track considerations may include areas such as audio technologies for games, networked gaming and simulations systems, educational entertainment title development, and entertainment and gaming on mobile platforms.

The degree program experience will conclude with the capstone design and capstone development two-course sequence. The capstone is designed for cohorts and is intended to reflect the game industry software production experience. Students will develop their capstone ideas with respect to both group and individual goals and responsibilities. Students will hone their ideas into formal proposals and will then proceed to the design and implementation phases of their capstone projects. Faculty will evaluate capstone projects at an end of the year showing. Evaluation will include, but not be limited to, how well the student addresses the intended problem, the balance of individual and group goals and responsibilities, how well the students address technical and development goals of the project, and the quality of written and oral materials that accompany the capstone work. After the faculty has evaluated capstone work, students will participate in a public showing. Student work will be presented to the academic community along with invited guests from the games and entertainment industry. Public showings will occur at the end of each year with a supplemental showing scheduled for the subsequent fall quarter.

This program will prepare students to become viable employees for the game, entertainment, and related industries, who have broad educational exposure to all facets of this multidisciplinary area, especially given the experience of working in a multidisciplinary team.

II. Curriculum

A. Courses and Credits

Figure 3 indicates the flow of course tracks and sequences in this proposed degree program. The colors shown in the diagram will be used consistently in all tables that follow to help identify whether courses are common to all students in the curriculum versus whether they belong to a particular track or sequence.

Three academic units host the courses associated with the degree. These units include the Computer Science Department (CS) and Information Technology Department (IT), which belong to the B. Thomas Golisano College of Computing and Information Science (GCCIS). Also included is the Computer Graphics Design Program (CGD) of the College of Imaging Arts and Science (CIAS).

Within each sequence or track, prerequisites will ensure the proper course progression, however major and minor tracks and the seminar sequence are taken in parallel as the student progresses through his or her coursework.

Students must successfully complete a total of 62 credit hours for this degree program. Although the credit hour requirements exceed the number prescribed for typical RIT Master's programs, the requirement is not considered excessive when compared to other graduate gaming degrees. Rationale for an increase in the required credit hours is based upon the necessity of having adequate breadth and depth in major and minor track areas as well as a capstone experience that reflects academic and industry needs.

Memos of support from all departments involved, including a cost estimate for any additional sections or new courses required by the program, are provided in Appendix A.

Game Design and Development Curriculum

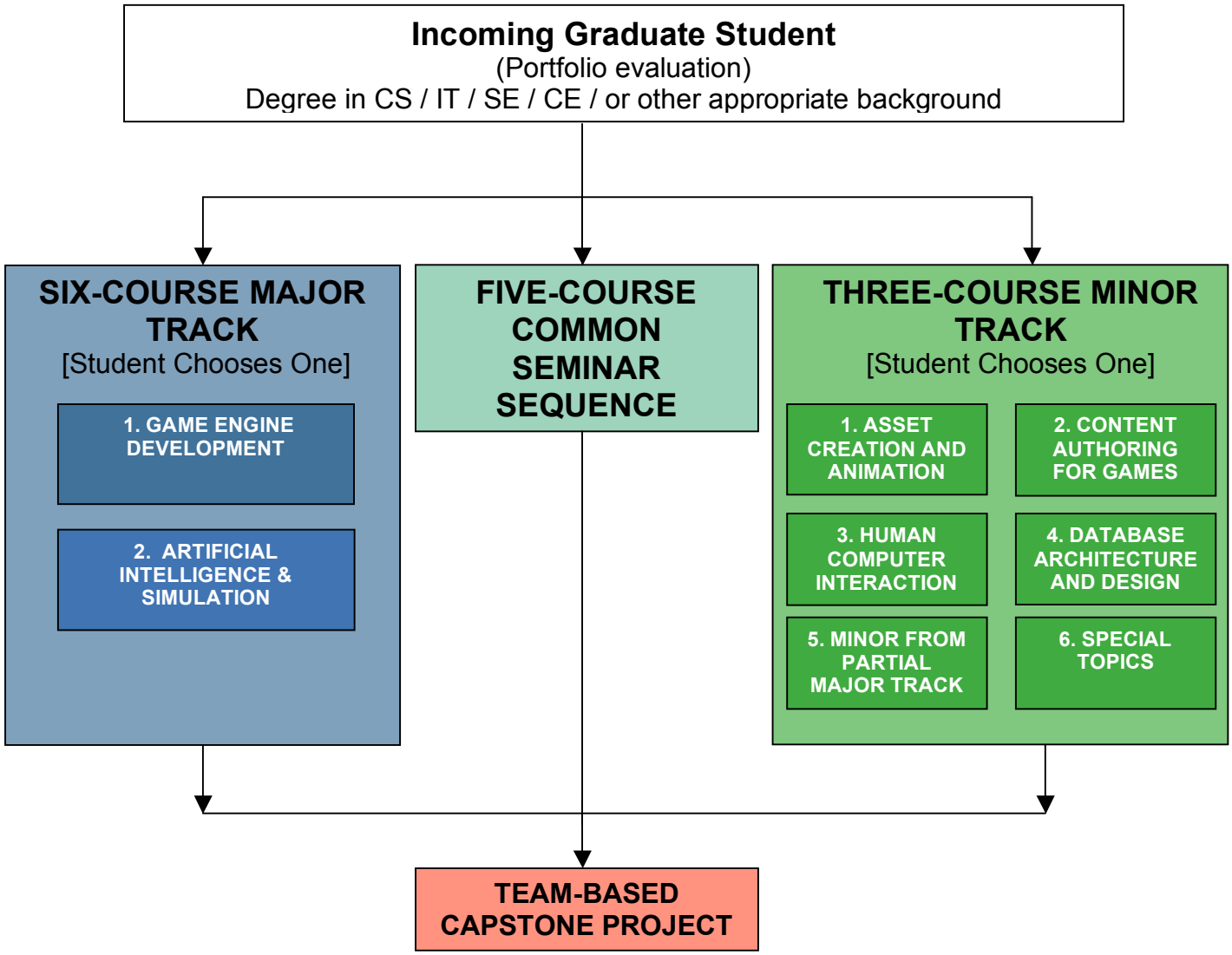


Figure 3: Flow of required course areas in the proposed degree program.

The following tables indicate the actual courses that comprise each track or sequence selection. Each entry within a table will include the course number, the course name, the home department or group (CS = Computer Science, IT = Information Technology, CGD = Computer Graphics Design Program), number of credits, and the approval and deployment status of the course.

FIVE-COURSE COMMON SEMINAR SEQUENCE

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
4004-731 History and Critical Analysis of Computer Games and Interactive Entertainment	IT	4	N	N
4004-734 Online Identity, Social and Community Behavior	IT	4	N	N
4002-790 Emerging Themes in Entertainment Technology	IT	4	N	N
4002-792 Development Processes in the Games Industry	IT	4	Y	N
4002-793 Business and Legal Aspects of Game Development	IT	4	Y	N

Table 1: Five-Course Common Seminar Sequence taken by all students.

SIX-COURSE MAJOR TRACK [Students Choose One]

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
1. Game Engine Development				
4005-761 Computer Graphics I	CS	4	N	N
4005-762 Computer Graphics II	CS	4	N	N
4002-734 2D Graphics Programming	IT	4	N	N
4002-735 3D Graphics Programming	IT	4	N	N
4005-763 Computer Animation: Algorithms & Techniques	CS	4	N	N
4002-836 Game Engine Design & Development	IT	4	N	N

SIX-COURSE MAJOR TRACK [Students Choose One – cont.]

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
2. Artificial Intelligence & Simulation				
4005-750 Introduction to Artificial Intelligence	CS	4	N	N
4002-791 Artificial Life and Evolutionary Simulation	IT	4	N	N
4005-752 Artificial Intelligence for Interactive Environments	CS	4	N	N
4005-759 Topics in Artificial Intelligence	CS	4	N	N
4005-756 Genetic Algorithms	CS	4	N	N
4005-755 Neural Networks & Machine Learning	CS	4	N	N

Table 2: Six-course major track. Students may choose either Game Engine Development or Artificial Intelligence and Simulation as the major track.

THREE-COURSE MINOR TRACK [Students Choose One]

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
1. Asset Creation & Animation [3DCG Modeling + Any Two]				
2001-651 3DCG Modeling	CGD	4	N	N
2001-652 3DCG Interactive Animation	CGD	4	N	N
2001-662 3DCG Shading	CGD	4	N	N
2001-692 3DCG Rendering, Output and Prototyping	CGD	4	N	N
2001-661 3DCG Lighting	CGD	4	N	N
2001-673 3DCG Character Design	CGD	4	N	N
2001-778 3DCG Production Pipeline	CGD	4	N	N

THREE-COURSE MINOR TRACK [Students Choose One – cont.]

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Minor Track Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
2. Content Authoring for Games				
4004-728 Interactive Narrative for Games	IT	4	N	N
4004-732 Game World Design	IT	4	N	N
4004-744 Building Online Communities	IT	4	N	N
3. Human Computer Interaction				
4004-745 Foundations of HCI	IT	4	N	N
4004-748 Usability Engineering	IT	4	N	N
4004-749 Usability Testing	IT	4	N	N
4. Database Architecture & Design				
4002-720 Data Object Development	IT	4	N	N
4002-784 Multi Client Database Implementation	IT	4	N	N
4002-785 Fundamentals of DBMS Architecture and Implementation	IT	4	N	N
5. Minor from Partial Major Track				
Note: Students may select courses from a major track to create an intended minor. Students are restricted to courses for which they have the appropriate prerequisites and to those courses that are not part of their intended major. This option must receive advisor and faculty approval.				
6. Special Topics				
Note: Students may alternatively select a minor track consisting of any three courses from non-selected major as well as minor tracks listed above. Additional prerequisites may apply depending upon student background. Special topics minor tracks must receive advisor and faculty approval.				

Table 3: Three-course minor track. Students choose Asset Creation and Animation, Content Authoring for Games, Human Computer Interaction, or Database Architecture and Design as the minor track.

TEAM-BASED CAPSTONE PROJECT

(Dept code: (CS) Computer Science, (IT) Information Technology, (CGD) Computer Graphics Design)

Course Number and Course Title	Home Dept.	No. of Credits	Is this a new course?	Is this a revised course?
4002-887 Capstone Design	IT	4	**Y**	N
4002-888 Capstone Development	IT	2	**Y**	N

Table 4: Two-course capstone project sequence. Students take both courses to complete their capstone experience.

B. Electives

There are no formal electives. Students are provided with flexibility though the selection of major and minor tracks. Please see section II.A for further details.

C. Free Electives

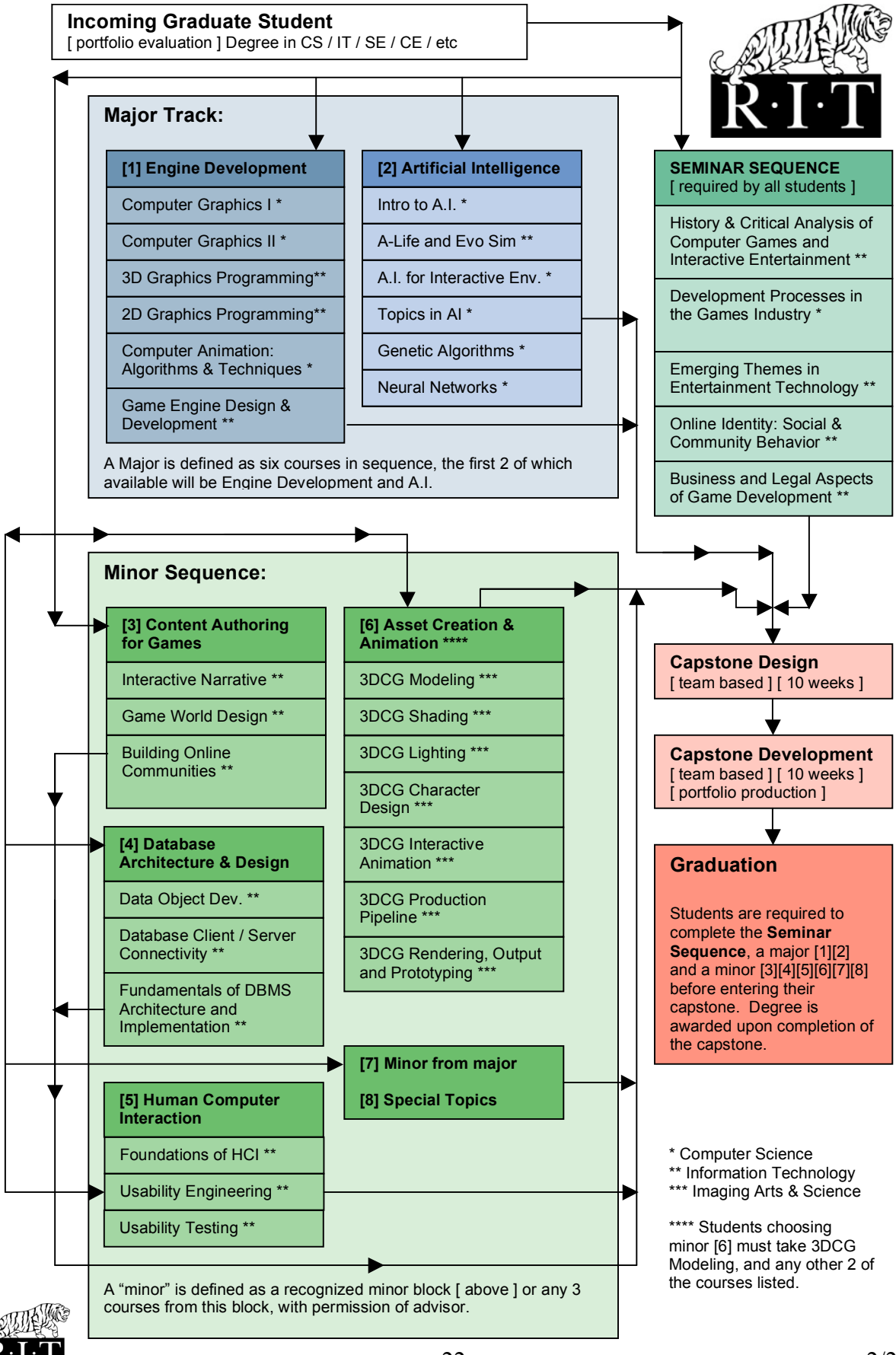
There are no free electives. Students are provided with flexibility through the selection of major and minor tracks. Please see section II.A for further details.

D. Cooperative Education (Co-op)

Cooperative education, otherwise known as co-op, is a tradition and experience that makes an RIT education unique. As part of the academic process, co-op provides students with real-world job search and employment experiences. Students quickly learn how their classroom knowledge translates to practice and helps the student focus his or her educational path based upon experience from the field.

Although cooperative education is not required to complete the Masters of Science Degree in Game Design and Development, students wishing this experience may request up to three quarters of cooperative education. It will be the responsibility of the student to find such experiences and coordinate with the Coop and Placement office to facilitate all necessary paperwork. Since capstone experiences are planned with cohort groups in mind, students must coordinate with their faculty advisor to successfully integrate the co-op experience with graduation plans. Students receive no credit towards their degree through cooperative education, but the review process is still available to students that desire the feedback.

MASTERS OF SCIENCE IN GAME DESIGN & DEVELOPMENT



E. Course Outlines

Included below are the RIT catalog descriptions for each of the courses that comprise the Masters of Science in Game Design and Development. In all cases, the minimum pre-requisite for enrollment is matriculation in the Masters of Science in Game Design and Development. Pre-requisites for first-of-sequence courses will be waived as applicable as academic preparedness will be assured on a per-track basis through the admissions and portfolio review process. Full course proposals for new and revised courses are included in Appendix E.

1. Common Seminar Sequence

4004-731 History and Critical Analysis of Computer Games and Interactive Entertainment

This course provides a historical perspective on the evolution of computer and video game design, development and production. Related interactive digital entertainment will also be investigated to provide an understanding of historical issues related to games, computer games, and interactive media. Topics include analyses and critique of analog and interactive television technology, the application of computing and technology to the arts and literature, the business of computer games and cultural responses to computer games. Students will critique computer games and other interactive entertainment products in the context of these topics, the trade press, and personal experience. **Credits:** 4.

4004-734 Online Identity, Social and Community Behavior

This course introduces students to the expanding body of research and popular writing on online identity, social and community behavior and its application to the development of new on-line communities and social software tools. Students will create their own prototypes for on-line communities and/or software tools, will participate in and evaluate existing online environments. **Credits:** 4.

4002-790 Emerging Themes in Entertainment Technology

This course examines current technologies as well as future trends that will impact the direction of technology development within the gaming industry. Topics of study may include, but are not limited to: graphics hardware, graphics algorithms, content creation tools, content organization tools, artificial intelligence techniques, machine learning techniques, game play networking, audio and video hardware and algorithms, user interface development, control and feedback systems, simulation systems, console game systems, as well as game engine technology and corresponding development APIs. **Credits:** 4.

4002-792 Development Processes in the Games Industry

This course examines the individual and group roles of the development process model within game design and development industry. Students will transform design document specifications into software and hardware needs for developers, testers, and end users. Students will examine team dynamics and processes for programming, content development, testing, deployment, and maintenance. Students will explore design process through the deconstruction of the game industry's software lifecycle model. **Credits:** 4.

4002-793 Business and Legal Aspects of Game Development

This course will provide students with a practical background in business and legal practices specific to the gaming industry. Students will be introduced to entrepreneurship in the gaming industry, confidentiality rules, game developer rights and responsibilities, the developer/publisher/retailer relationship, contract development, intellectual property rules and regulations, royalties, licensing, and legal responsibilities for content and consumer impact. Projects may include individual and group research, examination of case studies, and written and oral reports on current industry practice. **Credits:** 4.

2. Game Engine Development Major Track

4005-761 Computer Graphics I

A study of the hardware and software principles of computer graphics. Topics include an introduction to the basic concepts: 2-D transformations, viewing transformations, display file structure, geometric models, picture structure, interactive and non-interactive techniques, raster graphics fundamentals, 3-D fundamentals, graphics packages and graphics systems. Students use and develop a graphics software system based on an accepted graphics standard. Programming projects are required. **Credits:** 4.

4005-762 Computer Graphics II

This course will investigate the theory of computer image synthesis. Seminal computer graphics papers will be used to describe the various components of the image synthesis pipeline and explain, just as in photography, how the path of light in a virtual scene can be simulated and used to create photorealistic imagery. The course will emphasize the theory behind rendering tools and libraries available for image synthesis. The student will put theory into practice via programming assignments and a capstone project. Topics will include light and color, three-dimensional scene specification, camera models, surface materials and textures, rendering (local, ray tracing, radiosity), procedural shading and modeling, tone reproduction, and advanced rendering techniques. **Prerequisite(s):** 4005-761 Computer Graphics I. **Credits:** 4.

4002-734 2D Graphics Programming

Use of an advanced graphics API to access hardware accelerated graphics. Discussion of scene graphs, optimizations, and integration with the API object structure. Advanced use of the API calls in production code, to construct environments capable of real-time performance. **Credits:** 4.

4002-735 3D Graphics Programming

Use of a graphics API to access hardware accelerated graphics. Discussion of the API scene graph, 3D optimizations, and integration between the 2D graphics mode and a 3D immediate mode implementation. This course builds upon students' previous work and extends it in the construction of a fully functional 3D Engine, with library construction for game development. **Prerequisite(s):** 4005-734 2D Graphics Programming. **Credits:** 4.

4005-763 Computer Animation: Algorithms and Techniques

This course takes a look at Computer Animation from a programmer's perspective. It will investigate the theory, algorithms and techniques for describing and programming motion for virtual 3D worlds. Approaches that will be explored include keyframing systems, kinematics, motion of articulated figures, and procedural and behavioral systems. This course is a programming-oriented course with major deliverables including the implementation of techniques presented in lecture as well as a final project concentrating on an area of a student's choice. Students taking this course for Graduate credit will be required to read and summarize recent journal papers from the computer animation literature. **Prerequisite(s):** 4005-761 Computer Graphics I or 4002-734 2D Graphics Programming. **Credits:** 4.

4002-836 Game Engine Design and Development

This course will provide students with theory and practical skills in game engine design topic areas such as understanding the graphics pipeline as it influences engine design, hardware principles and the relationship to game engine construction, mathematical principles, scene graph construction and maintenance, advanced scenegraph manipulation, textures, materials, and lighting, collision systems, physics, particle systems, and control systems. Furthermore, this course will examine software and toolsets that assist game engine designers in their tasks. Students will be expected to design and implement a game engine in teams as well as properly document their design and development strategy. **Prerequisite(s):** 4002-735 3D Graphics Programming. **Credits:** 4.

3. Artificial Intelligence and Simulation Major Track

4005-750 Introduction to Artificial Intelligence

An introduction to the field of artificial intelligence, including both theory and applications. A programming language that allows effective symbolic manipulation (PROLOG) is used to demonstrate the capabilities and limitations of the material presented in class. Topics include search strategies and their implementation, logic, networks, frames and scripts, productions, symbolic manipulation and list processing, problem-solving methods, expert systems, natural language understanding, and selections from vision, robotics, planning and learning. Programming assignments are an integral part of the course. **Credits:** 4.

4002-791 Artificial Life and Evolutionary Simulation

This course will provide students with theory and practical skills in Artificial Life (A-Life). Topic areas include the history and evolution of Artificial Life algorithms, uses of Artificial Life as a simulation tool, as well as applications of Artificial Life algorithms to applied domains such as game artificial intelligence, computer music, simulation, and visualization. Software and toolsets that assist Artificial Life programmers will be examined. Students will be expected to design and implement a simulation in teams as well as properly document their design and development strategy. **Credits:** 4.

4005-752 Artificial Intelligence for Interactive Environments

This course delves into the use of artificial intelligence in the creation of modern computer games. The focus will be hands-on development using existing tools for programming assignments in genres such as interactive fiction, first person shooter, real-time strategy, and simulations. The topics of the course will include topics such as pattern matching, intelligent group movement, tactical reasoning, artificial life, and learning. **Prerequisite(s):** 4005-750 Artificial Intelligence. **Credits:** 4.

4005-759 Topics in Artificial Intelligence

Current topics in the field. The format of this course is a combination lecture and seminar. Students may resister for this course more than once. Topics covered in the past include: logic programming, natural language processing, pattern recognition, specialized AI languages and programming paradigms, robotics. Programming projects will be required. **Prerequisite(s):** 4005-750 Artificial Intelligence. **Credits:** 4.

4005-756 Genetic Algorithms

Genetic algorithms provide a powerful approach for searching large, ill-behaved problem spaces. In this course, we will study the theoretical foundations of genetic algorithms as well as their application to a variety of search and optimization problems. The course will cover topics from the current research literature, and students will be expected to do a library research review and perform an experimental project. Programming projects will be required. **Credits:** 4.

4005-755 Neural Networks and Machine Learning

Neural networks, systems with massively connected parallel primitive computing elements, are, metaphorically, computers structured after natural brains. Such systems promise much better performance than classical computers at pattern recognition and related areas. In this seminar, we will present several neural network models, introduce the current research activity, and develop some underlying mathematics. Students will have the opportunity to develop and present models, both paper and software simulated, and to utilize canned simulators. Students will be exposed to the current research literature. Programming projects will be required. **Credits:** 4.

4. Asset Creation and Animation Minor Track

2001-651 3DCG Modeling

This course covers a contrast and comparison of various methods of creating geometry for use in 3D environments including polygons, NURBS and subdivision surfaces for various purposes. Skills learned can be applied to creating elements for computer and video games, creating virtual environments or in visualization. Students have the opportunity to work on group projects and real world application. **Credits:** 4.

2001-652 3DCG Interactive Animation

This course covers first the use of animation in interactive environment including games, visualization and virtual reality. Students will create animation using key frames, paths, deformation, forward and inverse kinematics. **Credits:** 4.

2001-662 3DCG Shading

The course focuses on incorporating 2D and 3D groups of textures into realistic materials. Students learn to use texture maps instead of detail in models to increase interaction speeds. Textures are also used in order to incorporate simple models into diverse scenes. Displacement textures are used to create detail in models. Advanced techniques in the use of shading networks are incorporated into the process. **Prerequisite(s):** 2001-651 3DCG Modeling. **Credits:** 4.

2001-692 Rendering, Output and Prototyping

This course covers a contrast and comparison of various methods and resolutions of rendering and outputting information from 3D software. **Prerequisite(s):** 2001-651 3DCG Modeling or 2001-652 3DCG Interactive Animation. **Credits:** 4.

2001-661 3DCG Lighting

Students apply standard lighting methods to lighting 3D models. The interaction of light and pigment, use of light in painting, photography, film and computer graphics are used as examples. Students apply problem solving techniques to arrive at a lighting solution for various problems. **Prerequisite(s):** 2001-651 3DCG Modeling. **Credits:** 4.

2001-673 3DCG Character Design

This course covers first the design of characters and then the creation of them using 3D software, inverse kinematics and deformers. Students create interpretant matrices, model sheets, sketches and maquettes of characters followed by development of the character in software. **Prerequisite(s):** 2001-651 3DCG Modeling. **Credits:** 4.

2001-778 3DCG Production Pipeline

The course focuses on implementing a 3D computer graphics project from the planning stage, through completion and presentation. **Prerequisite(s):** 2001-651 3DCG Modeling and any other 3DCG graduate course. **Credits:** 4.

5. Content Authoring for Games Minor Track

4004-728 Interactive Narrative

This course will examine elements of narrative and storytelling within computer games. Students will learn how narrative works within these environments and how it differs from standard narrative whether the digital creation is original or derived from a traditional narrative source. Students will learn to apply different theories of Ludology (theory and critical analysis of computer games) to analysis and critique of computer games. Students will write treatments, flowcharts, storyboards and scripts for their own games and then implement prototypes based on those documents. Students will complete written assignments. **Prerequisite(s):** 4004-731 History and Critical Analysis of Computer Games. **Credits:** 4.

4004-732 Game World Design

In this course, students will examine technical requirements for the creation of computer games based on previously developed design artifacts. They will create a design document consistent with current industry practices, building upon a written script, related materials and prototype and will present the draft design documents for critique. **Prerequisite(s):** 4004-728 Interactive Narrative for Games. **Credits:** 4.

4004-744 Building Online Communities

Students design and then work in teams to implement fully-functional on-line communities and/or social software tools to support on-line communities. This includes attracting members, promoting, and managing their communities. Students will also evaluate the performance of their designs, their community members and their own management skills. **Prerequisite(s):** 4004-734 Online Identity, Social and Community Behavior. **Credits:** 4.

6. Human Computer Interaction Minor Track

4004-745 Foundations of Human Computer Interaction

Human-computer interaction (HCI) is a field of study concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them. This course surveys the scope of issues and foundations of the HCI field: cognitive psychology, human factors, and interaction design methods with emphasis on users and their tasks. **Credits:** 4.

4004-748 Usability Engineering

This team project oriented course stresses the importance of good software interfaces and the relationship of user interface design to human-computer interaction. Topics include: the usability engineering lifecycle, effective system design and development, usability heuristics, testing, assessment methods, and international user interfaces. This course focuses on the design, testing and development of effective user interfaces. **Prerequisite(s):** 4004-745 Foundations of Human Computer Interaction. **Credits:** 4.

4004-749 Usability Testing

This project-based course will focus on the formal evaluation of user interfaces. Topics include: usability test goal setting, recruitment of appropriate users, design of test tasks, design of the test environment, test plan development and implementation, analysis and interpretation of the results, and documentation and presentation of results and recommendations. **Prerequisite(s):** 4004-748 Usability Engineering. **Credits:** 4.

7. Database Architecture and Design Minor Track

4002-720 Data Object Development

Introduction to analysis and design of data representations and data object implementation. Current software environments are used to explore effective data design implementation concepts. Topics include basic database design, database transactions, data object design, database quality and error handling. Software design and programming projects are required. **Credits:** 4.

4002-784 Multi Client Database Implementation

Students will investigate strategies for client-server and server-server communication against single or multiple database servers. Specifically, students will configure, test, and demonstrate successful communication between multiple database servers and multiple clients. Similarities and differences between commercially available connectivity packages, and issues impacting performance will be explored. Programming exercises are required. **Prerequisite(s):** 4002-720 Data Object Development. **Credits:** 4.

4002-785 Fundamentals of DBMS Architecture and Implementation

Students will be introduced to issues in client/server database implementation and administration. Topics such as schema implementation, storage allocation and management, user creation and access security, transaction management, data backup and recovery, and performance measurement and enhancement will be presented in lecture and investigated in a laboratory environment. Students will configure and demonstrate successful management of a database server for client access. **Prerequisite(s):** 4002-720 Data Object Development. **Credits:** 4.

8. Team-Based Capstone Project

4002-887 Capstone Design

This course allows students within the Game Design and Development program to develop a capstone proposal and design document. The capstone design document specifies the scope and depth of the capstone project as well as defines the group and individual responsibilities for the cohort capstone project experience. **Prerequisite(s):** Permission of a Game Design and Development Advisor. **Credits:** 4.

4002-888 Capstone Development

This course provides Master of Science in Game Design and Development students with capstone project experiences. Students are expected to work in cohorts towards the implementation of a game system that properly illustrates proficiency in the application of theory and practice towards a large-scale project. For each student, individual responsibilities for the group project will be defined in consultation with both the group and the faculty. Students must successfully complete the Capstone Design course and present a satisfactory capstone project proposal to the faculty before enrolling in this course. **Prerequisite(s):** 4002-887 Capstone Design and Permission of a Game Design and Development Advisor. **Credits:** 4.

F. Program Scheduling

Table 5 depicts the layout of and credit for the courses required for this degree. It shows the layout of the major and minor track that the student selects, as well as the required seminar and capstone courses. It is important to note that each quarter, students take a mix of courses from the seminar, major, and minor tracks. This allows for parallelism in the program and allows for experiences from one sequence or track to enhance the interactions in the other two.

Color-coding is consistent with previous tables.

MASTERS OF SCIENCE IN GAME DESIGN & DEVELOPMENT SEMINAR, MAJOR TRACK, AND MINOR TRACK BREAKDOWN BY YEAR		
YEAR 1 - FALL	**YEAR 1 - WINTER**	**YEAR 1 - SPRING**
SEMINAR SEQUENCE [4]	SEMINAR SEQUENCE [4]	SEMINAR SEQUENCE [4]
MAJOR TRACK [4]	MAJOR TRACK [4]	MAJOR TRACK [4]
MINOR TRACK [4]	MINOR TRACK [4]	MINOR TRACK [4]
YEAR 2 - FALL	**YEAR 2 - WINTER**	**YEAR 2 - SPRING**
SEMINAR SEQUENCE [4]	SEMINAR SEQUENCE [4]	CAPSTONE DEVELOPMENT [2]
MAJOR TRACK [4]	MAJOR TRACK [4]	
MAJOR TRACK [4]	CAPSTONE DESIGN [4]	

Table 5: Two-year progression of seminars, major track, and minor track courses to be taken by the student.

Tables 6 and 7 show the quarters in which each course in the curriculum is offered over the two years of the program. These are color-coded consistent with the previous diagrams to identify courses that are parts of the seminar sequence, major, and minor tracks.

YEAR ONE

FALL		WINTER		SPRING	
COURSE TITLE	**CREDIT HOURS**	**COURSE TITLE**	**CREDIT HOURS**	**COURSE TITLE**	**CREDIT HOURS**
COMMON SEMINAR COURSES					
History and Critical Analysis of Computer Games and Interactive Entertainment	4	Online Identity, Social and Community Behavior	4	Emerging Themes in Entertainment Technology	4
MAJOR TRACK COURSES					
Computer Graphics I	4	Computer Graphics II	4	2D Graphics Programming	4
Introduction to Artificial Intelligence	4	Artificial Life and Evolutionary Simulation	4	Artificial Intelligence for Interactive Environments	4
MINOR TRACK COURSES					
3DCG Modeling	4	3DCG Interactive Animation	4	3DCG Character Design	4
				3DCG Production Pipeline	4
Interactive Narrative	4	Game World Design	4	Building Online Communities	4
Foundation of HCI	4	Usability Engineering	4	Usability Testing	4
Data Object Development	4	Multi Client Database Implementation	4	Fundamentals of DBMS Architecture and Implementation	4
Total Credits	**12**	**Total Credits**	**12**	**Total Credits**	**12**

Table 6: Selection of courses available to students within the seminar sequence, major track selections and minor track selections during year 1.

YEAR TWO

FALL		WINTER		SPRING	
COURSE TITLE	**CREDIT HOURS**	**COURSE TITLE**	**CREDIT HOURS**	**COURSE TITLE**	**CREDIT HOURS**
COMMON SEMINAR COURSES					
Development Processes in the Games Industry	4	Business and Legal Aspects of Games Development	4		
MAJOR TRACK COURSES					
Computer Animation: Algorithms & Techniques	4	Game Engine Design & Development	4		
3D Graphics Programming	4				
Topics in Artificial Intelligence	4	Neural Networks & Machine Learning	4		
Genetic Algorithms	4				
MINOR TRACK COURSES					
3DCG Lighting	4	3DCG Shading	4		
		3DCG Rendering, Output and Prototyping	4		
TEAM-BASED CAPSTONE PROJECT					
		Capstone Design	4	Capstone Development	2
Total Credits	**12**	**Total Credits**	12	**Total Credits**	2

Table 7: Selection of courses available to students within the seminar sequence, major track selections and minor track selections during year 2.

G. Off-campus Courses

Other than distance learning course offerings in Human Computer Interaction, as described in section II.I, all of the offered courses meet on-campus.

H. Interdisciplinary Elements

The goal of the proposed degree program is to provide students with the expertise to embark on meaningful careers in the game, entertainment and related industries. This is a two-college degree program that will leverage the expertise of faculty members from the Information

Technology and Computer Science Departments within the B. Thomas Golisano College of Computing and Information Sciences (GCCIS) and the Computer Graphics Design Program with the College of Imaging Arts and Sciences (CIAS). Students will benefit by interaction with faculty from each department. The degree program will also formalize interaction between participating faculty members from the three departments. It is anticipated that this program will be attractive to undergraduate students from all departments within GCCIS and also from Computer Graphics Design in CIAS.

Of the 35 courses in the degree, all but four (4) will be shared with another degree and/or certificate program in the College of Computing or the College of Imaging Arts and Sciences. The courses not shared with any other current program are listed below:

Common Core Seminar Courses
Development Processes in the Games Industry
Business and Legal Aspects of Game Development

Team-Based Capstone Project
Capstone Design
Capstone Development

The program will share the resources currently used by the three departments. Memos providing documentation of agreement are available in Appendix A.

I. Distance Learning

At this time, courses belonging to the Human Computer Interaction minor track are offered either as distance learning courses or as traditional on-campus courses. In many cases, distance and traditional courses are scheduled for the same quarter or within one quarter of the alternative offering. None of the other courses, nor the degree program, are offered in a distance format at this time.

III.Assessment

A. Assessment Plan

1. Program Goals and Educational Outcomes

The primary program goal of the Masters of Science in Game Design and Development is to produce successful professionals within the game design and development industry as well as in careers related to entertainment technology. Furthermore, it is a goal of this program to produce professionals who understand the multidisciplinary nature of the gaming field.

The program goals will be addressed through a number of anticipated program outcomes.

- Students will be able to relate current game development practices and processes to historical roots within the industry. Students will be able to incorporate lessons of success and failure from previous works into their own game constructs. To be assessed through course projects, culminating in the capstone experience.

- Students will be able to incorporate currently accepted development processes in the game industry towards their own game development. Assessed in projects in several courses, culminating in the capstone project.

- Students will be able to work effectively in multidisciplinary teams to create entertainment technology titles with awareness and respect for various authoring, development and maintenance roles. Assessed by successful completion of the capstone project, as well as several group projects in various courses.

- Students will be able to incorporate social and community theory into the construction of gaming and entertainment systems. Assessed through seminar completion, culminating in the capstone project.

- Students will recognize intellectual property and publishing issues as related to the entertainment technology industry. Assessed through coursework within the degree.

- Students will be able to participate in the construction of a working game or entertainment technology software title. Assessed through the completion of the capstone design and development project.

2. Assessment Methods

As the game design and development program spans multiple departments and colleges, assessment methods must be designed in a manner that promotes multidisciplinary understanding and allows for transparency in the intended goals and outcomes of courses as well as program procedures and policies. By performing regular and diligent assessment of the courses and the

program, it is the intent that the evaluation process will help the faculty to maintain closer ties with students as well as each other and the industry as a whole.

The assessment process begins with and is controlled by the Administrative Committee. The Administrative Committee, or an officially appointed assessment subcommittee, will be charged with the responsibility of creating and maintaining assessment criteria and standards. The committee will consist of representatives from all three sponsoring departments or programs.

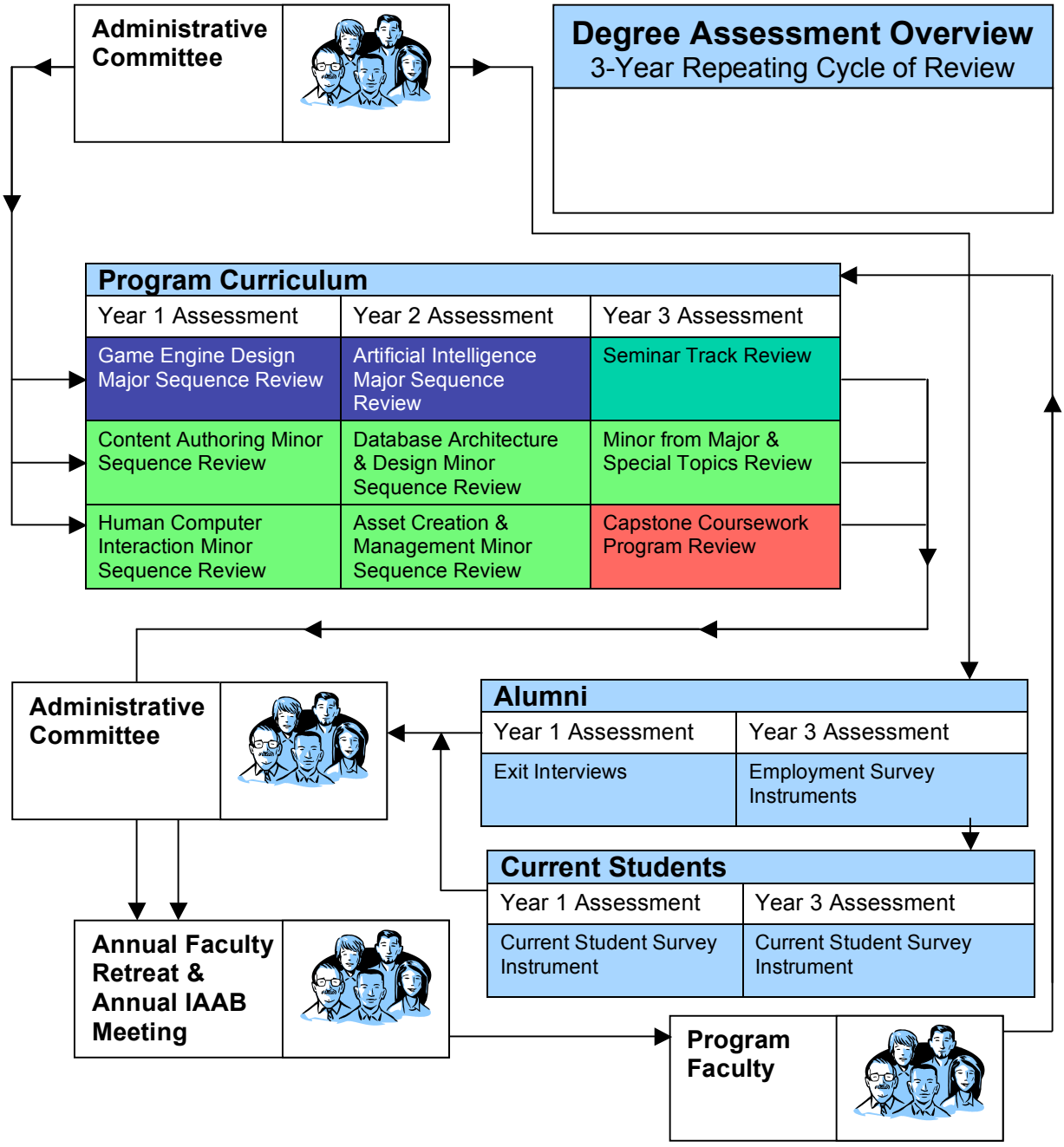


Figure 4: Assessment Cycle for the Game Design and Development Degree Program

Program evaluation will occur over a three-year cycle, as depicted in Figure 4. The evaluation process is divided into two categories, program curriculum as well as student and alumni satisfaction. Each academic year, the Administrative Committee will select a specific set of courses for evaluation, selecting equally from the major tracks, the minor tracks, the seminars, and the capstone experience.

From the selected courses, faculty will ascertain as to whether the course meets intended educational objectives as well as whether the course fits appropriately within the assigned track and the program as a whole. Part of the course assessment will come from analysis of student survey instruments, administered during the last week of the course.

As the faculty revise and develop course related materials, a review panel of faculty from the program will review the materials internally. The process will be formative in nature and will help to insure the applicability and quality of materials related to the coursework.

To address assessment of the current student body and alumni of this program, survey instruments will measure their overall satisfaction with the degree and applicability of the program to their overall career goals. While students are matriculated in the program, focus groups will be conducted with the faculty to determine if the program is meeting the student's educational expectations. After graduation, alumni will be surveyed at 1 year and at 3 years to determine if the program has successfully prepared them for their intended career path.

Furthermore, the Administrative Committee will compare selected accepted portfolio work relative to capstone projects in order to determine the growth of student competency as they progress through the program.

Another facet of assessment is the involvement of the Industrial and Academic Advisory Board (IAAB). Currently, each department's existing Industrial Advisory Board is comprised of select people who possess relevant backgrounds within the game industry and are directly involved with the game design and development process. These people have expressed an interest in advising this proposed degree program. Furthermore, Advisory Board members may also be selected directly from the game design and development industry. Members may also consist of academics from other universities or institutions with gaming or game related programs, degrees, or certificates. Finally, Advisory Board members may also consist of past graduates of the program who are working in industry or academia and who have a vested interest in the promotion and success of the degree program. In particular, the Advisory Board will provide insight and comment regarding particular content areas of the degree program, the overall direction of the degree, and how the degree matches the needs and future trends of the industry as a whole.

The results of curricular review, student focus groups, alumni survey instruments, and recommendations from individual IAAB members will be summarized and presented by the Administrative Committee to program faculty at an annual faculty retreat. The summary will also be presented to the Industrial and Academic Advisory Board at IAAB meeting, which will

be conducted on a two-year cycle. After the results are presented, faculty will incorporate the feedback into curricular and program revisions.

Finally, the faculty will be responsible for disseminating classroom practice and results to juried- and peer-reviewed conferences and journals dealing with the academic aspects of game design and development as well as industrial practices. Potential avenues for publication include the ACM SIGGRAPH Educational Program, ACM SIGCSE, ACM SIGITE, ACM SIGCHI, and the Game Developer's Conference.

Appropriate and authorized personnel within each home department and the Institute may examine course materials and representative student work at any time upon request.

B. Accreditation

General accreditation of courses within the Game Design and Development program will occur as part of RIT's involvement with the Middle States accreditation process. At present, there is no professional organization or agency with the capability or authority to accredit a graduate game design and development program. Since the majority of courses in this proposal are contained within other degrees and certificate programs, they would be reviewed as part of required accreditation processes within each department or college. In the future, if a suitable professional accreditation organization or agency should come into existence, the faculty members of the Game Design and Development program will endeavor to be associated with the creation, implementation, and deployment of accreditation standards.

IV. Faculty

The faculty participating in the Game Design and Development degree are affiliated with the Department of Information Technology and Department of Computer Science within the B. Thomas Golisano College of Computing and Information Science as well at the Computer Graphics Design Program within the College of Imaging Arts and Sciences.

A. Faculty Names and Qualifications

The following table lists the names and qualifications of each participating faculty member. The core faculty members responsible for the program are identified with an asterisk (*). Full faculty curriculum vitae are provided in Appendix C. Faculty members with non-terminal degrees were selected to participate in the program based upon unique expertise, including appropriate industry, academia, or scholarly activity. In such circumstances, when not clearly evident by the faculty member's CV, an additional statement of special competence will be included in Appendix C.

The faculty will govern the degree program through a shared governance model. A committee with members from each home department will be selected and will share the coordination and governorship responsibilities. In addition, a program chair will be elected every three years from the committee's membership.

Additional faculty may be brought into the program based upon curricular need balanced against the requirements and obligations of their respective home departments. Furthermore, additional faculty may be considered for hire based upon program growth.

Faculty List – Information Technology Department

Name and Rank	Professional Qualifications / Areas of Interest
Andrew Phelps * Assistant Professor Interactive Media Group	M.S. in Information Technology, Rochester Institute of Technology, 1999. Professor Phelps is nationally recognized for his contributions in the areas of academic game and entertainment technology scholarship. He currently serves on the advisory board on the International Association for Game Education and Research. He has also served as a contributing editor for the International Game Developer's Association Special Interest Group on Online and Downloadable Games from 2002-2004. He has been elected and has served as a co-chair on the VRML consortium's External Authoring Interface committee, which created the standards document for VRML and External Programming Language interoperability (1999-2001). Professor Phelps has also been elected and as served on the V-Learn board of directors, a not-for-profit organization sponsored by Cornell University, University of Washington, Harvard, and other academic institutions (2000-2003). Professor Phelps has also been invited to participate in invited evaluation panels, workshops, and panels hosted by Macromedia, Inc. Professor Phelps has published numerous peer-reviewed and popular press articles on entertainment technology and has talked at numerous national and international conferences by invitation. Professor Phelps has also secured a principal investigators grant from Microsoft for his work on M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study). He has also served on a number of department, college, and institute-level committees for graduate curricula. He has also been an invited member of program review and assessment committees for other games programs at both the baccalaureate and masters level. **Areas of Interest:** Entertainment Technology, Game Engine Design and Implementation, Graphics Techniques and Algorithms, and Virtual World Design and Implementation.
Christopher Egert * Assistant Professor Interactive Media Group	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003. Minor in Media Study. **Areas of Interest:** "Edutainment" Games and Online Play, Computer Mediated Communication, Computing Education through Multimedia Experiences, Distributed Systems, Desktop Virtual Reality, Agent Design, Application of Media Theory, and Computer-Human Interaction.

Name and Rank	Professional Qualifications / Areas of Interest
Stephen Jacobs * Assistant Professor Interactive Media Group	M.A. in Media Studies, New School for Social Research, 1988. Graduate Coursework in Animation at RIT. Professor Jacobs has been editor, contributing editor, or publisher for a number of popular press publications related to the games industry, including Gadget Boy Gazette, CNET Consumer Electronics' Future Tech Television 2.0, and Television Business International. Professor Jacobs has also engaged in freelance writing for popular publications such as Wired, and Fast Forward. He has served as a multimedia content designer and an "edutainment" game consultant for companies such as Anabasis Software, Discerning Nature, Binney and Smith, as well as Harbortown games from 1995-2003. Along with popular press publications, Professor Jacobs has also been the creator, producer, and director of a popular regional radio show, "What the Tech", which aired on public radio in Rochester from 2002-2005. Professor Jacobs success in the popular press has translated into numerous media placements (quotes and commentary in nationally recognized media outlets) and invited talks. Professor Jacobs has been a chapter contributor and chapter editor for two Charles River Media books. Professor Jacobs is also involved in the International Game Developer's Association Games Writers SIG, and has published nationally in this venue. **Areas of Interest:** Social and Cultural Theories of Game Play and Interactivity, Media Theory Design Document Development, Narrative Structure Development for Games, History of Games and Entertainment Technology, and Human Factors.
Al Biles Professor Interactive Media Group	M.S. in Computer Science, University of Kansas, 1980. Professor Biles has been at the Rochester Institute of Technology for over 25 years in both Computer Science and Information Technology. Professor Biles has had a number of national and international publications and performances based on Genetic Algorithms for Music and Art. Professor Biles belongs to a number of professional organizations including the International Computer Music Association, the Electronic Music Foundation (charter member, the Society for Information Technology Education, the IEEE Computer Society, the IEEE technical committee on computer-generated music, and the ACM. Professor Biles is world-renowned for his work in digital audio, particularly the Gen-JAM package that combines digital music concepts with artificial intelligence. **Areas of Interest:** Computer Music, Digital Audio, Human Factors, Interface Design, Multimedia Development, and Artificial Intelligence

Name and Rank	Professional Qualifications / Areas of Interest
Steve Kurtz Professor Interactive Media Group	M.S. in Information Technology, Rochester Institute of Technology, 1987. M.F.A. in Imaging Arts, Rochester Institute of Technology, 1979. Professor Kurtz has been actively involved in the intersection of art and technology for the last 23 years at the Rochester Institute of Technology. He is currently performing scholarly investigation in the areas of learning and simulation, including the NATCAT project, a cooperative venture between RIT and SUNY Binghamton to study classification from a cognitive science perspective within 3D virtual environments. He has also consulted for a number of industry-based multimedia projects. Professor Kurtz has published in a number of national venues including SIGGRAPH, SIGITE, and CITC. Professor Kurtz serves as the unit coordinator of the Interactive Media Group. **Areas of Interest:** 3D Multi-user Environment Development, Virtual Worlds Design and Implementation, Simulation and Game Development based upon Educational Theory.
Evelyn Rozanski Professor Enterprise Computing Group	Ph.D. in Social Foundations of Education, University at Buffalo (SUNY), 1994. **Areas of Interest:** Human-Computer Interaction, and Multimedia.
Deborah Coleman Assistant Professor Enterprise Computing Group	M.S. in Software Development and Management, Rochester Institute of Technology, 1997. Professor Coleman has extensive work experience spanning 30 years. She has worked as a technical programmer for Eastman Kodak (10 years), a data and process analyst for Paychex (3-4 years), an applications manager for Unity Health System (2-3 years), and a data architect and enterprise architecture consultant for Xerox Corporation (2½ years). She has developed curricular materials for portions of the Masters of Science in Human-Computer Interaction as well as the Masters of Science in Software Development and Management. Professor Coleman is working towards her Ph.D. in Information Systems at Nova Southeastern University. **Areas of Interest:** Software Development, Data Modeling, Knowledge Management, Business and Legal Aspects of Game Industry.
Dianne Bills Associate Professor Enterprise Computing Group	M.S. in Computer Science, Rochester Institute of Technology, 1986. Professor Bills has over seven years of applications programming experience as well as over 20 years of academic experience. She has a number of peer-reviewed regional and national publications and has presented work at over a dozen conference venues. She has participated in a number of professional development activities at Oracle and Disney Corporation. Professor Bills has served as the Graduate Program Coordinator of the Information Technology program since 2001. **Areas of Interest:** Database Design and Development, Database Optimization Techniques

Name and Rank	Professional Qualifications / Areas of Interest
William Stratton Associate Professor Enterprise Computing Group	Ph.D. in Educational Administration, University at Buffalo (SUNY), 1988. **Areas of Interest:** Data Modeling, Database Design, Data Manipulation and Transformation Techniques.
Anne Haake Associate Professor Enterprise Computing Group	Ph.D. in Developmental Biology, University of South Carolina, 1985. **Areas of Interest:** Human Computer Interaction.
Kevin Bierre Assistant Professor Enterprise Computing Group	M.S. in Computer Science, Rochester Institute of Technology, 1990. Professor Bierre has over 25 years of professional Computer Science and Information Technology industry experience. He is the vice-chair of the game accessibility special interest group for the International Game Developers Association. He has published peer-reviewed gaming an entertainment technology papers in areas such as game environment design for education and game accessibility. He has published and presented at prestigious national and international venues such as IEEE Frontiers in Education, ACM SIGITE, ACM SIGCSE, and HCI International. He was also part of the team that authored the game accessibility white-paper for the International Game Developer's Association. **Areas of Interest:** Collaborative Virtual Environment Use in Education, Accessibility in Games.
Elissa Weeden Assistant Professor Enterprise Computing Group	M.S. in Software Development and Management, Rochester Institute of Technology, 1998. Professor Weeden has served as an industry consultant for enterprise and database projects for over a decade. She has served on committees for the ACM Special Interest Group for Information Technology Education (SIGITE). She has also published papers on database education at SIGITE. She is also a member of the Association for Women in Computing (AWC) and the Upstate New York Oracle Users Group. She is an associate member of the International Oracle Users Group. She has been nominated for advisor and teaching awards and has received 3 RIT development grants since 2003. Professor Weeden is also working toward her Ph.D. in Computer and Information Sciences at Nova Southeastern. **Areas of Interest:** Applications Programming, Interface Designs, Needs Assessment, Data Modeling, and Database Administration.

Table 8: Faculty within the Information Technology Department who teach courses associated with the Game Design and Development Program. The asterisk (*) denotes program faculty.

Faculty List – Computer Science Department

Name and Rank	Professional Qualifications / Areas of Interest
Joseph Geigel * Assistant Professor	D.Sc. in Computer Science, George Washington University, 2000. **Areas of Interest:** Computer Graphics, Multimedia, and Virtual Theatre.
Jessica Bayliss * Assistant Professor	Ph.D. in Computer Science, University of Rochester, 2001. **Areas of Interest:** Artificial Intelligence, Alternative Computer Interfaces, and Agents in Computer Games.
Warren Carithers Associate Professor	M.S. in Computer Science, University of Kansas, 1981. Professor Carithers has been a professor at the Rochester Institute of Technology for over 20 years. In addition, he has served as a consultant to industry at companies such as Xerox Corporation, Kodak, Sykes Datatronics, and the Academic Media Center Corporation. He has also been a principle investigator or co-principle investigator on an NSF-ILI grant (facilities upgrade grant for graphics courses 1987) and an NSF-DUE grant (object-oriented programming in introductory course sequences 1994). **Areas of Interest:** Computer Graphics and Systems Programming
Leon Reznik Professor	Ph.D. in Engineering, St. Petersburg Polytechnic Institute, 1983. **Areas of Interest:** Fuzzy Logic and Neural Networks.
Zach Butler Assistant Professor	Ph.D. in Robotics, Carnegie Mellon, 2000. **Areas of Interest:** Artificial Intelligence and Robotics.

Table 9: Faculty within the Computer Science Department who teach courses associated with the Game Design and Development Program. The asterisk (*) denotes program faculty.

Faculty List – Computer Graphics Design Program

Name and Rank	Professional Qualifications / Areas of Interest
Marla Schweppe * Associate Professor Chair of the Computer Graphics Design Department	M.A. in Art Education, The Ohio State University, 1984. Professor Schweppe is the Director of Visualization within the College of Imaging Arts and Sciences at the Rochester Institute of Technology. She has been the Art Gallery Chair for the ACM SIGGRAPH 1999 conference, and a committee member for the ACM SIGGRAPH in 1992 and 1994. She has served as a reviewer or juror for SIGGRAPH from 1996-1998, 2000-2003. She has also reviewed USDOE FIPSE grants and has served as a NY Foundation for the Arts Computer Art panelist in 2003. She has had dozens of publications and exhibits in peer-reviewed venues. **Areas of Interest:** Computer Graphics Design, Modeling, Lighting, Shading, Character Animation, and Content Creation Practices.
Chris Jackson Assistant Professor	M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996. **Areas of Interest:** Authoring Experiences, Interactive Design for Children, Digital Storytelling, and 3D Modeling and Animation.

Table 10: Faculty within Computer Graphics Design Program who teach courses associated with the Game Design and Development Program. The asterisk (*) denotes program faculty.

Based upon the list of faculty presented in Tables 8 through 10 inclusive, Table 11 provides a list of game design and development courses matched to faculty with the expertise to develop primary curricular materials and serve as instructor. **Please note that section F, "Relevant other experience (such as certification / licensure)," appears in the table heading as per the New York State proposal format, but the informational column in the table has been removed, as there are no formal certifications or licenses that apply directly to the field of Game Design & Development, or applicable sub-areas such as graphics programming or A.I.** Instead, a few recent publications of each faculty member have been presented to demonstrate currency in the field, along with any relevant industrial experience. For a complete listing of recent scholarly activities, please refer to the faculty CVs located in Appendix C. An asterisk (*) has been used to denote program faculty listed above, and (D) to denote the program director as per the NYS form.

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
History and Critical Analysis of Computer Games and Interactive Entertainment	4	Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		
Online Identity, Social and Community Behavior	4	Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		
Emerging Themes in Entertainment Technology	4	Andy Phelps (D) * Steve Jacobs *	M.S. in Information Technology, Rochester Institute of Technology, 1999. M.A. in Media Studies, New School for Social Research, 1988.

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
		Christopher Egert * Kevin Bierre	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003. M.S. in Computer Science, Rochester Institute of Technology, 1990.
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry. **Prof. Jacobs** Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001) **Dr. Egert** Software and Systems Consultant,			**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105. **Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.	

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
INTROTECH, North Tonawanda, NY, 1992-present. Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990 Software Engineer, Moore Research Center, Grand Island, NY, 1988	**Dr. Egert** Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005. Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.		
Prof. Bierre Principal Engineer, Real Time Enterprises, Rochester, NY 1995-2001 Senior Software Engineer, Wegmans Food Markets, Rochester, NY 1992-1995 Software Engineer, MOSCOM, 1988-1992	**Prof. Bierre** Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Bierre, K et al., "Game Not Over: Accessibility Issues in Video Games", *HCI International,* Las Vegas, NV, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.		
Development Processes in the Games Industry	4	Andy Phelps (D) * Jessica Bayliss *	M.S. in Information Technology, Rochester Institute of Technology, 1999. Ph.D. in Computer Science, University of Rochester, 2001.

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry. **Dr. Bayliss** Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105. **Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.		
Business and Legal Aspects of Game Development	4	Deborah Coleman Jessica Bayliss *	M.S. in Software Development and Management, Rochester Institute of Technology, 1997. Ph.D. in Computer Science, University of Rochester, 2001.

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Coleman Enterprise Architecture Consultant, Xerox Corporation, 2001-2002 Data Architect, Xerox Corporation, 2000-2001 Applications Manager, Unity Health System, ACM Medical Labs, 1998-2000 Data and Process Analyst, Paychex Corp., 1995-1998 Technical Programmer, Eastman Kodak Company, 1975-1985 **Dr. Bayliss** Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.	**Prof. Coleman** Coleman, D., Lorek. C., and Murray, B., "Data, Object, and Interface Design", *DAMA International Symposium,* Wilshire Meta-Data Conference, 2005. Coleman, D. and Zilora, S., "Dynamic Enterprises Demand Advanced Curriculum in Development and Management", *Proceedings of the 4th Annual Conference on Information Technology Curriculum*, 2003. Coleman, D. and Joy, D., "Software Development Management: Abilities, Expertise, and Styles", *CITC3 Conference,* Rochester NY, 2002. **Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.		
Computer Graphics I	4	Jessica Bayliss * Warren Carithers	Ph.D. in Computer Science, University of Rochester, 2001. M.S. in Computer Science, University of Kansas, 1981.
Dr. Bayliss Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.	**Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Carithers Faculty member at RIT for over 20 years with teaching and scholarship interests in systems programming, systems architecture, and computer graphics. He has consulted to such companies as Eastman Kodak, Xerox Corporation, and the Academic Medical Center Consortium for the better part of two decades.	**Prof. Carithers** Carithers, W., "Programming (Chapter 58)", *Handbook of Modern Electronics and Electrical Engineering,* Belove, C. (ed.), John Wiley and Sons, 1986. Has developed a number of educational simulation software packages for academia.		
Computer Graphics II	4	Joe Geigel * Warren Carithers	D.Sc. in Computer Science, George Washington University, 2000. M.S. in Computer Science, University of Kansas, 1981.
Dr. Geigel Senior Scientist, Eastman Kodak, Rochester, NY, 1997-1999 Research Programmer, Pittsburgh Supercomputing Center, 1994-1996 Software Consultant, AT&T Bell Labs, Whippany, NJ, 1990-1991	**Dr. Geigel** Geigel, J. and Schweppe, M., " Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", *The 32nd Annual Conference on Computer Graphics and Interactive Techniques (Educators Program),* Los Angeles, CA, 2005. Geigel, J. and Schaller, N., "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics,* **29***(1),* pp. 257-265, 2005. Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Geigel, J. and Loui, A., "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging,* 2001.		
Prof. Carithers Faculty member at RIT for over 20 years with teaching and scholarship interests in systems programming, systems architecture, and computer graphics. He has consulted to such companies as Eastman Kodak, Xerox Corporation, and the Academic Medical Center Consortium for the better part of two decades.	**Prof. Carithers** Carithers, W., "Programming (Chapter 58)", *Handbook of Modern Electronics and Electrical Engineering,* Belove, C. (ed.), John Wiley and Sons, 1986. Has developed a number of educational simulation software packages for academia.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
2D Graphics Programming	4	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.		
3D Graphics Programming	4	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004.		

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	Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.		
Computer Animation: Algorithms & Techniques	4	Joe Geigel *	D.Sc. in Computer Science, George Washington University, 2000.
Dr. Geigel Senior Scientist, Eastman Kodak, Rochester, NY, 1997-1999 Research Programmer, Pittsburgh Supercomputing Center, 1994-1996 Software Consultant, AT&T Bell Labs, Whippany, NJ, 1990-1991	**Dr. Geigel** Geigel, J. and Schweppe, M., " Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", *The 32nd Annual Conference on Computer Graphics and Interactive Techniques (Educators Program),* Los Angeles, CA, 2005. Geigel, J. and Schaller, N., "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics,* **29***(1),* pp. 257-265, 2005. Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Geigel, J. and Loui, A., "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging,* 2001.		
Game Engine Design & Development	4	Christopher Egert * Andrew Phelps (D) *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003. M.S. in Information Technology, Rochester Institute of Technology, 1999.
Dr. Egert Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-present. Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990 Software Engineer, Moore Research Center, Grand Island, NY, 1988	**Dr. Egert** Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005. Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.		

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Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.		
Introduction to Artificial Intelligence	4	Jessica Bayliss * Zach Butler	Ph.D. in Computer Science, University of Rochester, 2001. Ph.D. in Robotics, Carnegie Mellon, 2000.
Dr. Bayliss Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995. **Dr. Butler** Academic experience in the areas of artificial intelligence, robotics, and distributed systems and algorithms.	**Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002. **Dr. Butler** Butler, Z. and Rus, D., NSF Grant, "Computational Tools for Controlling Herds", 2005-2008 Over 20 publications, including: Butler, Z., "Motion-Constrained Mobile Sensor Networks", *International Conference on Advanced Robotics,* 2005. Butler, Z., Corke, P., Peterson, R., and Rus, D., "Dynamic Virtual Fences for Controlling Cows", *International Symposium on Experimental Robots,* 2004.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Artificial Life and Evolutionary Simulation	4	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
		Steve Kurtz	M.F.A. in Imaging Arts, Rochester Institute of Technology, 1979.
		Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Al Biles	M.S. in Computer Science, University of Kansas, 1980.
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**

Prof. Kurtz

Academic at RIT for over 20 years with teaching and scholarship at the intersection of technology and multimedia.

Interactive Media Group Coordinator, Information Technology Department, RIT.

Prof. Kurtz

Doubleday, N. and Kurtz, S., "Shared Extensible Learning Spaces", *Proceeding of the Special Interest Group on Information Technology Education*, Salt Lake City, UT, ACM Press, 2004.

Kurtz, S. and Doubleday, N., "Virtual Worlds, Cognitive Maps", *Proceedings of the Educator's Program from the 31st Annual SIGGRAPH Conference on Computer Graphics and Interactive Techniques,* Los Angeles, CA, 2004.

Doubleday, N., Kurtz, S., and Goodman, G., "Using a Multimedia Environment to Introduce Programming to Students of New Media", *Proceedings of the Conference for Information Technology Curriculum,* Rochester, NY, 2002.

Dr. Egert

Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-present.

Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990

Software Engineer, Moore Research Center, Grand Island, NY, 1988

Dr. Egert

Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006.

Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005.

Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005.

Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005.

Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.

Prof. Biles

Professor at RIT for over 20 years.

Undergraduate Program Coordinator for the Information Technology Department, 1996-present

Chair of the Computer Science Department, 1990-1993

Prof. Biles

Bills, D. and Biles, J., "The Role of Programming in IT", *Proceedings of the ACM Special Interest Group for Information Technology Education,* Newark, NJ, ACM Press, 2005.

Biles, J. A., "GenJam in Perspective: A Tentative Taxonomy for GA Music and Art Systems", *Leonardo*, **36***(1)*, MIT Press, 2003.

Biles, J. A., "The Importance of Synergy: Integrating Curricular Components in IT", *Proceedings of the Third Conference in Information Technology Curricula*, Rochester, NY, 2002.

Biles, J. A., "GenJam: Evolutionary Computation Gets a Gig", *Proceedings of the Third Conference in Information Technology Curricula*, Rochester, NY, 2002.

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Artificial Intelligence for Interactive Environments	4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
Dr. Bayliss Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.	**Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.		
Topics in Artificial Intelligence	4	Jessica Bayliss * Zach Butler	Ph.D. in Computer Science, University of Rochester, 2001. Ph.D. in Robotics, Carnegie Mellon, 2000.
Dr. Bayliss Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995. **Dr. Butler** Academic experience in the areas of artificial intelligence, robotics, and distributed systems and algorithms.	**Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002. **Dr. Butler** Butler, Z. and Rus, D., NSF Grant, "Computational Tools for Controlling Herds", 2005-2008 Over 20 publications, including: Butler, Z., "Motion-Constrained Mobile Sensor Networks", *International Conference on Advanced Robotics,* 2005. Butler, Z., Corke, P., Peterson, R., and Rus, D., "Dynamic Virtual Fences for Controlling Cows", *International Symposium on Experimental Robots,* 2004.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Genetic Algorithms	4	Joe Geigel *	D.Sc. in Computer Science, George Washington University, 2000.
Dr. Geigel Senior Scientist, Eastman Kodak, Rochester, NY, 1997-1999 Research Programmer, Pittsburgh Supercomputing Center, 1994-1996 Software Consultant, AT&T Bell Labs, Whippany, NJ, 1990-1991	**Dr. Geigel** Geigel, J. and Schweppe, M., " Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", *The 32nd Annual Conference on Computer Graphics and Interactive Techniques (Educators Program),* Los Angeles, CA, 2005. Geigel, J. and Schaller, N., "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics,* **29***(1),* pp. 257-265, 2005. Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Geigel, J. and Loui, A., "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging,* 2001.		
Neural Networks & Machine Learning	4	Leon Reznik	Ph.D. in Engineering, St. Petersburg Polytechnic Institute, 1983.
Dr. Reznik Has over 26 years of experience in research and work with R&D organizations (see C.V. for greater detail) in the areas of neural networks and fuzzy logic.	**Dr. Reznik** Published over 50 refereed journal and conference articles as well as 3 books and 8 chapters in books. Some include: Reznik, L. and Kreinovich, V. (Eds.), *Soft Computing Measurement and Information Acquisition,* Spinger-Verlag, Heidelberg, 2003. Reznik, L, Dimitrov, V., and Kacprzyk, J. (Eds.), *Fuzzy System Design: Social and Engineering Applications*, Physica Verlag, Heidelberg, 1998. Little, A. and Reznik, L., "Improving the Approximation Smoothness of Radial Basis Neural Networks", *Journal of Advanced Computational Intelligence, **4**(6),* pp. 417-420, 2000.		
3DCG Modeling	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT.	Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM.		
Prof. Jackson Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer, Hierographics, 1992-1996	**Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		
3DCG Interactive Animation	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT.	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM.		
Prof. Jackson Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000	**Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		

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Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996			
3DCG Shading	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT. **Prof. Jackson** Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM. **Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		
3DCG Rendering, Output and Prototyping	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT. **Prof. Jackson** Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM. **Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition*.		
3DCG Lighting	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT.	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Jackson Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996	**Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		
3DCG Character Design	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT.	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM.		
Prof. Jackson Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996	**Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
3DCG Production Pipeline	4	Marla Schweppe * Chris Jackson	M.A. in Art Education, The Ohio State University, 1984. M.F.A. in Computer Graphics Design, Rochester Institute of Technology, 1996.
Prof. Schweppe Director of Visualization for the College of Imaging Arts and Science at RIT from 2000- present MFA Coordinator in Computer Animation 1993-2001 Animation Chair for School of Film and Animation, RIT 1997-2001 Developer of curricula in the area of animation and computer animation for the School of Film and Animation, RIT.	**Prof. Schweppe** Schweppe, M, CEIS University Technology Showcase, Entertainment Technology: Digital Visualization, 2004 Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Schweppe, M., "An Animator's Perspective on Animating Cloth", *In Cloth Modeling and Animation*, Breen, D. and House, D. (Eds.), AK Peters, Ltd., 2000 Art Gallery Chair, SIGGRAPH 1999 International Conference, ACM.		
Prof. Jackson Instructional Design Consultant, Eastman Kodak Company, 2000-Present Technology Development Specialist, Eastman Kodak Company, 1997-2000 Computer Graphics Designer, Creative Approaches, Inc., 1996-1997 Founder/Graphic Designer Hierographics, 1992-1996	**Prof. Jackson** Jackson, C. and Ver Hague, J., "Flash: Animation in the Third Dimension", *the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) Educator Program,* ACM Press, 2005. Prof. Jackson has won numerous professional awards for multimedia project showings and submissions for the *Society for Technical Communications (STC) Annual Technical Publication Competition.*		
Interactive Narrative for Games	4	Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)			
Game World Design	4	Stephen Jacobs * Christopher Egert *	M.A. in Media Studies, New School for Social Research, 1988. Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		
Dr. Egert Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-present. Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990 Software Engineer, Moore Research Center, Grand Island, NY, 1988	**Dr. Egert** Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005. Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Building Online Communities	4	Stephen Jacobs	M.A. in Media Studies, New School for Social Research, 1988.
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		
Foundations of HCI	4	Evelyn Rozanski Anne Haake	Ph.D. in Social Foundations of Education, University at Buffalo (SUNY), 1994. Ph.D. in Developmental Biology, University of South Carolina, 1985.
Dr. Rozanski Interim Associate Dean of Research and Graduate Programs, GCCIS, RIT, 2005-present Director of the Laboratory for Computer-Human Interaction and Performance Support, RIT, 2004-present Graduate Program Chair, Information Technology Department, RIT, 1991-1997 Principle, EyesOnUsability, LLC, 2005-present Usability Consultant, CitiGroup, 2005-present Consultant Instructor for IBM, Frontier Corporation, Xerox Corporation, and Eastman Kodak Corporation over the last 20 years.	**Dr. Rozanski and Dr. Haake** Rozanski, E. and Haake, A., Research Grant, "Eye Tracking to Enhance Usability Testing", Xerox University Affairs, 2003-2006. Rozanski, E., Haake, A., Karn, K., Vigliotti, A., and Pelz, J., "Simplified Eye Tracking Enhances Problem Understanding and Solution Discovery in Usability Testing", *Human Factors and Ergonomics Society 49th Annual Meeting,* Orlando, FL, 2005. Lapa, C., Rozanski, E., Haake, A., Sekella, C., and Karn, K., "Understanding Banner Blindness: Using Eye-Tracking to Improve Website Design", *13th European Conference on Eye Movements (ECEM13),*Bern, Switzerland, 2005 Thompson, K., Rozanski, E., and Haake, A., "Here, There, and Everywhere: Remote Usability Testing That Works", *Proceedings for the Conference for Information Technology Curriculum,* Salt Lake City, UT, 2004.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Dr. Haake Professor of Information Technology specializing in Usability and Human-Factors for over 5 years. Principle, EyesOnUsability, LLC, 2005-present			
Usability Engineering	4	Evelyn Rozanski Anne Haake	Ph.D. in Social Foundations of Education, University at Buffalo (SUNY), 1994. Ph.D. in Developmental Biology, University of South Carolina, 1985.
Dr. Rozanski Interim Associate Dean of Research and Graduate Programs, GCCIS, RIT, 2005-present Director of the Laboratory for Computer-Human Interaction and Performance Support, RIT, 2004-present Graduate Program Chair, Information Technology Department, RIT, 1991-1997 Principle, EyesOnUsability, LLC, 2005-present Usability Consultant, CitiGroup, 2005-present Consultant Instructor for IBM, Frontier Corporation, Xerox Corporation, and Eastman Kodak Corporation over the last 20 years. **Dr. Haake** Professor of Information Technology specializing in Usability and Human-Factors for over 5 years. Principle, EyesOnUsability, LLC, 2005-present	**Dr. Rozanski & Dr. Haake** Rozanski, E. and Haake, A., Research Grant, "Eye Tracking to Enhance Usability Testing", Xerox University Affairs, 2003-2006. Rozanski, E., Haake, A., Karn, K., Vigliotti, A., and Pelz, J., "Simplified Eye Tracking Enhances Problem Understanding and Solution Discovery in Usability Testing", *Human Factors and Ergonomics Society 49th Annual Meeting,* Orlando, FL, 2005. Lapa, C., Rozanski, E., Haake, A., Sekella, C., and Karn, K., "Understanding Banner Blindness: Using Eye-Tracking to Improve Website Design", *13th European Conference on Eye Movements (ECEM13),*Bern, Switzerland, 2005 Thompson, K., Rozanski, E., and Haake, A., "Here, There, and Everywhere: Remote Usability Testing That Works", *Proceedings for the Conference for Information Technology Curriculum,* Salt Lake City, UT, 2004.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Usability Testing	4	Evelyn Rozanski	Ph.D. in Social Foundations of Education, University at Buffalo (SUNY), 1994.
Dr. Rozanski Interim Associate Dean of Research and Graduate Programs, GCCIS, RIT, 2005-present Director of the Laboratory for Computer-Human Interaction and Performance Support, RIT, 2004-present Graduate Program Chair, Information Technology Department, RIT, 1991-1997 Principle, EyesOnUsability, LLC, 2005-present Usability Consultant, CitiGroup, 2005-present Consultant Instructor for IBM, Frontier Corporation, Xerox Corporation, and Eastman Kodak Corporation over the last 20 years.	**Dr. Rozanski** Rozanski, E. and Haake, A., Research Grant, "Eye Tracking to Enhance Usability Testing", Xerox University Affairs, 2003-2006. Rozanski, E., Haake, A., Karn, K., Vigliotti, A., and Pelz, J., "Simplified Eye Tracking Enhances Problem Understanding and Solution Discovery in Usability Testing", *Human Factors and Ergonomics Society 49th Annual Meeting,* Orlando, FL, 2005. Lapa, C., Rozanski, E., Haake, A., Sekella, C., and Karn, K., "Understanding Banner Blindness: Using Eye-Tracking to Improve Website Design", *13th European Conference on Eye Movements (ECEM13),*Bern, Switzerland, 2005 Thompson, K., Rozanski, E., and Haake, A., "Here, There, and Everywhere: Remote Usability Testing That Works", *Proceedings for the Conference for Information Technology Curriculum,* Salt Lake City, UT, 2004.		
Data Object Development	4	William Stratton Dianne Bills	Ph.D. in Educational Administration, University at Buffalo (SUNY), 1988. M.S. in Computer Science, Rochester Institute of Technology, 1986.
Dr. Stratton Consultant, Xerox Corporation, 1996 -1997 for Online Instructional Delivery Systems Development Full Partner, Personalized Software Systems Co., Inc., of Buffalo and Rochester, 1978-1990 Professor at RIT for over 30 years. **Prof. Bills** Graduate Program Coordinator, Information Technology Department, RIT, 2001-present Associate Chair, IT Department, 2000-2003.	**Dr. Stratton** Data modeling, database design, implementation, and management; U.S. higher education and higher education administration **Prof. Bills** Bills, D. and Biles, J., "The Role of Programming in IT", *Proceedings of the ACM Special Interest Group for Information Technology Education,* Newark, NJ, ACM Press, 2005. Bills, D., "Marketing Higher Education in Information Technology", *Proceedings of the ACM Special Interest Group for Information Technology Education,* Salt Lake City, UT,		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Applications Programmer and Analyst, Systems Development and Operation, Management Services, NTID, RIT, 1980-1983. Applications Programmer, Systems Development and Operation, Management Services, NTID, RIT, 1978-1980.	ACM Press, 2004. Whittington, K. and Bills, D., "Alternative Pacing in an Introductory Java Sequence", *Proceeding of the ACM Special Interest Group for Information Technology Education,* Salt Lake City, UT, ACM Press, 2004. Weeden, E., Scarborough, G., and Bills, D., "Lab Management Strategies for IT Database Curriculum", *Proceedings of the 4th Conference on Information Technology Curriculum in Information Technology Education,* Lafayette, IN, ACM Press, pp. 62-66, 2003.		
Multi-Client Database Implementation	4	William Stratton Dianne Bills	Ph.D. in Educational Administration, University at Buffalo (SUNY), 1988. M.S. in Computer Science, Rochester Institute of Technology, 1986.
Dr. Stratton Consultant, Xerox Corporation, 1996 -1997 for Online Instructional Delivery Systems Development Full Partner, Personalized Software Systems Co., Inc., of Buffalo and Rochester, 1978-1990 Professor at RIT for over 30 years.	**Dr. Stratton** Data modeling, database design, implementation, and management; U.S. higher education and higher education administration		
Prof. Bills Graduate Program Coordinator, Information Technology Department, RIT, 2001-present Associate Chair, IT Department, 2000-2003 Applications Programmer and Analyst, Systems Development and Operation, Management Services, NTID, RIT, 1980-1983. Applications Programmer, Systems Development and Operation, Management Services, NTID, RIT, 1978-1980.	**Prof. Bills** Bills, D. and Biles, J., "The Role of Programming in IT", *Proceedings of the ACM Special Interest Group for Information Technology Education,* Newark, NJ, ACM Press, 2005. Bills, D., "Marketing Higher Education in Information Technology", *Proceedings of the ACM Special Interest Group for Information Technology Education,* Salt Lake City, UT, ACM Press, 2004. Whittington, K. and Bills, D., "Alternative Pacing in an Introductory Java Sequence", *Proceeding of the ACM Special Interest Group for Information Technology Education,* Salt Lake City, UT, ACM Press, 2004. Weeden, E., Scarborough, G., and Bills, D., "Lab Management Strategies for IT Database Curriculum", *Proceedings of the 4th Conference on Information Technology Curriculum in Information Technology Education,* Lafayette, IN, ACM Press, pp. 62-66, 2003.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Fundamentals of DBMS Architecture and Implementation	4	Elissa Weeden	M.S. in Software Development and Management, Rochester Institute of Technology, 1998.
Prof. Weeden Independent Consultant to the Center for Electronic Manufacturing and Assembly, Rochester Institute of Technology, 2001-2002. Performed database needs analysis and implementation. Consultant to Microworx Direct, Inc., 1998. Created and implemented inventory and pricing database. Partner, Ecletech Domain, 1997-Present.	**Prof. Weeden** Holden, E. and Weeden, E., "Prior Experience and New IT Students", Journal of Issues in Informing Science and Information Technology, 2, 2005. Holden, E. and Weeden, E., "The Experience Factor in Early Programming Education", *Proceedings of the 5th Conference on Information Technology Curriculum in Information Technology Education,* Salt Lake City, UT, ACM Press, pp. 211-218, 2004. Weeden, E., "Expanding online learning exam options with computer-based assessment", *In The Internet Society: Advances in Learning, Commerce and Security,* Morgan, K. and Spector, J. (Eds.), United Kingdom, WITPress, 2004. Weeden, E., Scarborough, G., and Bills, D., "Lab Management Strategies for IT Database Curriculum", *Proceedings of the 4th Conference on Information Technology Curriculum in Information Technology Education,* Lafayette, IN, ACM Press, pp. 62-66, 2003.		
Capstone Design	4	Andrew Phelps (D) * Christopher Egert * Jessica Bayliss * Joe Geigel * Stephen Jacobs *	M.S. in Information Technology, Rochester Institute of Technology, 1999. Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003. Ph.D. in Computer Science, University of Rochester, 2001. D.Sc. in Computer Science, George Washington University, 2000. M.A. in Media Studies, New School for Social Research, 1988.

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Phelps Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology. He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.	**Prof. Phelps** Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005. Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004. Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.	
Dr. Egert Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-present. Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990 Software Engineer, Moore Research Center, Grand Island,NY, 1988	**Dr. Egert** Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005. Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005. Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.	

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Dr. Bayliss Software Engineer, Xerox Corporation, 2000 Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997. Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.	**Dr. Bayliss** Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005. Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005. Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004. Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.		
Dr. Geigel Senior Scientist, Eastman Kodak, Rochester, NY, 1997-1999 Research Programmer, Pittsburgh Supercomputing Center, 1994-1996 Software Consultant, AT&T Bell Labs, Whippany, NJ, 1990-1991	**Dr. Geigel** Geigel, J. and Schweppe, M., " Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", *The 32nd Annual Conference on Computer Graphics and Interactive Techniques (Educators Program),* Los Angeles, CA, 2005. Geigel, J. and Schaller, N., "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics,* **29***(1),* pp. 257-265, 2005. Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004. Geigel, J. and Loui, A., "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging,* 2001.		
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Capstone Development	2	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
		Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
		Joe Geigel *	D.Sc. in Computer Science, George Washington University, 2000.
		Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.

Prof. Phelps

Professor Phelps has over a decade and a half of academic, industry relations, and research experience with digital game development, graphics processing, and entertainment technology.

He is a member of a number of organizations, advisory panels, and other organizations related to the digital games industry.

Prof. Phelps

Phelps, A., Principal Investigators Grant from Microsoft Corporation for M.U.P.P.E.T.S. (Multi-User Programming Pedagogy for Enhancing Traditional Study), 2005.

Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006.

Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005.

Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.

Bierre, K. and Phelps, A., "The Use of MUPPETS in an Introductory Java Programming Course", *Proceedings of the Special Interest Group in Information Technology Education*, Salt Lake City, UT, 2004.

Phelps, A., Bierre, K., and Parks, D., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study", *Proceedings of the 4th Conference on Information Technology Education,* Lafayette, IN, 100-105.

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**

Dr. Egert

Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-present.

Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990
Software Engineer, Moore Research Center, Grand Island, NY, 1988

Dr. Egert

Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education*, Houston, TX, 2006.

Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education*, Indianapolis, IN, 2005.

Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1", *Eastern Conference of the Consortium for Computing Sciences in Colleges*, 2005.

Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains", *American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005.

Phelps, A., Egert, C., Bierre, K., and Parks, D., "Half Day Workshop/Course: An Open-Source CVE for Programming Education: A Case Study", *The 32nd International Conference on Computer Graphics and Interactive Techniques* (SIGGRAPH), Los Angeles, CA, 2005.

Dr. Bayliss

Software Engineer, Xerox Corporation, 2000

Intern, NASA Goddard Space Flight Center, Greenbelt, MD, Summer 1996 and 1997.

Intern, Lawrence Livermore National Laboratory, Livermore, CA, Summer 1994 and 1995.

Dr. Bayliss

Bayliss, J., Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled Reality and Programming Together (RAPT), 2004-2005.

Bayliss, J. and Inverso, S., "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface", *HCI International,* In Press, 2005.

Bayliss, J., Inverso, S., and Tentler, A., "Changing the P300 Brain Computer Interface", *Cyberpsychology,* **7**(6), 2004.

Bayliss, J., "The Use of the P3 Component of the Evoked Potential for Control in a Virtual Apartment", *Brain-Computer Interfaces for Communication and Control 2nd International Meeting,* 2002.

Dr. Geigel

Senior Scientist, Eastman Kodak, Rochester, NY, 1997-1999

Research Programmer, Pittsburgh Supercomputing Center, 1994-1996

Software Consultant, AT&T Bell Labs, Whippany, NJ, 1990-1991

Dr. Geigel

Geigel, J. and Schweppe, M., " Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", *The 32nd Annual Conference on Computer Graphics and Interactive Techniques (Educators Program),* Los Angeles, CA, 2005.

Geigel, J. and Schaller, N., "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics,* **29***(1),* pp. 257-265, 2005.

Geigel, J. and Schweppe, M., "Theatrical Storytelling in a Virtual Space", Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context, New York, NY, ACM Press, 39-46, 2004.

Geigel, J. and Loui, A., "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging,* 2001.

Course Title (a)	No. of Credits (b)	Faculty Members Assigned to Each Course. (Use "D" to Specify Program Director) (c)	Highest Earned Degree & Discipline, College or University (d)
Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *** **		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Prof. Jacobs Consultant to Harbortown Games, 2003 Independent Consultant to Binney and Smith Inc., 2002 Project co-developer of *Break It, Fix It, Ride It,* for Anabasis, 2000-2002 Editor and Publisher for Gadget Boy Gazette, 1995-2000 Contributing Editor for CNET Consumer Electronics' Future Tech (2000-2001) and Television 2.0 (1999-2001)	**Prof. Jacobs** Jacobs, S., "The Basics of Narrative for Games", *Game Writing: Narrative Skills for Video Games,* Chapter Contributor, Charles River Media, Pending Publication. Jacobs, S., "Writesizing", *Game Developer,* 2004. Jacobs, S. "What The Tech!", Radio Show for Public Radio, 2002-2005. Prof. Jacobs makes many appearances, provides press comments, and writes popular press articles for issues pertaining to the games industry as well as narrative and story for entertainment technologies.		

Table 11: Game Design and Development Course Offerings matched to faculty with the expertise to serve and lead instructor. ***Note that column (F) "Relevant other experience (such as certification / licensure)" appears in the table header but the informational column has been omitted. See the note at the start of the table for details. The asterisk (*) denotes program faculty, and a (D) denotes the program director as per the NYS proposal format.

B. Faculty Advising

During the first quarter after admission, members of the Administrative Committee of the Game Design and Development program will advise newly admitted students. The Administrative Committee consists of at least one representative from each of the three hosting departments. During the second quarter, students will select an advisor in their area of specialization. This advisor will review the student's curriculum each quarter thereafter.

V. Enrollment

A. Admissions Requirements

Prospective students will be expected to have an undergraduate degree in a relevant field, such as Computer Science, Software Engineering, Information Technology, or Computer Graphics. Students with undergraduate degrees in related disciplines such as Computer Animation or Human Computer Interaction will also be considered. Students will be admitted in the fall quarter only. Admissions will be based on their performance in their undergraduate degree program as well as by portfolio examination. The portfolio will include both individual and group projects in the area in which they wish to study within the degree program. Prospective students are encouraged to include examples of game construction activities as part of their portfolios. Applicants to the program will be required to take the GRE exam if their undergraduate or highest related graduate degree is under a 3.00 GPA on a 4.00 scale. It should be noted that the portfolio requirement would still allow students with a lower GPA to be considered if they possess exceptional skill or have relevant experiences from industry that would complement the cohort. Furthermore, meeting the minimum GPA requirements does not automatically guarantee acceptance in the program. Applicants will be selected in a manner to ensure balance among the various tracks and specialties.

For international students who have not received an undergraduate degree at an English-speaking institution, the TOEFL test will be required to ensure necessary communication skills. For students taking the TOEFL, they must score above 230 on the computer-based examination, above 570 on the paper-based examination, or above 88 on the Internet-based examination.

The program's Administrative Committee, or an appointed selection sub-committee, will directly determine admission selections with appropriate input from program faculty. Admissions materials will be due in early December prior to the subsequent school year fall quarter. Admissions decisions will be made by the early February for the subsequent school year.

The program requires students to possess a sufficient mix of technical, social, and usability skills upon entry into the program. By requesting an undergraduate degree and portfolio materials, the faculty can ensure that students will have the appropriate level of skill mastery and motivation to succeed in the program. The admissions process will also create an environment in which students will be exposed to an appropriate multidisciplinary background. This will be accomplished by selecting students using the same criteria that the industry utilizes for creating strong game design teams. This includes diversity in prior skill set along with cultural and experiential diversity. Such diversity of background will ensure experiences similar to those in the games industry and will promote cohort-based constructivist and collaborative learning experiences.

The admissions process will also encourage participation from traditionally underrepresented student groups, including women and minorities. The multidisciplinary approach to the program ensures that students with a range of technical and social skills will be valued. A diverse student population also ensures that different perspectives into game design and development are

properly represented, including cultural game systems as well as gender-friendly gaming experiences. Such participation will help to increase the global value of the degree and graduating students. We are currently working with corporations within the game and entertainment technology industry to encourage underrepresented groups, such as women and minorities, to apply to this program. At present, we are investigating corporate-sponsored scholarship programs as well as promotional events to encourage a broader participation pool. Faculty as well as the Administrative Committee will participate in RIT's institutional programs for attracting and retaining underrepresented students. Further, the program will advertise in venues specifically catered to underrepresented students and academic advisors.

B. Enrollment Information

The following section presents information on competing programs, geographic draw, student enrollment status, enrollment projections, and attractors and retainers.

1. Competition

An ever-growing number of community colleges, four-year colleges, and universities have recognized the importance of game design and development as an academic discipline. In addition, there have been a growing number of industry-sponsored schools promoting game curriculum. A listing of academic institutions by the industry-sponsored website Gamasutra (http://www.gamasutra.com) specifies over 300 institutions of various forms that provide industrial training, academic courses, certificate programs, or degrees in some aspect of game development and design or related entertainment technology discipline (Gamasutra, 2005).

First, it is important to note that despite the growing popularity of game curriculum, there are only a handful of top-rated universities and institutions that offer a graduate-level degree in gaming and entertainment technology.

For example, Carnegie Mellon University (CMU) supports the Entertainment Technology Center (CMU, 2005), which offers a two-year masters degree in Entertainment Technology dually issued by the School of Computer Science and the Department of Fine Arts. The CMU structure for the program is project-based, and creates situations in which artists and technologists work together to create the appropriate tools for artistic vision, storytelling, and interactive entertainment. The center is co-directed by Randy Pausch, a well-known name in the graphics, virtual reality, and human computer interaction field.

Another example is the Masters of Science in Information Design and Technology offered at Georgia Tech (Georgia Tech, 2005b). Under the supervision of Dr. Janet Murray, this program explores digital media and entertainment technology from a humanities perspective, integrating theory and practice with the focus on creating and understanding the technological, social, and cultural significance of today's and tomorrow's digital artifacts. The success of this masters degree program has led to the recent creation of a Ph.D. program in Digital Media. The program also has ties with the Experimental Game Lab at Georgia Tech (Georgia Tech, 2005a). The EGL

lab, directed by Michael Matteas, explores research issues pertaining to game genres and investigates principles related to the creation new game genres.

The University of Southern California has several Master's level paths of study that include gaming and entertainment technology. At the forefront is the Computer Science Department's Masters of Science in Multimedia and Creative Technologies USC (USC, 2005). The program coexists with the Institute for Creative Technologies at USC (ICT, 2005), which provides graduate-level research opportunities in the area of simulation technologies. Researchers examine artificial intelligence techniques, interaction, sound, and the overall virtual world experience.

Finally, the Savannah College of Art and Design offers a M.A. and a M.F.A. in Interactive Design and Game Development (SCAD, 2005). The degree focuses upon design and creative principles, and trains students to be problem solvers and critical thinkers in game development and research jobs. The M.F.A. concentrates upon art and interactive portfolio development at an individual level.

Along with degree programs, a number of universities offer game design and development courses as minors, certificates or individual electives.

The Indiana University of Pennsylvania hosts the Applied Media and Games Simulation Center, directed by Dr. Allen Partridge of the Communications Department (IUP, 2005). Although not degree bearing, the Center examines games and simulation from the perspective of communications, computer science, political science, as well as education and educational technology.

Ms. Celia Pearce at University of California at Irvine directs the UCI Game Culture and Technology Lab (UCI, 2005). The mission of the GCTL is to explore game metaphors, design principles, game technologies. In particular, the group endeavors to challenge notions of content and contextual delivery for games. The group also offers courses through UCI's extension program. Ms. Pearce is an accomplished academic, well known for both her writing and her involvement with educational initiatives in digital arts and games.

The CREAT Lab at the University of Central Florida specializes in courses and certificates in Digital Arts (UCF, 2005). Offered by the College of Arts and Sciences, CREAT offers courses in key areas for game design including interactive media, digital music, and writing. In Fall 2005, University of Central Florida has plans to create the Florida Interactive Entertainment Academy (FIEA, 2005). FIEA will offer a graduate degree program in Interactive Entertainment. Students will select concentrations in five key areas, including 3-D modeling, animation and motion, technical artistry, software development and production management. FIEA's faculty consists of both UCF faculty as well as personnel from leading game companies.

Dr. Mary Flanagan (Flanagan, 2005) teaches courses in games and game theory through Hunter College's Department of Film and Media Studies (Hunter College, 2005). She is also the author of several articles on gender and gaming as well as activism through games (Flanagan, 2002, 2003), Furthermore, Dr. Flanagan is the founder of tiltfactor.org (tiltfactor, 2005), a multi-

university research group that studies humanistic, artistic, and scientific approaches to gaming. Dr. Christopher Egert, a co-author of this document, is a member of this group.

Northwestern University offers a game design course through the Interactive Entertainment Group (Northwestern University, 2005). This group, housed in Computer Science, specializes in graphics, computer vision, robotics and artificial intelligence. One of the primary members of this group is Ian Horswill, who has a strong academic reputation for vision, artificial intelligence, and robotics (Horswill, 2005).

Dr. John Laird at the University of Michigan offers courses in general game design as well as the artificial intelligence aspects of gaming (Laird, 2005), Well respected in Computer Science, Dr. Laird has been instrumental in promoting an academic agenda for gaming, both publishing in authoritative artificial intelligence journals (such as AAAI) and chairing games related conferences, such as Artificial Intelligence and Interactive Digital Entertainment Conference (AAIDE, 2005).

Dr. Ian Parberry at the University of North Texas offers courses in game programming and advanced game programming though the Laboratory for Recreational Computing (LARC) (UNT, 2005). Dr. Parberry is best known for his prolific writing for games research and development. Dr. Parberry ranges from academic publications in such notable conferences as SIGCHI to a series of versatile game textbooks for teaching introductory game programming.

Dr. Beth Kolko from the Department of Technical Communications at the University of Washington offers a course in Digital Games and heads the Digital Gaming Research Group (University of Washington, 2005), which studies games as a medium for intercultural communication.

The Simon Fraser University Surry School of Interactive Arts and Technology offers graduate level courses in computational art and design, new media, programming, and critical media analysis that can be used as a foundation for games research (SIAT, 2005).

George Mason University's Art and Visual Technology Department offers a digital art concentration in which students study 2D graphics, 3D graphics, video, and other forms of multimedia (George Mason University, 2005).

Purdue University offers a Masters of Science degree within the College of Technology, which focuses upon Computer Graphics Technology (Purdue University, 2005). Areas of study include interactive multimedia, technical animation, as well as industrial and manufacturing graphics.

The IT University of Copenhagen offers Masters and Ph.D. courses in game design through the Center for Computer Games Research, directed by Dr. Espen Aarsbeth (ITU, 2005). Hosted through the Department of Digital Aesthetic and Communications, the Center provides courses in aesthetics, social and cultural analysis for games, and virtual game world design. Although not degree bearing, courses offered through the center help to fulfill a M.Sc. in Information Technology with a Media Technology and Games focus of study.

Regionally, several colleges and universities have begun to explore gaming and related fields as an academic discipline. For example, David Schwartz at Cornell University offers two courses in game design and development as part of the Game Design Initiative (Cornell, 2005) administered within the School of Computing and Information Sciences. The first course assumes no prior background in game development and encourages students from a range of backgrounds to participate. The second course concentrates upon development aspects and is offered as supervised undergraduate research for computer science students as well as a broader computing and information sciences population. At this time, there is no graduate equivalent.

In addition, Rensselaer Polytechnic Institute (RPI, 2005) provides a game study minor, co-sponsored by the department of cognitive science and the department of art. Again, the minor is only open to undergraduate students. RPI is also planning an undergraduate major in Game Sciences and Arts, which will start in the Fall of 2006 (D'Errico, 2005). This Bachelor's of Science degree will be initially offered as a dual-major program. As such, students must take a sequence of courses in game design and simulation systems along with a traditional major of computer science, psychology, or communications. This major is directed in part by Dr. James Watt, director of the Social and Behavioral Research Laboratory at RPI.

It is our belief that the gaming degree presented in this proposal is unique in New York State as well as nationally. Unlike other game related departments that have grown out of art and design, communications, or traditional sciences, this program is built upon a tradition of career-based education with strong foundations in the science of computing while still stressing the importance and relevance of art and the breadth of the game creation process. The strength of the programs upon which the degree will be built will ensure the creation of a competitive, viable graduate level program.

Additionally, our program relies on the deep technical focus that characterizes the RIT community. Approximately three-quarters of the programs known to exist that refer to themselves as "Game Design" programs do not contain any underlying coursework in software development. It is our belief that the medium *is not ready* to see this bifurcation of study: meaning that the technology that drives games and interactive experiences cannot be readily separated from their content. In order to become deeply versed in the totality of the phenomenon of games as medium, students must study not only the underlying theories of communication, cooperative development, and artistic expression. Furthermore, students must master the technical principles upon which games are designed and developed in order to appreciate the capabilities and limitations of the medium.

The focus on technical development, while leveraging a broader experience through teamwork and collaboration, sets this proposal apart from every other program we have studied thus far, while incorporating many elements from many diverse programs across the nation.

2. Geographic Population

It is anticipated that the program will appeal to students beyond the New York State region. The program will have appeal at both a national and international level. The anticipated interest can be based on current levels of interest in the individual courses that will comprise the degree.

3. Status

Students will be admitted into the program full-time only and will be required to participate in on-site courses. The restriction to full-time, on-campus status will help to ensure successful student progress in the degree as well as multidisciplinary participation within group game design experiences. Full-time status will also help to encourage cohorts and peer-based learning opportunities not possible in a part-time or distance program. In cases where employment or life circumstances require a student to drop to part-time status for a short period of time, students will be required to meet with a program academic advisor to determine an appropriate course of action to fit the circumstances.

4. Enrollment Projections

The program will admit students once per year for the fall quarter. Students may be formed into cohorts. A cohort progression will ensure that students with diverse backgrounds will have the opportunity to learn and grow together, while appreciating the value of each other's abilities and views. Much like the admissions process, cohorts will be assembled along principles of industry-based design teams. This will also help encourage multidisciplinary interactions among the faculty and students of the three hosting departments. Although cohorts are not required, they will be strongly encouraged. Students who have to temporarily suspend degree progress may take courses in an ad-hoc manner as long as pre-requisites are maintained and as long as skills required of current pre-requisite courses are kept up to date.

Table 12 presents projected enrollment figures, compiled by Dr. Robert French of the RIT Office of Enrollment, for the first five academic years of the program. To help maintain program stability, the entering student class size will be limited to 30 students at its steady state in 2008.

2006		Fall	Winter	Spring	Summer
	Year 1	20	18	17	0
	Year 2	0	0	0	0
	FTE Total	20	18	17	0

2007		Fall	Winter	Spring	Summer
	Year 1	25	22	21	0
	Year 2	16	15	14*	0
	FTE Total	41	37	23	0

2008		Fall	Winter	Spring	Summer
	Year 1	30	27	25	0
	Year 2	20	19	18*	0
	FTE Total	50	46	28	0

2009		Fall	Winter	Spring	Summer
	Year 1	30	27	25	0
	Year 2	24	22	21*	0
	FTE Total	54	49	29	0

2010		Fall	Winter	Spring	Summer
	Year 1	30	27	25	0
	Year 2	24	22	21*	0
	FTE Total	54	49	29	0

Table 12: Enrollment projection for the Master of Science in Game Design and Development over the fiscal years 2006 through 2010.

In Table 12, asterisks (*) indicate enrollment projections that differ from the FTE projections based upon the fact that students in their last quarter are registered for two (2) credit hours, but file for full-time equivalency. The number given next to the asterisk represents the number of students enrolled that quarter, but the FTE total for each column has been adjusted.

This projection assumes a 20% attrition rate for new students after Year 1 and a 30% attrition rate (70% graduation) by the end of Year 2. All students projected will take a full-time course load (12-14 qtr. hrs.) for five quarters and a part-time load (2 qtr. hrs.) during spring quarter of Year 2.

5. Attractor and Retainer

Graduate Game Design and Development students will be drawn from both the undergraduate programs at RIT as well as students from external undergraduate institutions. Students will be attracted through promotional events scheduled at major game-related national and international conferences and advertisements in major game development publications. In addition, students will be attracted through promotional material sent to undergraduate institutions as well as through exposure of game related scholarship. Advertisement and dissemination of scholarship will occur through conferences, journals, and at industry related events.

C. Anticipated Graduation Rate

Enrollment predictions provided by Dr. Robert French in the RIT Office of Enrollment are based upon a 20% attrition of students by the end of year 1 of the program and 30% total attrition by the end of year 2. A 70% graduation rate is considered reasonable due to the academic rigor and focus of the program. It is anticipated that the focus and determination of students entering the program will help to minimize attrition. In addition, the faculty advisor will play a major role in retaining students and will endeavor to match the students' interests with course selection.

D. Graduation Marketability

Appendix B contains letters of support from potential employers of graduates from this program. Companies such as Microsoft, Sony, Electronic Arts, Linden Labs and Vicarious Visions employ undergraduates and graduate students who have taken gaming courses within the Information Technology Department's college-wide concentration in Game Programming. Using this as an indicator, we believe that graduates of this program would be highly valued due to their technical competence and broad set of experiences in team-based multidisciplinary development.

VI. Fiscal Viability

A. Rationale and Incremental Cost Estimate

1. Faculty

Faculty members listed in section IV of this proposal have an appropriate level of expertise and interest to teach and perform appropriate scholarship activities within this program. Currently listed faculty will teach program related courses for the first two years of the program. It is anticipated that at current levels of course participation balanced against home department needs, it will be necessary to recruit at least one (1) new faculty member under the blended-portfolio system. If growth of the program exceeds enrollment expectations or demand requires expansion of course offerings, additional faculty may be considered. The new line would possibly be created at the college level.

2. Support Personnel

Initially, impact on staff will be minimal. The Administrative Committee will be able to use existing staff resources in their home departments with little to no additional hardship. Technical support staff within each coordinator's home department will be able to handle the technology needs for course and student support.

3. Facilities and Equipment

There are no additional or incremental requests for facilities and equipment associated with this proposal. Letters of support for sustaining facilities and equipment are provided in Appendix A. Two of the central foci of the Game Design and Development Master's Degree are the Entertainment Technology (ET) Lab housed within the Information Technology Department and the Artificial Intelligence (AI) Lab housed within the Computer Science Department. In addition, the Computer Graphics Lab, which contains virtual reality and motion capture equipment, as well as the ICL6 lab, which supports 3D modeling tool resources, must be supported. These labs are currently maintained through cascade funding. The success of this program is dependent on the continued cascade-based service of the ET and AI labs at an appropriate level to ensure their equipment remain at or near state-of-the-art levels. The continued need for cascade funding is discussed in the internal letters provided by Jim Leone, Chair of Information Technology and Walter Wolf, Chair of Computer Science (see Appendix A).

4. Space Requirements

Initially, there are no additional requests for space associated with this proposal. As the program grows, each home department is committed to provide the space requirements necessary to ensure viability (see Appendix A for support letters).

5. Library Resources

The RIT library system will provide support for the procurement of hard copy and digital publications related to game design and development. Resources will include, but are not limited to reference books, conference proceedings, journals, and appropriate digital media collections. Roman Koshykar, the GCCIS support librarian, has provided a letter of support. The letter has been included in Appendix A.

6. Institute Computer Facilities

The Institute will be required to provide adequate bandwidth and Internet capabilities to support the communication needs of the program. It is anticipated that the current levels of support and cooperation will be sufficient to sustain these needs. In addition, the Institute will be required to provide adequate teaching classrooms for game degree courses not housed within the hosting departments or college. Once again, this request falls within the normal operating parameters of our current relationship between the host departments and Institutional Computing Services.

7. Support Services

As with any other program at RIT, this program will require the support of RIT's Educational Technology Center for student education technology needs and National Institute for the Deaf support for hearing-impaired students registered in gaming courses. Letters of support from both service groups have been provided in Appendix A.

B. Grants and Contracts

1. Grants and Contracts Received or Anticipated

Initial funding of projects directly affiliated with the game design and development degree include a Provost Learning Initiative Grant in 2002-2003 in the amount of $10,000 acquired by Professor Andrew Phelps. The grant was used to develop the Multi-User Programming Pedagogy for Enhancing Traditional Study (M.U.P.P.E.T.S.), a virtual world system for learning programming based upon game engine design and implementation techniques. In addition, Professor Joe Geigel received funding for his Virtual Theatre initiative through a Provost Learning Initiative Grant in 2004-2005 in the amount of $7,500 as well as Faculty Evaluation and Development Grant for $5,500 in the same year. Professor Geigel's Virtual Theatre initiative utilizes M.U.P.P.E.T.S. technology.

Select faculty of this program are also involved in proposing a National Science Foundation Course, Curriculum, and Laboratory Improvement grant (to be submitted January, 2006). Furthermore, Professor Geigel has submitted a National Science Foundation Grant for the

Virtual Theatre project in the amount of $80,000 for a one-year investigation (submitted June, 2005).

C. Donations, Gifts, Scholarships, or Endowed Chairs

Recent negotiations with Microsoft Corporation have yielded an $83,530 gift purposed for the development of M.U.P.P.E.T.S. Part of this money will be used to fund students and to provide equipment for students in the Entertainment Technology Lab. Furthermore, Professor Jessica Bayliss in Computer Science received a Microsoft Corporation Computer Game Production Curriculum Award for $80,000 for a project entitled *Reality and Programming Together (RAPT),* which explores using the C# programming language with DirectX to create games in CS2 and CS3 classrooms, with a multidisciplinary emphasis placed upon the pedagogical approach (Microsoft Corporation, 2004).

D. Projected Revenue and Operating Costs (RIT Costing Model)

Based on the enrollment projects provided by the RIT Office of Enrollment Management, Careen Shumway has prepared a costing model in the standard format. The cost projections for the first 5 years of operation, and summary totals, are provided in Appendix D.

Appendix A: RIT Internal Letters of Support

1. Dr. Jorge Diaz-Herrera, Dean of GCCIS – Letter of Support

R·I·T

Rochester Institute of Technology
B. Thomas Golisano College of
Computing and Information Sciences
Office of the Dean
20 Lomb Memorial Drive
Rochester, NY 14623-5604
585-475-7203 • Fax 585-475-4775

December 14, 2005

Dr. Katherine Mayberry
VP for Academic Affairs
Rochester Institute of Technology

RE: M.S. Game Design and Development

Dear Kit:

I am very pleased to endorse the proposal for the M.S program in Game Design and Development. The proposed program represents the second college-wide degree, embarking faculty from several departments within the college and even across colleges (from CIAS). This is a long-awaited degree with much anticipation for success. The program is both very unique in its breadth and quite strong in its depth. The laboratory support already exists with world-class, home-grown software (M.U.P.P.E.T.S.) currently enjoying national recognition and supported by industry.

In summary, I am very excited about the prospect of a new MS program in our college, especially at the college level. The MS in Game Design and Development is a good complement to our existing programs.

Sincerely,

Jorge Díaz-Herrera, Ph.D.
Professor and Dean

2. Dr. Joan Stone, Dean of CIAS – Letter of Support

R·I·T

Rochester Institute of Technology

College of Imaging Arts & Sciences
Office of the Dean
Frank E. Gannett Building
55 Lomb Memorial Drive
Rochester, New York 14623-5603
585-475-2733 Fax 585-475-7279

December 13, 2005

Dean Jorge Diaz-Herrera
Golisano College of Computing and Information Sciences
Rochester Institute of Technology

Dear Jorge:

The College of Imaging Arts & Sciences is able to provide a limited number of seats in courses in the game art and design area as a concentration for students in the proposed Game Design and Development M.S. degree program. It is anticipated that 5-7 students per year will select this concentration of three 4-credit courses.

Because of space limitation, students who choose this concentration will be responsible for enrolling in the courses in a timely manner. 3DCG Modeling (2001-651) is a prerequisite for most of the other courses, and it is offered Fall and Spring quarters. The following other courses are offered once per year:

2001-661 3DCG Lighting
2001-662 3DCG Shading
2001-682 3DCG Rendering
2001-673 3DCG Character Design
2001-651 Interactive 3DCG Animation

The College of Imaging Arts & Sciences looks forward to our continued collaboration with the Golisano College of Computing and Information Sciences and, in particular, to the opportunity for our students to take courses such as Programming for Designers and Designing Physical Interactive Experiences.

Sincerely,

Joan B. Stone

Joan B. Stone
Dean

3. Dr. Jim Leone, IT Department Chair, GCCIS – Letter of Support

R·I·T

Rochester Institute of Technology

Department of Information
Technology
102 Lomb Memorial Drive
Rochester, New York 14623-5608
585-475-6179 Fax 585-475-2181

September 2, 2005

Dr. Katherine Mayberry, Vice President for Academic Affairs &
Chair, Graduate Council
3035 Eastman
Rochester Institute of Technology
Rochester, New York 14623

Dear Dr. Mayberry:

I strongly support the proposal for a Masters degree in Game Design & Development within the B. Thomas Golisano College of Computing and Information Sciences (GCCIS). I believe the degree to be both of high quality and extremely current to our field. The Information Technology department graduate curriculum committee has reviewed the proposal as well, and lends their strong support.

This proposal represents a degree that operates at the "college level" meaning that no single department has ownership of the degree within the college. Nonetheless, as per an existing agreement with the office of the Dean, this degree will make use of the IT Department's well-trained office staff and professional advising personnel. We have been preparing for this degree for some time, and welcome these new students into the already diverse mix of majors we have within the college.

The field of Game Design & Development is driven in part by rapid advances in both hardware and software. The need for currency is not merely a need to stay competitive: using current generation software and consoles defines the entire market viability of a product within this space. Students studying in this program, in addition to learning the key theories of the discipline, must also have tremendous skills with current generation hardware and software techniques. Thus, it is critically important that the IT department's cascade budget remain at or above current levels in order to be able to support this proposal.

So while the proposal makes no request for additional facilities or laboratory equipment at this time, the future budgetary requests for cascade are critical to the overall success of the degree. Currently, GCCIS houses several state-of-the-art facilities, two of which will be primary foci for the new degree: the Entertainment Technology Laboratory, and the

Artificial Intelligence Laboratory. As the degree unfolds over the next several years, maintaining the current level of currency and functionality in these environments will be strategically important.

Finally, this proposal, because of its cross-disciplinary nature, offers us the unique opportunity to create additional relationships with the Department of Computer Science, and the School of Computer Graphics Design within the College of Imaging Arts and Sciences. I welcome the opportunity to work together with the faculty, staff, and administration of these (and other) groups within RIT, in support of RIT's tradition of cross-disciplinary, well-rounded education. This proposal has my strongest support.

Sincerely,

Jim Leone, Ph. D.
Professor and Chair

4. Dr. Walter Wolf, CS Department Chair, GCCIS – Letter of Support

R·I·T

Rochester Institute of Technology

Department of Computer Science
102 Lomb Memorial Drive
Rochester, New York 14623-5608
585-475-5178 Fax 585-475-7100

September 1, 2005

To: Dr. Katherine Mayberry, Vice President got Academic Affairs &
Chair, Graduate Council
From: Dr. Walter Wolf, Chair, Computer Science Dept.
Subject: Masters in Game Design & Development Proposal

Dear Dr. Mayberry,

I strongly support the proposal for a Masters degree in Game Design & Development within the B. Thomas Golisano College of Computing and Information Sciences (GCCIS). I believe the degree will be of high quality and outstanding design as well as extremely attractive to a wide range of students. While the proposal is at the college level, the department welcomes it and looks forward to its quick implementation.

Support means supplying faculty and facilities to support students in achieving the degree. We agree to a pattern of offerings of required and elective courses that achieves this. We should be able to do this with a small incremental expense, phased in as the program grows. We will need to add and staff some sections to accommodate the games students, both in required and elective courses.

Facilities are slightly more involved. We will not need to request any additional hardware but we may have to slightly speed up out replacement schedule (due to using PC's rather than SUN machines). There will also be some software expenses but these can be mostly covered from our regular budget.

This proposal details an exciting new program that fosters both intra- and inter- college cooperation ad creativity. We hope it will be accepted and implemented promptly.

Do not hesitate to contact me if further information is needed.

Sincerely

Walter Wolf

Walter Wolf
Chair
Computer Science

5. Sponsored Services – Letter of Support

R·I·T

Rochester Institute of Technology

Sponsored Research Services
141 Lomb Memorial Drive
Rochester, NY 14623-5604
585-475-7987 • Fax 585-475-7990
http://www.research.rit.edu

December 2, 2005

Andrew Phelps
Assistant Professor
Information Technology
Golisano College of Computing and Information Sciences

Dear Dr. Phelps,

I am please to write this letter in support of the Masters of Science in Game Design and Development degree proposal. The office of Sponsored Research Services is a supportive infrastructure that promotes and supports the expertise of the RIT community by facilitating all aspects of externally funded grants and contracts. Our staff work with others at RIT to increase sponsored funding by helping principal investigators identify avenues for supporting their scholarly efforts, and by helping them develop successful proposals and manage successful projects.

The Master of Science in Game Design and Development will be supported by Sponsored Research Services directly and indirectly by several of our staff members. Jason Polito is the Senior Research Administrator for the B. Thomas Golisano College of Computing and Information Sciences, and he will be the key person to help faculty identify funding opportunities and prepare proposals. Jason has been with the college for about six months and has established relationships with many of the faculty in the new degree program. Other staff will assist faculty with preparation of agreements and project management as awards are received.

With the opportunities for research afforded by growth in the industry, and the diverse talents of the faculty involved, I anticipate faculty in the degree program will develop an exciting portfolio of externally sponsored projects. We look forward to working with faculty in the new degree program.

Sincerely,

David Bond
Associate Director, Proposal Development
Sponsored Research Services

6. ETC – Letter of Support

R·I·T

Rochester Institute of Technology

Educational Technology Center
91 Lomb Memorial Drive
Rochester, New York 14623-5603
585-475-2551

December 12, 2005

Ms. Eydie Lawson
Associate Dean
College Computing & Information Sciences
Rochester Institute of Technology

Re: Letter of Support – Campus Classrooms
M.S. in Game Design and Development

Dear Ms. Lawson:

Within in the scope of existing campus facilities there are 120 "general purpose" classrooms spread across all colleges and of these, 85 have installed projection equipment. Any one of these rooms provides connectivity which would allow gaming system presentation equipment to communicate with the display device. In addition, there are over 200 non-general purpose teaching spaces (e.g., labs, seminar rooms, conference rooms, etc.) equipped with similar projection devices and equipment connectivity. Mobile projection can be requested and delivered to most other teaching locations on campus.

If there are further questions regarding campus classroom technology capability or availability, please don't hesitate to contact my office.

Sincerely,

David M. Cronister, Director

cc: Dr. Lynn Wild, Assistant Provost,
Teaching & Learning Services
Terry Bruce, Director, Campus Learning
Technologies

7. NTID – Letter of Support

R·I·T

Rochester Institute of Technology

National Technical Institute for the Deaf
Access Services
Hugh L Carey Bldg., Rm. 14-1576
97 Lomb Memorial Drive
Rochester, NY 14623-5603
Phone/TTY: 585.475.6455

December 15, 2005

Andrew Phelps
Assistant Professor, Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences

Dear Andrew:

RE: Interpreting Support to the MS degree program in *Game Design & Development*

Thank you for the opportunity to review your degree proposal for a Master of Science in *Game Design & Development* from the perspective of the impact on Access Services. As I read the proposal, I believe there would be some incremental requirement for access services were NTID supported students to pursue the degree. The amount of additional service we would need to provide will depend on the number of NTID supported students who join the program. I would expect both interest and enrollment from NTID students.

The cross-disciplinary proposal draws heavily from existing RIT courses. There are only three new courses proposed for the GD&D program. However, although there are not many new courses, it would be most reasonable to expect that an NTID supported student who joins a cohort traversing the curriculum proposed will mainly be generating unique, incremental requests. This is a reality typical of most MS level study. Were the program to prove attractive to deaf and hard-of-hearing students, a real possibility, it might improve the efficiency of the services we provide by grouping more students into shared courses. When the program is running in steady state at 54 students enrolled, I would project an increased annual demand for access services for six courses each quarter.

Improvements to RIT's programs mean more students and more student success. The fact that increased numbers of students pushes increased requests for access services is not a reason to hold back advances in curriculum. Access Services will do its best to acquire and efficiently utilize the resources needed to support students in the GD&D program. As always, we will depend on your continuing cooperation in scheduling to help us meet these needs as efficiently as possible.

Sincerely,

Stephen A. Nelson
Director, Access Services
National Technical Institute for the Deaf
585.475.6455 (Voice or TTY)
585.475.7526 (Fax)
sandis@rit.edu

XC: Al Smith, Assistant Vice President, NTID College Operations
Chris Licata, NTID Associate Vice President for Academic Affairs

8. Roman Koshykar, Library Liaison to GCCIS – Library Impact Statement

LIBRARY IMPACT STATEMENT
Master of Science in Game Design and Development
August 2005

Preface

The RIT Libraries have been supporting the concentration in game design and development, offered through the Department of Information Technology, for some time now. Selecting materials in this subject area is the responsibility of the Library Liaison to the Golisano College of Computing and Information Sciences. The following is an assessment of the current state of resources that support the proposed Masters program in game design and development, followed by a description of additional resources that would be required for supporting the fully developed new program.

Resources currently available

- **Books**

Appropriate Library of Congress (LC) subject headings of relevance to the topic areas covered by this proposed program are given below, followed by the number of records in the RIT Library online catalog at the time of writing (http://albert.rit.edu). Since Carnegie Mellon University's Entertainment Technology Center was identified in the program proposal as an institution with a competing program, the number of records in the CMU Libraries catalog is given for comparison (http://cameo.library.cmu.edu). These figures are then compared with the number of records in the Library of Congress online catalog (http://catalog.loc.gov). The final column shows the percentage of books cataloged by the Library of Congress that are held by RIT in each given subject.

LC Subject Heading*	Total records RIT	Total records CMU	Total records LOC	Pct. held by RIT
Computer games (and all subheadings)	300	57	1080	28%
Computer games – Programming (and subheadings)	188	15	242	78%
Computer games – Design (and subheadings)	59	5	43	(137%)
Computer graphics	949	1531	2902	33%
Artificial intelligence	377	2434	1382	27%
Computer animation	311	186	577	54%
Human-computer interaction	189	493	397	48%

Neural networks (Computer science)	179	706	617	29%
Machine learning	57	917	179	32%
Genetic algorithms	25	156	81	31%

*Note: More than one subject heading can be assigned to a book; any book may be counted under multiple subject heading above. Differences in cataloging procedures may explain the higher number of subject headings for "Computer games – Design" in RIT's catalog and the higher number of subject headings in CMU's catalog for other subjects.

Clearly, the RIT Library has been collecting books in these subject areas, and has built up a solid collection. RIT owns approximately 35% of the books cataloged by the Library of Congress in these subject areas (roughly estimated from the record count shown above). Additionally, RIT Library users have access to the book collections of eight other colleges in New York through Connect NY – Rensselaer Polytechnic Institute, Colgate University, St. Lawrence University, Vassar College, Union College, Siena College, Bard College, and the U.S. Military Academy (http://www.connectny.info).

- **Electronic books**

The Library subscribes to *Books 24x7*, a database of over 4000 e-books covering all aspects of information technology. The majority of the e-books in Books 24x7 have been published within the last five years. An advanced search of Books 24x7 shows 22 books with the phrase "game programming" in the title and 6 books with the phrase "game development" in the title. Charles River Media, Premier Press, Course Technology and MIT Press are all Books 24x7 participating publishers.

The Library also subscribes to *ebrary*, an e-book system with thousands of titles in many subject areas. An advanced search of ebrary shows 32 books with the phrase "game programming" in the title and 9 books with the phrase "game development" in the title. There is some overlap in titles with Books 24x7.

Students enrolled in this program will find these two e-book sources useful. New content is continually added to them, and records for e-books are included in the RIT Library online catalog.

- **Periodicals**

RIT Libraries has current access to the following computer game periodicals:

Game Developer
Game Studies
IEEE Computer Graphics and Applications

Game Developer is available online through ProQuest Research Library and Wilson Full Text OmniFile. Page images are in black and white only. *Game Studies* is an open-access journal

that is freely available on the web (http://www.gamestudies.org). *IEEE Computer Graphics and Applications* is available online through IEEE Xplore.

Additionally, RIT Libraries owns some volumes of the *Game Developers Conference Proceedings*, the premier source for publishing research on game development and design. We also own the 2004 edition of *Games 411*, a resource directory for the electronic games industry.

There are few periodicals devoted to the study and design of computer games (most computer game periodicals are aimed at the consumer). Articles on this topic and related topics are published in many other periodicals, many of which can be found in the online databases discussed below.

- **Online databases**

In addition to the e-book databases discussed above, RIT Libraries currently subscribes to the following databases, which will be of use to students enrolling in the proposed program:

ACM Digital Library: Contains the full text of articles from ACM journals, transactions, magazines and conference proceedings, as well as some affiliated publications. Subjects covered include all areas of computer science and technology. Electronic versions of transactions and conference proceedings sponsored by SIGGRAPH and SIGCHI (special interest groups for computer graphics and human-computer interaction, respectively) are available through ACM Digital Library.

IEEE Xplore: Contains the full text of articles from IEEE journals, transactions, magazines, conference proceedings and standards, including those published by the IEEE Computer Society.

INSPEC: Indexes technical and research articles from journals and conference proceedings from across the computer science and information technology literature.

These databases contain either full text (ACM Digital Library, IEEE Xplore) or citations and abstracts (INSPEC) of publications of original research as well as research reviews and other scholarly material.

Aggregator databases such as *ABI/Inform* and *Business Source Elite* provide full text of articles from the business and trade literature, which will be of importance in a multidisciplinary program such as this one. Students enrolling in the proposed program will need access to such material, particularly when they undertake thesis research.

Requests for new material

- **Books**

As noted above, RIT Libraries own approximately 35% of the books cataloged by the Library of Congress in subjects relevant to supporting this program. This is a solid sample of the current literature, though it has been collected in support of a concentration, and not a full degree-

granting program. According to Books in Print, 169 books assigned the generic subject "Computer Games" were published in 2004, and 160 books on this topic have been published in 2005 to date. Acquiring 50% of this annual output is a reasonable goal, due to the fact that not every book published will meet our needs or be of interest to our users (many published books assigned this subject are clearly aimed at the consumer market). Since we currently acquire approximately 35%, and using an estimated average of 165 books per year, the Library should purchase an additional 15% of the annual output, or 25 additional books, rounded up. According to YBP Library Services (RIT Library's book vendor), the average cost of a book on a computing topic is $68.27. An in-house estimate of 3% inflation was used to calculate the cost of purchasing 25 additional books per year in game design and development, borne out over the first five years of the program (costs rounded to the nearest dollar):

2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
$1707	$1758	$1811	$1865	$1921

RIT Libraries should also acquire the Game Developers Conference Proceedings – we do not yet own the 2004 or 2005 proceedings. According to the publisher (https://www.gamasutra.com/php-bin/store.php?category=3), the cost is as follows:

- 2004 GDC Audio Proceedings (entire set): $64.95
- 2005 GDC Audio Proceedings (entire set): $349.00

The amount of $414 is requested to purchase these back issues of the proceedings, to be added to the new book funds request in the first year of the program. Subsequent proceedings should be acquired via standing order (see below).

- **Periodicals**

Beginning with the 2006 proceedings, the Libraries should budget annually for the *Game Developers Conference Proceedings*. As mentioned above, the cost for 2005 is $349. Proceedings are published as CD-ROMs.

The Libraries should also continue to acquire *Games 411*, an annual directory of information for the game development industry (http://www.games411.com). The cost for the 2004 volume was $20.

While RIT users have access to articles from *Game Developer* magazine (http://www.gdmag.com) through two aggregator databases, the page images are only available in black and white, and there is often a time delay in obtaining the most current issue through an aggregator database. The Libraries should subscribe to Game Developer (Digital Edition) – for 2005, the subscription price is $29.95.

As identified in the program proposal, the *Journal of Game Development*, published by Charles River Media (http://www.jogd.com), is the primary peer-reviewed research journal in the field of game design and development. The annual subscription rate is $300 for the print journal (electronic access is included in the cost, with a limit of 25 seats per subscription).

Using an in-house estimate of 10% inflation for science and technology journals and 3% for books (applies only to Games 411), the Libraries require the following funds to subscribe to these publications, borne out over the first five years of the program (costs rounded to the nearest dollar):

2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
$768	$843	$926	$1017	$1117

Document delivery/Interlibrary loan

RIT students may request library material not owned by the RIT Library through the Library's Information Delivery Service (IDS). IDS estimates the average cost to the Library of filling each interlibrary loan request at $30 for material in the sciences and technology. According to the program proposal, estimated enrollment is 20 new students in the first year, 25 new students in the second year, and a steady state of 30 new students thereafter. Making a conservative estimate of 1 request per year per enrolled student, the following would be the estimated cost to the Library of filling interlibrary loan requests:

	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
ILL requests	20	25	30	30	30
Cost	$600	$750	$900	$900	$900

Library Staffing Impact

Based on in-house estimates, there is a cost of $30 for selection and processing of each new book purchased. There is a cost of $35 for establishing each new serial subscription in the first year of subscription. The staffing cost per interlibrary loan request is $12. Additional funding for library staffing impact, borne out over the first five years of the program, follows:

Staff time	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
New books	$750	$750	$750	$750	$750
New serials	$140	-	-	-	-
ILL requests	$240	$300	$360	$360	$360
Total staff costs	$1130	$1050	$1110	$1110	$1110

Total additional library funding requested per year

	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
New books	$2121	$1758	$1811	$1865	$1921
Periodicals	$768	$843	$926	$1017	$1117
ILL borrowing	$600	$750	$900	$900	$900
Staff time	$1130	$1050	$1110	$1110	$1110
Yearly total	$4619	$4401	$4747	$4892	$5048

Conclusion

As the program in game design and development transitions from a concentration to a fully developed Masters degree curriculum, the Libraries will need to acquire some new resources and materials to support it. Emphasis will be placed on acquiring scholarly material on the subject of game development and design and related subjects, such as computer graphics and animation, programming for artificial intelligence, and human-computer interaction, since many computer game publications are aimed at consumers.

Prepared by Roman Koshykar
Librarian for Computer Science, Information Technology, Software Engineering
Library liaison to GCCIS
rev. 8/25/2005

Appendix B: External Letters of Support

1. Electronic Arts



University Administration
Rochester Institute of Technology
B. Thomas Golisano College of Computing and Information Sciences
102 Lomb Memorial Drive
Rochester, NY 14623

Dear RIT University Administration,

Interactive entertainment will be to the 21st century, what motion pictures and television were to the 20th. Games will transform our communications and culture, and also provide thousands of new creative and technical jobs.

The games industry employs approximately 30,000 in the US and demand is expected to grow 15% per year. Industry-wide sales of game hardware and software around the globe this year could surpass $25 billion and, though estimates vary, are expected to grow at least 10% a year for several years. Combined annual sales of consoles and game software in the U.S. have already eclipsed movie box-office receipts. More than a dozen colleges have added a four year program in game design, which proves that this is truly legitimate career path.

While numerous undergrad game development programs are surfacing, very few graduate level degrees have been proposed. The need for a graduate level program is quite apparent in our ever growing industry. While undergrads are great hires, a considerable amount of time and effort is required for long term development and growth. Graduate level students, on the other hand, require less development time and training. With a combination of previous work experience, and a higher level of education, they are much better prepared to make direct contributions in shorter amount of time. In fact, a few of our graduate student hires have been selected for our "fast track" rotation program designed to identify future leaders and to build bench strength. The Fast Track to Creative Leaders Program is a key component to our long term growth and success. We eagerly anticipate the opportunity to recruit from Professors Jacobs and Phelps Masters of Science in Game Design and Development program at RIT for additional fast track program candidates.

Over the next 4 years, Electronic Arts is projected to double in size. Essentially, we anticipate to grow our company by approximately 4000 employees with a bulk of it coming from bright new college graduates and graduate students. Game Design and Development programs are critical in our pursuit for college talent. The ideal program should offer a well rounded multidisciplinary experience in software engineering, computer graphics, artificial intelligence, networking, internetworking protocols, database design, human computer interaction, physics etc. Gaming's traditional training ground, a mentoring system where the self taught pass along knowledge to the like

209 Redwood Shores Parkway, Redwood City, CA 94065 [TEL] 650 628 1500 www.ea.com

minded tech-savvy gamers, is no longer enough due to the myriad of skills needed to create today's modern games.

With the advent of next generation consoles, it is imperative that we begin to identify talent with the knowledge and tenacity to take on the task to develop games for these advanced consoles. We eagerly hope that the program Stephen Jacobs and Andrew Phelps are putting together at RIT will become an invaluable resource for potential leaders at Electronic Arts, and our industry as a whole.

Should you have any additional questions or need additional information, please feel free to contact me. Electronic Arts and I wish you best success in a fast start on this valuable new direction for RIT.

Regards,

Phillip Gee
University Relations Manager
Electronic Arts

2. Sony Online Entertainment

SONY ONLINE ENTERTAINMENT

February 10, 2004

Professor Stephen Jacobs
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Stephen,

It's with great pleasure that I write to you in support of your program at RIT. Pleasure, because it is gratifying in the extreme to see academia focusing its considerable energies on what is, in the end, a fascinating and vitally important new field of study.

In the last few decades, videogaming has crossed an enormous gap from tiny hobby to mainstream cultural force. We've come a long way from the days of "Pac Man Fever" being a novelty hit on the radio. It's common today to see major celebrities who profess a love of gaming, and the popular media are in this instance merely reflecting the cultural reality: playing videogames is now a common pastime for children, adolescents, and adults. When you visit a high school, you're just as likely to hear "game designer" as a highly desired occupation as you were to hear "rock star" a decade ago.

Until fairly recently, there were no formal higher education paths available tot hose ambitious young people. Today, there are a dozen or more degree programs at a wide range of institutions across the United States. Some are theoretical and some are vocational, but all of them share the dream of making a medium that has until now largely been driven by apprenticeship into a formal profession with established practices and pedagogy.

The challenges are significant—but the program that you have put together strikes the right balance between the artistic and the technical, between the realities of production and the ambitions to improve the medium. That said, the key thing that makes your program so interesting is that you propose a graduate degree. Virtually all of the programs thus far have been undergraduate ones, and have to be considered primarily vocational. By engaging students in seminars that tackle topics such as critical theory and history of videogames, you will not only be training future developers, but also laying the necessary critical and theoretical groundwork to lead us forward in innovation.

I look forward to seeing the talent emerge from this program and others like it, because it can only help to create new leaders in our field. I wish you the best of luck in getting it off to an excellent start.

Best,

Raph Koster
Chief Creative Officer
Sony Online Entertainment

8928 Terman Court
San Diego, CA 92121
t. (858) 577 3100
f. (858) 577 3200

3. NewBlue, Inc.

Professor Stephen Jacobs
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Stephen,

I'm thrilled to hear that you are considering creating a Master's program in Game Design and Development. There's a crying need for such a degree.

Historically, game development teams have been dominated by engineers and artists who are fanatically passionate about creating games. That, in itself, is wonderful. But, these same people tend to lack the education and discipline to successfully build large projects. Ironically, games can be among the most demanding software projects of all because they present the challenge to build an exciting real time entertainment environment that delivers on a creative vision while battling rigid hardware constraints (memory, cpu, etc.) Any developer working on a game really should have a strong background in computer science coupled with a deep appreciation of aesthetic techniques and objectives. Likewise, any game artist (which includes level designers, graphic artists, sound designers, musicians and more) must have a good understanding of the software techniques and challenges.

In my time leading game audio technology in Microsoft's DirectX organization and then working in advance game technologies on the XBOX team, I was amazed and sometimes horrified at the relatively primitive programming and aesthetic styles of most game developers. A lot of games suffer from poor software design coupled with unrealistic and often narrow minded creative vision. Too often, game development projects start with lofty ambitions and quickly fall behind schedule. The final release is delayed, features are chopped, the cost skyrockets, and the code becomes a horrifying tangled mess – a nightmare in the testing stages. In such a messy production environment, it's not surprising that game publishers are increasingly averse to artistic and technological innovation.

As interactive entertainment grows to replace traditional linear entertainment on the web, game consoles, portable phones, and more, there is a crying need for talented, well educated people to drive these mediums forward. Your Master's program in Game Design and Development would be extremely welcome and appropriate. When I was a graduate student in Computer Science at Stanford in '85, they introduced the first computer graphics class. Today, that seems astoundingly delinquent. Likewise, twenty

years from now, I'm certain that people will look back and wonder why programs in interactive media development were so critical, yet slow to materialize.

Best,

Todor Fay
Principal
NewBlue, Inc.

4. There, Inc.

Professor Stephen Jacobs
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Stephen,

Two decades ago, a passionate and creative person (probably a teen-aged boy) could create a successful game given only an Apple II and possibly a book on programming the 6502 microprocessor. Today, commercially viable interactive entertainment requires a team of dozens of highly specialized individuals many with advanced degrees, great resumes or frequently both.

In an industry that is advancing at the same pace as technology improvements and consumer interest in this media, the demand for these talented and qualified individuals is increasing dramatically. The situation we face at There Inc. is even more challenging because the unique service we provide is an integration of database, communication, animation, artificial intelligence, game theory and human interface technologies. Frequently, the individuals we meet have a very focused background and do not have the breadth of experience we need.

Your program offers an opportunity for highly motivated individuals to pursue their interests and to explore a broad range disciplines. Graduates of your program will have a unique advantage over graduates of other programs since much of your curriculum is relevant to our needs and its value easily understood by us.

We wish you good luck in your ongoing development of this program and look forward to hearing the news of its progress and meeting some of the graduates. Please let us know if there is anything we can do to help.

Regards,

Stewart Bonn
Vice-President, Fun
There Inc.

5. Cyan Worlds, Inc.

January 5, 2005

Professor Stephen Jacobs
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Stephen,

I wholeheartedly support your efforts to bring a Game Design and Development degree program to RIT. From where I sit, it is clear that for our industry to continue to innovate and evolve we need programs for ambitious youth such as the one you propose. Sincere academic efforts have begun to bear fruit in the past few years. Providing a place for your students to get in on the ground swell can only benefit your university, your students and the industry.

As a post-graduate student at Carnegie Mellon University, I was involved with the earliest formation of their Entertainment Technology Center and their similar graduate degree program. The interdisciplinary nature of that education and the experience of working on complicated team-based projects set me up well for the career I've been privileged to enjoy for the last several years. I refer to lessons learned there on a regular basis in practical daily work and in the training and education of new developers.

Developers who specialize in game art or programming will always be crucial to a project's success, but more than ever the industry needs developers who understand projects and the development process as a whole. With timetables shrinking and project complexity growing, it is becoming nearly impossible to gain that kind cross-department perspective in the apprenticeship training model that the industry has practiced to date.

Your program would be a great service to your students and our industry. Thank you for work and best wishes for the acceptance of your proposal.

Sincerely,

Bill Slease
Producer
Cyan Worlds, Inc.

Appendix C: Faculty C.V.'s (in alphabetical order)

1. Jessica Bayliss, Ph.D. – Computer Science, GCCIS

Jessica D. Bayliss
Rochester Institute of Technology
Computer Science Dept.
102 Lomb Memorial Dr.
Rochester, NY 14623-5608
(585) 475-2507
jdb@cs.rit.edu
www.cs.rit.edu/~jdb

Education

Ph.D. in Computer Science, University of Rochester, Rochester, NY
Dissertation: "A Flexible Brain-Computer Interface" — Aug. 2001

M.S. in Computer Science, University of Rochester, Rochester, NY — Dec. 1996

B.S. in Computer Engineering and minor in Computer Science,
California State University, Fresno, Fresno, CA — May 1995

Awards

Microsoft Grant — 2004-2005
National Physical Science Consortium (NPSC) Fellowship — 1995-2001
Provost's Fellowship — 1995-1997
NSF Minority Fellowship — 1995

Teaching

Ass't Professor, Rochester Institute of Technology, Rochester, NY — August 2001-present
Have taught introductory programming courses as well as Artificial Intelligence, Artificial Intelligence in Computer Game Programming, Programming Language Concepts, and a problem solving seminar geared to introduce undergraduates to research in the Computer Science discipline. Am currently supervising both graduate and undergraduate students in research projects involving brain-computer interfaces and computer vision, and game design and development.

Instructor, University of Rochester, Rochester, NY — Summers 1999 & 2000
Proposed, designed, and taught a two-week Computer Science introduction course for High School students as part of the Rochester Scholars program at the University of Rochester. Topics covered included software engineering, usability, requirements, systems, hardware, programming (Visual Basic), robustness, security, web page design, and medical systems.

Guest Lecturer and Lab Supervisor — 1997, 1998, 2000
Lectured on Brain-Computer Interface Technology and then led small group experiments that used the P3 evoked potential to control items in a virtual apartment.

McNair Research Project Advisor — present
Supervised a senior undergraduate's research project for the McNair Scholarship program.

Teaching Ass't
Artificial Intelligence (CSC242) — 1997
Introduction to Computers (CSC108) — 1996

Industry Experience

Software Engineer (Sum 2000): Xerox Corporation, Webster, NY.
Design and implementation of a prototype tool enabling systems engineers to easily write control rules without having to write them in the CLIPS expert system shell. This task involved creating a restricted scripting language, writing a program (using flex and bison) in order to translate that language into CLIPS, creating a development environment in Emacs Lisp, and performing usability studies with the engineers.

Research Ass't (School year 1996-current): University of Rochester, Rochester, NY.
Performed research at the NIH Resource for the Study of Neural Models of Behavior.

Intern (Sum 1997 & 1996): NASA Goddard Space Flight Center, Greenbelt MD.
Created a prototype that used independent component analysis in order to spectrally unmix minerals in AVIRIS hyperspectral images. Also did Intelligent Agent work using the CLIPS expert system shell.

Intern (Sum 1994 & 1995): Lawrence Livermore Nat'l Laboratory, Livermore, CA.
Implemented various algorithms including PCA, a Hough transform, and region finding algorithms for a Computer Fabric Inspection system.

Software Engineer (Spr. 1995): Dantel (dantel.com), Fresno, CA.
Object-oriented design in UML for an alarm system.

Programmer Analyst (Sum 1993): Pacific Gas and Electric Co., San Francisco, CA.
Created reports and forms as well as maintained such reports and forms using SQL and both Oracle and Paradox database systems. Also resolved customer complaints and questions.

Sci. & Engin. Research Semester Participant (Spr 1993): Lawrence Livermore Nat'l Laboratory, Livermore, CA.
Used computer vision for tight tolerance assembly.

Refereed Publications

- Bayliss, J.D. and Inverso, S.A., P300 Brain Computer Interface Considerations, submitted.
- Bayliss, J. D. and Inverso, S. A.., Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface, *HCI International,* accepted.
- Bayliss, J. D., Inverso, S. A., and Tentler, A., Changing the P300 Brain-computer Interface, *Cyberpsychology,* 7(6), 2004.
- Bayliss, J.D., The use of the P3 component of the evoked potential for control in a virtual apartment, *Brain-ComputerInterfaces for Communication and Control, 2nd Internat'l Mtg*, June, 2002.
- Bayliss, J.D., and B. Auernheimer, Observations from using brain-computer interfaces in real and virtual worlds, *Proc. of HCI Internat'l*, August 2001.
- Bayliss, J.D., A Flexible Brain-Computer Interface, *TR756 and Ph.D. Thesis*, Computer Science Dept., U. Rochester, August 2001.
- Bayliss, J.D. and D.H Ballard. A Virtual Reality Testbed for Brain-Computer Interface Research*, IEEE Trans. on Rehabilitation Engineering*, 8(2), 2000.
- Bayliss, J.D. and D.H Ballard. Recognizing Evoked Potentials in a Virtual Environment, *Advances in Neural Information Processing Systems 12*, 2000.
- Bayliss, J.D. and D.H Ballard. Single Trial P300 Epoch Recognition in a Virtual Environment, *Neurocomputing*, 32-33, pp. 637—642, 2000.
- Bayliss, J.D. and D.H Ballard. Single Trial P300 Recognition in a Virtual Environment, *CIMA'99 (Soft Computing in Biomedicine)*, Rochester, NY, June 22-25, 1999.
- Bayliss, J.D., J.A. Gualtieri, and R.F. Cromp. Analyzing hyperspectral data with independent component analysis, *Proc. SPIE Applied Image and Pattern Recognition Wrkshp*., October, 1997.

Research Publicity, Posters, and Presentations

- **Workshop Presentation** (December 2004)**:** *P300 Brain-Computer Interface Considerations*, Neural Information Processing Systems workshop "Towards Brain Computer Interfacing".
- **Invited Paper Presentation** (August 2004)**:** *Changing the P300 Brain-Computer Interface*, Adaptive Displays conference.
- **Invited Presentation** (July 2004)**:** Discussed Computer Science and brain-computer interfaces for NSF sponsored program *Under the Hood* at Colgate University. *Under the Hood* is a program to attract high school girls into the sciences.
- **Radio Interview** (August 10, 2003)**:** Interviewed by Tony King about Brain-computer interfaces for Tech Talk show CHQR AM 770 in Calgary, Alberta.
- **Invited Presentation** (May 2003): *Brain Computer Interfaces: Facts and Fiction,* California State University, Fresno.
- **Invited Poster/Presentation** (Jul. 2002): *Using a Brain-Computer Interface in Virtual Reality*, New Paradigms in Using Computers, IBM Almaden Research Ctr, 2002.
- **Presentation** (Dec. 2001): *P3 Recognition in Virtual and Real Worlds*, NIPS Workshop on Directions in Brain-Computer Interface (BCI) Research, December, 2001.
- **Popular Press Articles On Research Have Appeared In**: Discover Magazine, Signal Magazine, Facts, slashdot.org, ABCnews.com, Wired Online
- **Honorarium** (Oct. 2000): "Designing a brain-computer interface", Lycoming College, Pa.
- **Talk Show Guest** (Aug. 2000): Guest on local TV station talk show to discuss using Virtual Reality in medicine.
- **Guest Lecture** (Sept. 1999): "Designing a Brain-Computer Interface". Talk given for local ACM chapter.
- **TV Interview** (Sept. 1998): Interviewed for the "It Could Work" new technology spotlight clip on the "Homework Hotline" (local PBS station WXXI) show for young students.
- **Honorarium** (Sept. 1997): "Analyzing hyperspectral data with independent component analysis". Honorarium at Ca. State Univ, Fresno.

University Service

Department Committees: Curriculum (current), Chair search committee (current), Introductory Course Sequence Committee (2001-2003), Preprogramming Committee (2002-2003), AI group (2002-2003), department honors program advocate (2003-current)

College/Institute Committees: Scholarship Committee (2002-2003), Faculty Learning Community (2003), Paternerships in Pluralism coach (2004)

Coordinator of University of Rochester Computer Science women's group. (1999-2001) The idea behind this group is to enable a local CS minority (women) to meet and get to know one another for support. A yearly dinner is sponsored for this purpose.

University of Rochester Department Seminar Speaker (2000 & 1996): Presented information from the Grace Hopper Conference Celebrating Women in Computing with other participants (2 during each year) on why women choose not to become Computer Scientists as well as what can be changed in order to encourage women to participate in this exciting field.

Guest Lecturer: Introduction to Programming course (2000), the Undergaduate Problem Seminar (1998, 1999, 2000), CS Outreach Panel participant at Harvey Mudd University (scheduled)

2. Kevin Bierre, M.S. – Information Technology, GCCIS

Curriculum Vitae

NAME: Kevin Bierre

CURRENT ACADEMIC RANK: Assistant Professor

TENURE STATUS: Tenure Track

Date of original appointment to this faculty, followed by dates and ranks of advancement:

Dates	Ranks of Advancement
2/12/2001	Original Appointment

Degrees with fields, institutions, and dates:

Degree	Field	Institution	Date
BA	Chemistry	SUNY at Geneseo	5/76
MS	Chemistry	Cornell University	12/78
MS	Computer Science	Rochester Institute of Technology	12/90

If you do not have a formal degree in IT or a related field, describe any course work you may have taken, or other ways in which you have achieved competence in IT; there is no necessity to repeat information here which is contained in later sections of this document:

Conferences, workshops, and professional development programs in which you have participated to improve teaching and professional competence in IT:

Member of the Faculty Learning Community 2005-2006
Faculty Institute on Teaching and Learning- RIT May 2005
CITE 4 – Lafayette, In, Oct 2003,
SIGITE '04 – Salt Lake City, Utah, Oct 2004
Faculty Institute on Teaching and Learning- RIT June 2004
Provost's American Sign Language Course – RIT June 2003

Other related computing experience (including teaching, industrial, governmental, etc.):

7/95 - 2/01 Principal Engineer, Real Time Enterprises, Inc.

While at RTE, I served as a Sybase DBA on a print-on-demand system, as well as being a developer. Work was done using Sybase System 10 on Sun Microsystems machines, using the Sun OS and Solaris operating systems. I was a project leader and primary developer on a film scanner project, as well as leading a documentation effort for a local firm. The language used on the programming projects was C++. I supervised a large project to provide a customer accounting system.

I performed the Oracle DBA work for the firm during the last two years I was at RTE. I took the Oracle DBA training course, but had worked with Oracle for a number of years prior to coming to RTE.

I taught internal Java classes for RTE employees. In addition, I taught courses for clients in "Relational Data Modeling", "Introduction to SQL", and "Intermediate SQL". I was also an instructor for "Java for C++ Programmers" and for "Java Programming".

9/99 - 5/01 Adjunct Instructor, SUNY Geneseo

I taught a course called "Problem Solving with Computer Applications". Course content covered use of basic computer applications, as well as problem solving techniques.

3/92 - 7/95 Senior Software Engineer, Wegmans Food Markets

I was a DBA on several projects at Wegmans, including a bad check tracking system, a mailing list analysis system, and the preliminary version of a market data analysis system. The databases used were Sybase System 10 and Informix SE. Work was performed on IBM RS/6000 machines using the AIX operating system. The language used on these projects was C. I was also a project member on a credit card authorization project.

9/91 - 5/94 Adjunct Faculty, Monroe Community College

I taught "File Structures and Peripherals", a Pascal based course that emphasized the advanced features of Pascal, file processing, and database utilization.

9/88 - 5/91 Adjunct Faculty, SUNY at Geneseo

I taught a course in FORTRAN called "Scientific Programming" to undergraduates. This job included course preparation, lectures and grading.

4/88 - 3/92 Software Engineer, MOSCOM (Now called Veramark)

I served as the DBA and database designer for a section of MOSCOM's INFO/MDR product. Work was performed using Sybase 4.9.2 on Sun Microsystems machines, running Sun OS. I was project lead for a call tracing system used to stop annoyance calls. I created and maintained the internal bug

tracking system, based on an Oracle database. I altered the call costing method used by MOSCOM, reducing the time to generate the necessary files from 8 hours to 20 minutes. This work was done on a ZIM database.

6/79 - 4/88 Programmer, Senior Programmer, Systems Analyst,
Pennwalt Pharmaceuticals

I maintained and enhanced a custom gas chromatography - mass spectroscopy system. I was part of several projects that were aimed at supporting the statistical analysis of clinical trials. I also served as the Oracle DBA and database designer for projects in the analytical chemistry and pharmacology departments. Work was done on PDP 11 and VAX equipment, using FORTRAN as the primary language.

Consulting—list agencies and dates, and briefly describe each project:

Excellus, June – August 2002, Supervised two students in the evaluation of business intelligence tools.

Excellus, Sept – Nov 2002, Supervised two students building a metadata database prototype for the company.

Department, college, and/or university committees of which you are a member:

Search Committee, Scholarship Committee, Academic Affairs Committee (GCCIS)

Principal publications of the last five years; please state in standard bibliographic format.

Phelps, A., Bierre, K., and Parks, D., *MUPPETS: multi-user programming pedagogy for enhancing traditional study,* Proceeding of the 4th conference on Information Technology Education , October 2003, Lafayette, Indiana, USA, 100-105

Bierre, K. and Phelps, A., *The Use of MUPPETS in an Introductory Java Programming Course,* Proceeding of SIGITE '04 , October 2004, Salt Lake City, Utah, USA

Bierre, K., Chetwynd, J., Ellis, B., Hinn, D.M., Ludi, S., and Westin, T. *Game Not Over: Accessibility Issues in Video Games*, HCI International , July 2005, Las Vegas, Nevada, USA

Phelps, A., Egert, C., and Bierre, K., *MUPPETS: Multi-user Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students*, 35th ASEE/IEEE Frontiers in Education Conference, October 2005, Indianapolis, Indiana, USA

Bierre, K., Ventura, P., Phelps, A., and Egert, C., *Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course*, SIGCSE 2006, March 2006, Houston, Texas, USA (submitted)

Egert, C., Bierre, K., Phelps, A., and Ventura, P., Hello, M.U.P.P.E.T.S.: *Using a 3D Collaborative Virtual Environment to Motivate Fundamental Object-Oriented Learning*, SIGCSE 2006, March 2006, Houston, Texas, USA (submitted)

Other scholarly activity: grants, sabbaticals, software development, etc.:

Vice chair of the Game Accessibility SIG of the IGDA.

Part of the team that authored the IGDA white paper on Game Accessibility (http://www.igda.org/accessibility/)

Article on Game Accessibility published on Gamasutra web site (http://www.gamasutra.com/features/20050706/bierre_01.shtml)

Part of the team that taught a course on MUPPETS at SIGGRAPH 2005 in Los Angles. ("An Open-Source CVE for Programming Education: A Case Study")

FEAD grant for pursuit of Java certification (2004-2005)

Scientific, professional, and honor societies of which you are a member:

Association for Computing Machinery (ACM)
International Game Developers Association (IGDA)

Honors and awards:

Courses taught this and last academic year term-by-term. (This year is the year in which this report was prepared; last year was the year prior to this.) If you were on sabbatical leave, please enter the information for the previous year. Please list each section of the same course separately.

20031	4002-484-01	Fundamentals of Database Client/Server Connectivity
20031	4002-485-02, 4002-485-43 (lab)	Fundamentals of Database Architecture and Implementation
20032	4002-218-02	Programming for Information Technology II
20032	4002-571-01	Application Programming
20033	4002-218-02	Programming for Information Technology II
20033	4002-219-02	Programming for Information Technology III
20033	4002-484-70	Fundamentals of Database Client/Server Connectivity
20034	4002-218-01	Programming for Information Technology II
20034	4002-318-70	Java for Programmers
20041	4002-217-03	Programming for Information Technology I
20041	4002-318-01	Java for Programmers
20042	4002-218-02	Programming for Information Technology II
20042	4002-484-01 4002-784-01	Fundamentals of Database Client/Server Connectivity (colisted)

20042	4002-571-01	Application Programming (team taught with K Whittington)
20043	4002-219-01 4002-219-02	Programming for Information Technology III
20043 **20044**	4002-572-1 4002-219-01	Distributed Application Programming Programming for Information Technology III
20051	4002-217-01	Programming for Information Technology I
20051	4002-414-01 4002-714-01	Java for Programmers (colisted)

Other assigned duties performed during the academic year, with average hours per week. Indicate which, if any, carry extra compensation. If you are course coordinator for courses taught by other than full-time faculty, please indicate here which courses.

Course development: I am developing a course on software and computer accessibility that will be initially taught in the Winter quarter of 2005.

Number of students for which you serve as academic advisor: _60_

Estimated percentage of time devoted to scholarly and/or research activities: _20__%

Please give a brief description of your major research and scholarly activities:

I have been working with Andy Phelps on the MUPPETS project. The focus of this work is to investigate the use of a virtual world when teaching programming. We are investigating collaborative learning through a three dimensional graphical interface. MUPPETS is Java based and can be extended by students as part of a course project. I am also interested in the area of accessibility of software for people with disabilities.

If you are not a full-time faculty member, state what percentage of full-time you work: _____%

Percentage of this time allocated to the IT program being evaluated: _____%

3. Al Biles, M.S. – Information Technology, GCCIS

John Alexander (Al) Biles

Professor and Undergraduate Program Coordinator
Department of Information Technology
Rochester Institute of Technology
Golisano Building, Bldg 70 – Room 2100
102 Lomb Memorial Drive
Rochester, New York 14623-5608

Phone: (585) 475-7453
Fax: (585) 475-2181
Email: jab@it.rit.edu
http://www.it.rit.edu/~jab

Positions Held

1980- Computer Science and Information Technology departments, Rochester Institute of Technology. Tenure received, 1986. Member, Graduate Computer Science Department 1985-90, Information Technology Department, 1993-present.

1996-	Professor and Undergraduate Program Coordinator, Information Technology
1990-93	Computer Science Department Chair
1988-95	Associate Professor
1982-88	Assistant Professor
1980-82	Instructor

Information Technology Courses Taught: Digital Audio and Computer Music, Interactive Digital Media, Theories of Interactive Computing, Computer-Human Interface Design, Human Factors in Information Processing, Electronic Imaging, Interactive Multimedia Development, Fundamentals of Interactive Multimedia, Artificial Intelligence and Expert Systems, IT Programming IIb, Abstractions in Programming for Transfer Students, Software Scripting, Computing Tools and Environments, Computer Programming and Problem Solving, Algorithms and Data Structures, Freshman Seminar.

Graduate Computer Science Courses Taught: Introduction to Artificial Intelligence , Knowledge Based Systems, Seminar in Artificial Intelligence, Seminar in Genetic Algorithms, Seminar in Knowledge Acquisition, Seminar in Expert Systems, Seminar in Logic Programming , Seminar in AI Programming Paradigms, Seminar in Natural Language Understanding, AI Programming Workshop, Programming I, Computer Organization and Programming, Assemblers Interpreters and Compilers.

Undergraduate Computer Science Courses Taught: Freshman Seminar, Introduction to Programming, Program Design and Validation, Programming II - Data Structures, Programming III - Design and Implementation, Assembly Language Programming, Digital Computer Organization, Data Structure Analysis, Data Organization and Management, Programming Language Concepts , Data Base Concepts, Assemblers Interpreters and Compilers, Review of Computer Science , Introduction to Artificial Intelligence.

Service Courses Taught: Fortran Programming, Survey of Computer Science, Introduction to Programming, Program Design and Validation, Seminar in Artificial Intelligence for Electrical Engineers.

1977-80 Assistant Instructor, Computer Science Department, University of Kansas, Lawrence, Kansas. Taught Introduction to Computer Science, Assembly Language Programming, Fundamentals of Symbol Processing.

1973-77 Teaching/Research Assistant, Psychology Department, University of Kansas, Lawrence. Applications programming, course development, neuro-psychological test interpretation at Topeka, Kansas, VA Hospital.

November 2, 2005

John Alexander (Al) Biles

Publications, Concerts, and Conference Presentations

2005 Bills, Dianne P and Biles, John A., "The Role of Programming in IT," *Proceedings of ACM SIGITE 2005*, Newark, NJ, ACM, 2005.

Biles, Al, Concert performed in the Artists Across Campus series, Onandaga Community College, Syracuse, NY, September 26, 2005.

Biles, Al, "Evolutionary Music," *GECCO-2005 Tutorial Program*, Genetic and Evolutionary Computation Conference, Washington, DC, 2005.

2004 Biles, Al, "Evolutionary Music," *GECCO-2004 Tutorial Program*, Genetic and Evolutionary Computation Conference, Seattle, WA, 2004.

2003 Biles, John A., "GenJam in Perspective: A Tentative Taxonomy for GA Music and Art Systems," *Leonardo*, 36(1), MIT Press, 2003.

2002 Biles, John A., "GenJam in Transition: from Genetic Jammer to Generative Jammer," *Proceedings of the Fifth International Conference on Generative Arts*, Milan, Italy, Politecnico di Milano University, 2002.

Biles, John A., "The Importance of Synergy: Integrating Curricular Components in IT," *Proceedings of the Third Conference for Information Technology Curricula (CITC3)*, Rochester, NY, Society for Information Technology Education, 2002.

Biles, John A., "GenJam: Evolutionary Computation Gets a Gig," *Proceedings of the Third Conference for Information Technology Curricula (CITC3)*, Rochester, NY, Society for Information Technology Education, 2002.

Hill, Lawrence, Bills, Dianne, and Biles, John A., "A Studio-Model Approach to Teaching Introductory Object-Oriented Programming and Problem-Solving Using Java," *Proceedings of the Third Conference for Information Technology Curricula (CITC3)*, Rochester, NY, Society for Information Technology Education, 2002.

2001 Biles, John A., "Autonomous GenJam: Eliminating the Fitness Bottleneck by Eliminating Fitness," *Proceedings of the 2001 Genetic and Evolutionary Computation Conference Workshop Program*, San Francisco, July, 2001.

Biles, John A., "GenJam: Evolution of a Jazz Improviser," in *Creative Evolutionary Systems*, Peter J. Bentley and David W. Corne, editors, Morgan Kaufmann, 2001.

2000 Biles, John A., "GenJam in Perspective: A Tentative Taxonomy for GA Music and Art Systems," *Proceedings of the 2000 Genetic and Evolutionary Computation Conference Workshop Program*, Las Vegas, July, 2000, modified version reprinted in *Leonardo*.

1999 Biles, John A., "Life with GenJam: Interacting with a Musical IGA," *Proceedings of the 1999 IEEE International Conference on Systems, Man, and Cybernetics*, Tokyo, Japan, October, 1999.

Biles, John A., "Composing with Sequences: …but is it art?" in *Applications of Fibonacci Numbers, Volume 8*, Kluwer, 1999.

1998 Biles, John A., "Interactive GenJam: Integrating Real-time Performance with a Genetic Algorithm," *Proceedings of the 1998 International Computer Music Conference*, Ann Arbor, MI, October, 1998, pp. 232-235.

Al Biles Virtual Quintet, "GenJam: Evolution of an Artist," performed at *Artificial Life* concert, The Music Gallery, Toronto, Ontario, January 30, 1998.

November 2, 2005

John Alexander (Al) Biles

1997 Biles, John A., "GenJam: An Interactive Genetic Algorithm Jazz Improviser," *Proceedings of the 134th Meeting of the Acoustical Society of America*, San Diego, NY, December, 1997.

Al Biles Virtual Quintet, *Lunchtime Concert at Watson*, performed at IBM Thomas J. Watson Research Center, Yorktown Heights, NY, August 22, 1997.

1996 Biles, John A., Laura Loggi, and Peter G. Anderson, "Neural Network Fitness Functions for a Musical IGA," *Proceedings of the International ICSC Symposium on Intelligent Industrial Automation (IIA'96) and Soft Computing (SOCO'96)*, March 26-28, Reading, U.K., ICSC Academic Press, pp. B39-B44.

Al Biles Virtual Quintet, *GenJam*, musical compact disk, Dynamic Recording Studios, Rochester, NY.

Al Biles Virtual Quintet, *Meet the Artist Concert*, performed at WGMC-FM, Greece, NY, September 19, 1996.

1995 Biles, John A., "GenJam Populi: Training and IGA via Audience Mediated Performance," *Proceedings of the 1995 International Computer Music Conference*, Banff, Alberta, September, 1995, pp. 347-348.

1994 Biles, John A., "GenJam: A Genetic Algorithm for Generating Jazz Solos," *Proceedings of the 1994 International Computer Music Conference*, Aarhus, Denmark, September, 1994, pp. 131-137.

Biles, John A., "GenJam, An Eager but Untried Jazz Jammer," performed at *A Concert of New Music*, on November 11, 1994, commissioned by the Studio of Electronic Music, Hartford CT.

1993 Ueda, Koji, Peter G. Anderson, and John A. Biles, "Neural network training using a genetic algorithm and iterated pseudo-inverse," *Intelligent Engineering Systems Through Artificial Neural Networks, Volume 3*, Cihan H. Dagli, et al., eds. (Proceeding of the 1993 Conference Artificial Neural Networks in Engineering, "ANNIE 93").

1989 Gayvert, R., T. Ridley, H. Rhody, and A. Biles, "RIT's Speech Understanding Project - Status, Implication and Future Directions," Northeast Artificial Intelligence Consortium (NAIC) Summer Conference, Minnow Brook, NY, August, 1989.

Gayvert, Robert T., John A. Biles, Harvey Rhody, and James Hillenbrand, "ESPRIT: A Signal Processing Environment with a Visual Programming Interface," *Proceedings of the 117th Meeting of the Acoustical Society of America*, Syracuse, NY, May, 1989

1988 Biles, Al, Rob Gayvert and Tom Ridley, "Speech Understanding - A Project Update," Northeast Artificial Intelligence Consortium (NAIC) Summer Conference, Minnow Brook, NY, August, 1988.

Rhody, Harvey and Al Biles, "Intelligent Signal Processing with Examples from Speech Understanding," Northeast Artificial Intelligence Consortium (NAIC) Spring Conference, Washington, DC, March, 1988.

Rhody, H. E., J. Hillenbrand, J. A. Biles, *Artificial Intelligence Applications to Speech Recognition.* RADC-TR-88-11, Rome Air Development Center, Griffiss AFB, NY.

1987 Biles, Al, "Prolog Toolkits for Knowledge Based System Development," NAIC Summer Conference, Minnow Brook, NY, July, 1987.

Biles, Al, Frank Cost, Guy Johnson and Ken Reek, "Using Expert Systems in Typographic Design," *IEEE Transactions on Professional Communication*, June, 1987.

Biles, Al, "Parallel Implementation of a Forward Chaining Speech Understanding Architecture," NAIC Spring Conference, Rome, NY, April, 1987.

1986 Biles, Al, "Forward Chaining Architecture for a Speech Understanding System," NAIC Summer Conference, Rochester, NY, July, 1986.

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Biles, John A., "Running a Program," in *Handbook of Modern Electronics and Electrical Engineering*. John Wiley & Sons, 1986.

1984-86 Book reviews for *IEEE Software*. Books reviewed include *Introduction to Artificial Intelligence* (appeared 11/86), *Prolog for Programmers* (appeared 5/86), *Building Expert Systems* (appeared 7/84).

Seminars and Invited Talks

1999 Colloquium: "GenJam: Gigging with an IGA," given in the University of Rochester colloquium series.

1998 Seminar: "Genetic Algorithms: Schemes and Schemata," given in the Computer Science House Seminar series.

1997 Invited Talk/Demonstration: "Introduction to GenJam: A Genetic Algorithm that Improvises Jazz Solos," given at *Insights 1997*, a two-year college faculty workshop hosted by RIT's College of Business and Department of Computer Science.

1996 Invited Talk/Demonstration: "GenJam: Training an Interactive Genetic Algorithm to Play Jazz Solos," given at the Rochester Chapter of the ACM and at the FROG Computer Society.

1995 Colloquium: "Digital Playgrounds: Sounds from ICMC '95," given in the Information Technology Faculty Colloquium series.

Invited talk: "GenJam: An Interactive Genetic Algorithm for Jazz Solos," given at Research Day, hosted by RIT departments of Computer Science, Imaging Science and Electrical Engineering.

Invited talk: "...but I know what I like: Teaching Computer Music to Technologists," given at *Insights 1995*.

1994 Colloquium: "GenJam: A Genetic Algorithm for Generating Jazz Solos," given in the Computer Science and Information Technology Colloquium series.

1993 Colloquium: "ICMC 1993: Far Out Sounds from the Far East" given in the Computer Science and Information Technology Colloquium series.

1993 Colloquium: "Computer Music: A Survey and Some Goals" given with Warren Carithers in the Computer Science and Information Technology Colloquium series.

1992 Invited talk: "Curriculum Development Trends in Computer Science Education" given at *PACISE 1992*, the spring conference of the Pennsylvania Association of Computer and Information Science Educators, held in Edinboro, PA.

Invited talk: "Computer Science Really Is a Lab Science" given at *Insights 1992*.

1991 Invited talk: "The Computer Science Major: A Vanishing Breed" given at *Insights 1991*.

1990 Invited talk: "Automating Operator Services: The AI Perspective" given at *Operator Services Forum - Person to Person 90*, St. Louis Mo.

1988-89 Colloquia: "Speech Understanding Research at RIT" given at Alfred University and Roberts Wesleyan College.

1988 Invited talk: "Intelligent Speech Processing at RIT" given at *Insights 1988*.

1987-88 Weekly seminars on artificial intelligence for students/faculty of RIT's Center for Imaging Science.

1987 Invited talk: "Artificial Intelligence Applications in Imaging" at Industrial Associates Meeting of Center for Imaging Science.

Invited talk: "Artificial Intelligence - A Practical Case Study" for Association of System Managers in Rochester, NY.

One-day seminar: "Artificial Intelligence - the Business Connection" for Association of System Managers in Rochester, NY.

Invited talk: "Artificial Intelligence in Signal Processing" at RIT Electrical Engineering Seminar Series on Signal Processing.

1986 Invited talk: "Recent Trends in Artificial Intelligence" at New York State Regional Conference of Mathematics Teachers, Jamestown, NY.

1986 Monthly one-day seminars on artificial intelligence for Xerox Corporation, Webster, NY.

1985-86 Co-organized three teleconferences on artificial intelligence shown at RIT.

1985-86 Weekly seminar series on artificial intelligence for Computer Science faculty.

1984 Invited talk: "AI Issues in Computer Music" at RIT Symposium on Artificial Intelligence.

1980-84 Various special purpose courses on UNIX, Pascal, Motorola 68000 assembly, and computer applications for Xerox, Eastman Kodak, and Taylor Instruments in Rochester.

Research and Professional Development

1993- Independent Researcher, computer music research applying genetic algorithms and chaos techniques to jazz improvisation and other interactive performance paradigms.

1987-90 Consultant, several projects applying object-oriented techniques to office automation, distributed simulation, and intelligent signal processing. Funded by Federal Government and conducted through RIT Research Corporation.

1987-89 Principle Investigator, project titled "An Expert System Application to Remote Sensing in the Thermal-Infrared Domain" funded by Federal Government and conducted with RIT Center for Imaging Science.

1986-88 Co-developer of ESPRIT, an integrated software environment for speech and signal processing applications running on TI Explorer/Odyssey Lisp workstation. Funded by Texas Instruments, Rome Air Development Center and Federal Government, and conducted by RIT Research Corporation.

1985-89 Co-principle investigator, Speech Understanding project with Northeast Artificial Intelligence Consortium, funded by Rome Air Development Center and conducted through RIT Research Corporation.

1985-90 Consultant and/or Project Leader, applying Artificial Intelligence to variety of industrial problems with firms including Marine Midland Bank, ORMCO, Xerox Corporation, and Eastman Kodak, conducted through RIT Research Corporation.

1985-89 Investigator, equipment grant titled "Xerox Network for Undergraduate and Graduate Instruction and Research in Computer Science and Computer Engineering," through the Xerox University Grant Program.

1983-90 Developed Prolog applications in knowledge representation, natural language processing, theorem proving, state/space searching, and expert systems.

1983-85 Reviewed several artificial intelligence texts and prospectuses for John Wiley & Sons.

November 2, 2005

1982 Software conversion for VAX/UNIX, RIT. Projects included developing menu-driven shell for UNIX and conversion of "Karel the Robot" simulator from Pascal to C.

1980 Kansas Follow Through, University of Kansas. Designed and implemented communications package interfacing 8080-based micro-computers and Honeywell main-frame system.

Curricular Development

1995-97 Developed course in Digital Audio and Computer Music for both undergraduates and graduate students.

1987-88 Designed a 24-credit hour advanced certificate program in Applied Artificial Intelligence.

1983-90 Developed and managed graduate concentration in Artificial Intelligence. Involved developing two recurring courses, Introduction to Artificial Intelligence (ICSS 781, ICSG 750) and Knowledge Based Systems (ICSS 782, ICSG 751), as well as several seminars.

1984-85 Designed and taught introductory programming sequence for Computer Science minor. Involved redesigning Introduction to Programming (ICSP 208) and Program Design and Validation (ICSP 210) to accommodate oversized classes of non-majors in a VMS environment. Release time funded by RIT Faculty and Program Development productivity grant.

1982 Proposed restructuring freshman programming sequence by replacing the ICSP 208/210/320 sequence with ICSP 241/242/243.

Administrative Positions and Committees

1996- Undergraduate Program Coordinator, Information Technology Department.

1994-96 Undergraduate Advisor, Information Technology Department. Advisee list numbered well over 150 students.

1990-93 Chair, Computer Science Department.

1989-90 Co-Chair, Graduate Computer Science Department. Chairman, Faculty Governance Committee for College of Applied Science and Technology.

1988-89 Member, Computer Science Director Search Committee, CAST Faculty Governance Committee.

1986-90 Coordinator, Graduate Artificial Intelligence. Member, Graduate Computer Science Curriculum Committee, Graduate Computer Science Scholarship Selection Committee.

1986-87 Member, CAST Tenure Committee.

1984-86 Coordinator of Undergraduate Student Services and Advising. Oversaw departmental advising policies, advised all new transfer students, "cut deals," met with prospective students, and assisted Chairman of Undergraduate Computer Science.

1981-85 Freshman Advisor. Advised all entering freshman computer science majors (about 200 per year).

1980-83 Coordinator of Student Orientation Sessions. Member, for at least one year, of Director Search, Tenure Evaluation, Undergraduate Advising, Curriculum, Standards, and Professional Development committees, and *ad hoc* Committee on Joint CS Programs at Eisenhower College.

November 2, 2005

John Alexander (Al) Biles

Professional Society Memberships

International Computer Music Association
Electronic Music Foundation (Charter Member)
Society for Information Technology Education (SITE)
IEEE Computer Society
IEEE Computer Society technical committee on computer-generated music
Association for Computing Machinery
2000 Elected to Phi Kappa Phi National Honor Society

Non-Professional Activities

1975- Semi-professional jazz musician. Current group: Al Biles Virtual Quintet.
1983-85 Jazz disc jockey, WGMC-FM, Greece, NY.
1981-82 Jazz Director and disc jockey, WITR-FM, Henrietta, NY.

Education

1977-80 University of Kansas, Lawrence, Kansas, M.S., Computer Science (Graduated with Honors)
Major Areas: Artificial Intelligence, Database Systems
Minor Areas: Operating Systems, Automata Theory
Thesis Title: *Adaptive Recognition and Synthesis of Transcribed Jazz Solos by Computer*

1973-76 University of Kansas, Lawrence, Kansas, Graduate Work: Ph.D. Clinical Psychology Program.
Completed course work and clinical practicum.

1969-73 University of Kansas, Lawrence, Kansas, B.A., Psychology.

November 2, 2005

4. Dianne Bills, M.S. – Information Technology, GCCIS

R · I · T

Dianne P. Bills

Rochester Institute of Technology
B. Thomas Golisano College of Computing & Information Sciences
Department of Information Technology, Building 70-2123
102 Lomb Memorial Dr., Rochester, NY 14623-5608
(585) 475-6791 (v/tdd) (585) 475-2181 (fax)

Professional Background:

Dates	Position
1998 to present	Associate Professor Information Technology Department, RIT • Teaching faculty: programming and database concepts. • Graduate Program Coordinator, IT Department (2001 – present) • Associate Chair, IT Department (2000 – 2003) • IT Programming and Database Area Coordinator (1999 – 2003)
1995 to 1998	Adjunct Instructor Information Technology Department, RIT
1993 to 1998	Assistant Professor Business & Computing Technologies Support Department Center for Baccalaureate & Graduate Studies, NTID, RIT • Support faculty: teaching, tutoring, and advising deaf and hard-of-hearing students preparing for and matriculated in RIT's Information Technology and Computer Science programs. • Student recruiting and educational outreach for NTID/RIT
1989 to 1993	Assistant Professor Applied Computer Technology Department School of Business Careers, NTID, RIT • Teaching faculty (programming, computer operations, and information management concepts) and student advisor. • Micro-computer Specialist curriculum revision (1992): proposed revision; managed process through NY State approval; new hardware/networking lab: helped design, managed equipment procurement, and did initial equipment setup and testing. • Department Coordinator (3 years): handled student problems; course/faculty scheduling; degree auditing; student and employer recruiting; equipment purchases, installation, management and maintenance. • System administrator for IBM 9370 DOS/VSE teaching system: managed equipment and software purchases, installation and maintenance; arranged for equipment donations; provided faculty support.

1985 to 1989	Instructor, Applied Computer Technology Department, NTID, RIT
1983 to 1985	Visiting Instructor, Applied Computer Technology Department, NTID, RIT
1980 to 1983	Applications Programmer/Analyst Systems Development and Operation (SD&O), Management Services, NTID, RIT • Management and maintenance of Student Records System: system development/conversion (analysis, design, operations, and end-user support; project reporting and resource/ effort analyses) and maintenance (data collection, verification, updating, reporting, storage and backup). • Academic administrative and statistical programming support for: • Administrative reporting and Institutional Research, • Governmental reporting and federal funding hearings, • End-user questions and data analysis needs. • Managed programming coops.
1978 to 1980	Applications Programmer SD&O, Management Services, NTID, RIT
1976 to 1978	Junior Applications Programmer SD&O, Management Services, NTID, RIT

Professional Publications:

External:

- **Bills, D.**, "The Skills Operations Managers Look for in Employees, and the Opportunities and Changes They Expect in the Field of Computer Operations", The Computer Operations Manager, The Magazine of AFCOM - the International Association for Computer Operations Management, Volume 8, Issue 3, May/June, 1988.
- **Bills, D.**, "Providing Distributed Access to Student Data Through the Use of an Integrated Database System", NEAIR Conference Proceedings, 15th. Annual Conference, October, 1988.
- **Bills, D.**, Ferrari, J., Foster, S., Long, G., and Snell, K., "Making Postsecondary Classes Accessible to Deaf and Hard-of-Hearing Students: Research, strategies, and Practices, PEPNET '98 Conference Proceedings, April 29-May 2, 1998.
- Hill, L., **Bills, D.**, and Biles, J., "A Studio Model Approach to Teaching Introductory Object-Oriented Programming and Problem-Solving Using Java". In Proceedings of the 3rd Annual Conference for Information Technology Curriculum, Rochester, NY, Sept. 19-21, 2002.
- Weeden, E., **Bills, D.**, and Scarborough, G., "Lab Management Strategies for IT Database Curriculum". In Proceedings of the 4th Annual Conference on Information Technology Curriculum (Lafayette, IN, Oct. 16-18, 2003). ACM Press, New York, NY, 2003.
- Whittington, K., **Bills, D.**, and Hill, L., "Implementation of Alternative Pacing in an IT Introductory Programming Sequence". In Proceedings of the 4th Annual Conference on Information Technology Curriculum (Lafayette, IN, Oct. 16-18, 2003). ACM Press, New York, NY, 2003, 47-53.
- Whittington, K. and **Bills, D.**, "Alternative Pacing in an Introductory Java Sequence". In Proceedings of the ACM/Special Interest Group for Information Technology Education (Salt Lake City, UT, Oct. 28-30, 2004). ACM Press, New York, NY, 2004.

- **Bills, D.**, "Marketing Higher Education in Information Technology". In Proceedings of the ACM/Special Interest Group for Information Technology Education (Salt Lake City, UT, Oct. 28-30, 2004). ACM Press, New York, NY, 2004.
- **Bills, D.** and Biles, J., "The Role of Programming in IT." In Proceedings of the ACM/Special Interest Group for Information Technology Education (accepted for SIGITE 2005 Conference, Newark, NJ, Oct. 20-22, 2005). ACM Press, New York, NY, 2005.

Internal:

- **Bills, D.** and Shaffer, J., NTID Student Database System and User's Guide, 1987-89.
- **Bills, D.**, NTID Student Enrollment Projection System and User's Documentation, 1988.
- **Bills, D.**, "The Status of the Information Technology Graduate Programs & Student Flow Analysis", internal report (2003).

Presentations:

External:

- "Providing Distributed Access to Student Data Through the Use of an Integrated Database System", North Eastern Association for Institutional Research (NEAIR) Conference, Providence, RI, October, 1988.
- "Taking Advantage of Software Command Syntax to Become a Proficient Software User", North Eastern Association for Institutional Research (NEAIR) Conference, Pittsburgh, PA, October, 1989.
- "Education in Computers vs. Computers in Education", with L. Hillman, SUNY Computer, Language, and Literature Conference, SUNY Brockport, March, 1989.
- "Storing Infrequently Used String Variables", with J. Walter, Academic Conference for SPSS Users, Montreal, Canada, June, 1990.
- "The Conceptual Leap into Learning Computer Programming", with J. Mallory and D. Lange, New York State Engineering Technology Association Conference, Rochester, NY, April, 1993.
- "Education Needs for Careers in Computer Technology", poster session, ADARA Conference, San Francisco, CA, May, 1993. [deaf education]
- "Making Postsecondary Classes Accessible to Deaf and Hard-Of-Hearing Students: Research, Strategies, and Practice" with Dr. Susan Foster, et al, at the PEPNet '98: Empowerment Through Partnerships Conference of the Postsecondary Education Consortium, Postsecondary Education Programs Network, Orlando, FL, April 29 – May 2, 1998. [deaf education]
- "Preparing Students to Enter "High-Tech" Fields of Study" with Dr. Gerard Walter, 1998 Statewide Conference on Education of the Deaf, Arlington, Texas, July 29-31, 1998.
- "A Studio-Model Approach to Teaching Introductory Object-Oriented Programming and Problem-Solving Using Java" with Prof. L. Hill, Conference on Information Technology Curriculum III (CITC3), Rochester, New York, September, 2002.
- "What Every IT Professional Should Know about Databases" (panel discussion) with Profs. D. Kennedy, W. Stratton, and E. Weeden, Conference on Information Technology Curriculum III (CITC3), Rochester, New York, September, 2002.
- "Lab Management Strategies for IT Database Curriculum" with Prof. E. Weeden and G. Scarborough, Conference on Information Technology Curriculum IV (CITC4) Conference, Lafayette, Indiana, September, 2003.
- "Implementation of Alternative Pacing in an IT Introductory Programming Sequence" with Profs. K. Whittington and L. Hill, Conference on Information Technology Curriculum IV (CITC4) Conference, Lafayette, Indiana, September, 2003.

- "Success with Alternative Pacing in an Introductory Programming Sequence" with Prof. K. Whittington, Conference on Faculty-Student Partnerships in Teaching and Learning, SUNY/Geneseo, New York, May, 2004.
- "Alternative Pacing in an Introductory Java Sequence" with Prof. K. Whittington, ACM/Special Interest Group for Information Technology Education, Salt Lake City, UT, October, 2004.
- "Marketing Higher Education in Information Technology", ACM/Special Interest Group for Information Technology Education, Salt Lake City, UT, October, 2004.

Internal:

- "Success with a Studio-Model Approach to Teaching" with Prof. L. Hill, Faculty Institute on Teaching & Learning (FITL) Conference, RIT, Rochester, New York, May, 2003.
- "Improving Student Success with Alternative Pacing" with Prof. K. Whittington, Faculty Institute on Teaching & Learning (FITL) Conference, RIT, Rochester, New York, May, 2004.

Major Research and Scholarly Activities:

- "Mainstreaming Study for the [NTID] Computer Science and Information Technology Programs" with Prof. S. Foster et al, Center for Baccalaureate and Graduate Studies, National Technical Institute for the Deaf (NTID), RIT (1996-9).
- RIT Provost's Learning Innovations Grant, "Real-Time Voice-to-Text Trials for Perceptually Impaired Students" with Prof. S. Jacobs, Center for Baccalaureate and Graduate Studies, NTID, RIT (1997-8).
- "Student Success Factors in Introductory Programming" with Profs. M. Reek, E. Weeden, K. Whittington and E. Holden, GCCIS, RIT (ongoing from AY 2002-3).
- RIT Provost's Learning Innovations Grant, "Implementing Active Learning and Student Cohorts in the First Course of the IT Introductory Programming Sequence", with Profs. K. Whittington, E. Weeden, and E. Holden (7/2004 – 6/2005).

Selected Professional Development:

- Introduction to LANs Using Novell Netware, RIT/College of Business, June, 1994
- Netware 3.11 Advanced Systems Administration, RIT/College of Business, August, 1994
- Multimedia Workshop, RIT/Center for Digital Media, June, 1996
- Oracle 8 Database Administration, Oracle Education, August, 1999
- Oracle 8i Introduction to SQL and PL/SQL, Oracle Education, July, 2000
- Oracle 8i Backup and Recovery, Oracle Education, July, 2000
- Oracle 8i Performance and Tuning, Oracle Education, July, 2000
- The Disney Approach to People Management Program, Disney Corporation, Orlando, FL, May, 2000

Selected Relevant Consulting:

- Webster School District, Webster, NY; with Profs. S. Mason and T. Howles; helped to develop strategies for increasing the numbers of female students in the sciences (1999).
- Genesee County Village and Museum, Mumford, NY; modifications to and enhancements the functionality of their admissions database (2000); volunteer in support of educational programs (1993 on).

Professional Societies:

- Association for Women in Computing (AWC), Upstate New York Chapter
- ACM/SIGITE (previously the Society for Information Technology Educators (SITE))

IT Courses Taught:

4002-208	Introduction to Programming (C++)
4002-210	Programming with Classes (C++)
4002-212	Abstractions in Programming (C++)
4002-217	Programming for Information Technology I (Java)
4002-320	Introduction to Multimedia (tutored only)
4002-340	Computer Concepts and Software Systems
4002-341	Data Communications and Computer Networks (tutored only)
4002-342	Internetworking Lab (labs only)
4002-360	Introduction to Databases and Data Modeling
4002-402	OS Scripting Concepts (tutored only)
4002-461	Fundamentals of Data Modeling
4002-484/784	Multi-Client Server Database Configuration
4002-485	Fundamentals of DBMS Architecture and Implementation (labs only)
4002-486	Multi-Client Server Database Configuration (labs only)
4002-572	Macintosh Programming (C++)
4002-787	Database Performance and Tuning

Areas of Expertise:

- Computer systems: Windows NT 4.0/2000/95/98/2000/XP, UNIX/Linux, Apple PowerPC 7.5.x/OS 8, VAX/VMS VAXCluster, IBM 9370 DOS/VSE & OS, IBM 370 VM/CMS & 3083 OS/VS1/MVS, IBM 4331 DOS/VSE, PDP-11/70 (UNIX), IBM 370-148 OS/VS1, IBM 4341 VM/CMS, and Xerox Sigma-6 & 9.
- Computer languages: Visual Basic 4.0-6.0/.Net, Java, C++, SPSS, Pascal, COBOL, FORTRAN, BAL, Intel 8080/85 micro assembly, PDP-11/70 assembly, and APL.
- Familiar with academic administrative computing, database maintenance, statistical analysis, and student flow simulation.
- Skilled in manual communication for the deaf and hard-of-hearing.

Education:

• Master of Science in Computer Science	Rochester Institute of Technology Rochester, New York
• Bachelor of Arts in General Science (High Distinction)	University of Rochester Rochester, New York

5. Zack Butler, Ph.D. – Computer Science, GCCIS

Zack Butler

Curriculum Vitae

School Address:
Computer Science Dept.
Golisano College of Computing & Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Dr.
Rochester NY 14623
+1 585 582 1339

Home Address:
37 Maplewood Ave.
Honeoye Falls NY 14472
+1 585 582 1339

Research Interests:

Robotics, Distributed Systems and Algorithms, Modeling of Natural Systems, Sensor Networks

Education:

Carnegie Mellon University, Ph.D. in Robotics, September 2000

Thesis: "Distributed Coverage of Rectilinear Environments"
Advisor: Ralph Hollis

Alfred University, B.S. in Electrical Engineering, May 1994

Graduated summa cum laude (3.9/4.0)
Alfred University Scholar (honors degree)

Experience:

Assistant Professor, Computer Science, RIT, 2004-present

- Courses taught: CS1, CS2, CS3, Artificial Intelligence, Professional Communications
- Serving on Ph.D. committee for student at Univ. of Auckland.

Research Fellow, Institute for Security Technology Studies, Dartmouth College, 2003-2004

- Developed distributed algorithms for networks of mobile sensors to allow convergence toward events with guaranteed sensor coverage.
- Served on Ph.D. thesis committee of Robert Fitch (planning for self-reconfigurable robots)

Postdoctoral Research Associate / Lecturer, Computer Science, Dartmouth College, 2000-2003

- Courses taught: Artificial Intelligence, Mobile Robot Theory and Design
- Developed several distributed algorithms for self-reconfigurable modular robots along with correctness analysis as well as distributed hardware implementations.
- Collaborated with graduate students and faculty on path planning, goal recognition and self-repair for modular robots and development of novel MEMS devices for self-assembly.
- Supervised undergraduate honors thesis on planning under uncertainty.

Graduate Research Assistant, Robotics Institute, Carnegie Mellon University, 1994-2000

- Developed a distributed coverage algorithm that produces cooperative coverage without initial information or a central controller, for robots equipped only with contact sensing.
- Principally designed (electronics and mechanical design), directed fabrication of, assembled and tested a novel position sensor for planar linear motors capable of sub-micron resolution.
- Teaching Assistant for Mathematical Foundations for Robotics (graduate course).

Refereed Publications:

Z. Butler, "Motion-Constrained Mobile Sensor Networks", Int'l. Conf. on Advanced Robotics, 2005.

Z. Butler, P. Corke, R. Peterson and D. Rus, "Dynamic Virtual Fences for Controlling Cows", Int'l Symposium on Experimental Robotics (ISER), 2004.

Z. Butler, K. Kotay, D. Rus and K. Tomita, "Generic Decentralized Locomotion Control for Lattice-Based Self-Reconfigurable Robots," Int'l Journal of Robotics Research, 23(9), 919-938, Sept. 2004.

R. Fitch, Z. Butler and D. Rus, "In-Place Distributed Heterogeneous Reconfiguration Planning", Distributed Autonomous Robotic Systems (DARS) 2004.

Z. Butler, P. Corke, R. Peterson and D. Rus, "Virtual Fences for Controlling Cows", Int'l Conference on Robotics and Automation (ICRA), 2004.

Z. Butler and D. Rus, "Controlling Mobile Sensors for Monitoring Events with Coverage Constraints", ICRA 2004.

Z. Butler and D. Rus, "Event-based Control for Mobile-Sensor Networks," IEEE Pervasive Computing, 2(4), 34-43, 2003.

J. Aslam, Z. Butler, F. Constantin, V. Crespi, G. Cybenko and D. Rus, "Tracking a Moving Object with a Binary Sensor Network," ACM SenSys '03, Los Angeles, Nov. 2003.

R. Fitch, Z. Butler and D. Rus, "Reconfiguration Planning for Heterogeneous Self-Reconfiguring Robots", IROS 2003, Oct. 2003.

Z. Butler and D. Rus, "Distributed Motion Planning for 3-D Unit-Compressible Robots," Int'l Journal of Robotics Research, 22(9), 699-716, Sep 2003.

Z. Butler and D. Rus, "Distributed Locomotion Algorithms for Self-Reconfigurable Robots Operating on Rough Terrain," IEEE Symposium on Computational Intelligence in Robotics & Automation (CIRA), July 2003.

Z. Butler, R. Fitch and D. Rus, "Distributed Control for Unit-Compressible Robots", IEEE/ASME Trans. on Mechatronics, 7(4), 418-430, Dec 2002.

Z. Butler, R. Fitch and D. Rus, "Experiments in Distributed Control of Modular Robots", Experimental Robotics VIII (Proc. of Int'l Symposium on Experimental Robotics), Springer-Verlag, 2003.

Z. Butler and D. Rus, "Distributed Motion Planning for 3D Modular Robots with Unit-Compressible Modules," Workshop on the Algorithmic Foundations of Robotics), 2002.

Z. Butler, R. Fitch and D. Rus, "Experiments in Distributed Locomotion with Unit-Compressible Robots", Proc. of Int'l Conf. on Intelligent Robots and Systems (IROS), October 2002.

Z. Butler, S. Murata and D. Rus, "Distributed Replication Algorithms for Self-Reconfiguring Modular Robots", in Distributed Autonomous Robotic Systems 5, pp. 37-48, 2002.

Z. Butler, K. Kotay, D. Rus and K. Tomita, "Generic Decentralized Control for a Class of Self-Reconfigurable Robots", Int'l Conference on Robotics and Automation (ICRA), 2002.

Z. Butler, R. Fitch, D. Rus and Y. Wang, "Distributed Goal Recognition Algorithms for Modular Robots", ICRA 2002.

Z. Butler, S. Byrnes and D. Rus, "Distributed Motion Planning for Modular Robots with Unit-Compressible Modules," Proc. of Int'l Conf. on Intelligent Robots and Systems (IROS), October 2001.

R. Fitch, Z. Butler and D. Rus, "3D Rectilinear Motion Planning with Minimum Bend Paths," Proc. of Int'l Conf. on Intelligent Robots and Systems (IROS), October 2001.

Z. Butler, K. Kotay, D. Rus and K. Tomita, "Cellular Automata for Decentralized Control of Self-Reconfigurable Robots," ICRA 2001 Workshop on Modular Self-Reconfigurable Robots.

Z. J. Butler, A. A. Rizzi and R. L. Hollis, "Simulation and Experimental Evaluation of Sensor-Based Coverage in Rectilinear Environments," Experimental Robotics VII, pp. 417-26, Springer-Verlag, 2001. (Proceedings of 2000 Int'l Symposium of Experimental Robotics)

Z. J. Butler, A. A. Rizzi and R. L. Hollis, "Distributed Coverage of Rectilinear Environments," Proc. of the Workshop on the Algorithmic Foundations of Robotics, 2000.

Z. J. Butler, A. A. Rizzi and R. L. Hollis, "Cooperative Sensor-based Coverage of Rectilinear Environments," Proc. of IEEE Int'l Conference on Robotics and Automation, San Francisco, April 2000.

Z. J. Butler, A. A. Rizzi and R. L. Hollis, "Contact Sensor-based Coverage of Rectilinear Environments," Proc. of IEEE Int'l Symposium on Intelligent Control, Boston, Sept. 1999

J. Gowdy and Z. J. Butler, "An Integrated Interface Tool for the Architecture for Agile Assembly," Proc. of IEEE Int'l Conference on Robotics and Automation, Detroit, May 10-15, 1999

Z. J. Butler, A. A. Rizzi and R. L. Hollis, "Integrated Precision 3-DOF Position Sensor for Planar Linear Motors," Proc. of IEEE Int'l. Conference on Robotics and Automation, Leuven, Belgium, April 1998.

P. J. Berkelman, Z. J. Butler and R. L. Hollis, "Design of a Hemispherical Magnetic Levitation Haptic Interface Device," 1996 ASME IMECE, Atlanta, November, 1996.

R. L. Hollis, Z. J. Butler, A. A. Rizzi and A. E. Quaid, "Closed-Loop Planar Linear Motor with Integral Monolithic Three-Degree-of-Freedom AC-Magnetic Position/Orientation Sensor," U.S. Patent 6,175,169.

Papers Under Review:

Z. Butler, "Corridor planning for natural agents," submitted to ICRA 2006.

Professional Activities:

Reviewer for Int'l Journal of Robotics Research, IEEE Trans. on Robotics and Automation, IEEE Pervasive Computing, IEEE Trans. on Mobile Computing, WAFR, ICRA, IROS

Judge for FIRST Regional Competition: Hartford, CT, March 2003, Manchester, NH, March 2004, Rochester, NY, 2005.

Invited demonstration at Siggraph 2002 Emerging Technologies Exposition

Invited demonstration at WIHAVE (Workshop on Intelligent Human Augmentation and Virtual Environments), 2002.

Grants/Fellowships/Awards:

NSF grant [w/ D. Rus, MIT], "Computational Tools for Controlling Herds", 2005-08, $99K

ISTS Research Fellowship, 2003-04

NSF Graduate Research Fellowship, 1995-99

Alfred University Merit Scholarship (National Merit Scholar), 1990-94

Other Achievements:

Member, U.S. Puzzle Team, 1995-2002, 2005

Placed in top 3 at World Puzzle Championships, 1996, 1998, 1999, 2001

Helped U.S. Team to six championships

Crossword puzzle constructor, four puzzles published in the New York Times

All-American (honorable mention), Academic All-American (1st), USCSA Men's Ski Team, 1993 [NCAA Division III equivalent]

6. Warren Carithers, M.S. – Computer Science, GCCIS

Warren R. Carithers **Vita**

Addresses

22 Lattimore Road
Rochester, New York 14620
(585) 442-5139

Department of Computer Science
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, New York 14623-5608
(585) 475-5393

Personal Data

Date of Birth: February 23, 1956
Married, two children

Interests

Computer Organization and Architecture; Computer Graphics; Operating Systems; System Software; Programming Languages; Ethics; Privacy; Computer Security; Computers and Music.

Education

The University of Kansas, Lawrence, KS:

M.S. in Computer Science, October 1981. Thesis title: ''Static Evaluation Functions and the Game of Othello''. Advisor: Dr. Albert Bethke; Committee: Dr. Richard Hetherington, Dr. Zamir Bavel.

B.S. in Computer Science, May 1978.

The Hochstein Music School, Rochester, NY:

1990 - 1993: Music Theory, Classical Guitar
1998 - 2001: Voice
2002 - 2004: Composition, Piano

Employment

September 1981 to present: Department of Computer Science, Rochester Institute of Technology, 102 Lomb Memorial Drive, Rochester, NY 14623-5608

Current position: Tenured Associate Professor

January 1978 through May 1981: Assistant Instructor, Department of Computer Science, University of Kansas, Lawrence, KS, 66045

May 1979 through August 1979: Engineering Assistant, Language Software Products Division, NCR Corporation, 3718 N. Rock Road, Wichita, KS 67226

Activities and Honors

5/80	Inducted into the Computer Science honor society Upsilon Pi Epsilon
5/81	Recipient of Paul F. Heubner Teaching Award, University of Kansas
9/83 - 8/90	Advisor to RIT's Computer Science House
8/83 - 12/87	IEEE Computer Society member
5/76 - 4/89	Association for Computer Machinery (ACM) member
5/93	Recipient of the Eisenhart Award for Outstanding Teaching, RIT
5/95	Inducted into Phi Kappa Phi
8/01 - present	Member of ACM/SIGGRAPH
10/03 - present	Member of ACM and ACM/SIGCSE

Grants

1987	NSF-ILI grant: a workstation-based lab for Computer Graphics
1994	NSF DUE grant #9451123: Labs for an Object-Oriented Introductory CS Curriculum
1994	Sun Microsystems: color laser printers to support faculty and student work
1995	RIT Provost's Productivity Grant: curriculum revision

1999	FIPSE ''Ethics Across the Curriculum'' grant participant

Courses Taught at RIT

Program Design and Validation; Programming I - Algorithmic Structures; Programming II - Data Structures; Programming III - Design and Implementation; Assembly Language Programming; Computer Science 1, 2, 3, and 4; Introduction to Digital Design; Computer Organization; Systems Programming I and II; Programming Language Concepts; Digital Computer Organization; Data Organization and Management; Logical Design; Operating Systems I and II; Computer Architecture; Computer Graphics I and II; Language Processors; Privacy and Security; Seminar: Computers and Music; Seminar: Computers and Cryptography.

Consulting Activities

1982	C programming seminar series for Xerox
1982	RIT Sigma-9 to VAX[1] computer conversion project
1983, 1984	VAX assembly language courses for Kodak
1984	Advanced UNIX [2] seminar for Xerox
1984 - 1985	CCI PERPOS operating system conversion project
1985	PDP-11 assembly language course for Xerox
1986	UNIX and C seminar series for Rochester Products
1986 - 1988	UNIX consulting for Xerox
1988	UNIX seminar series for RIT's School of Engineering
1988 - 1993	Introductory C & Advanced C seminars (annually)
1989	C consulting for Sykes Datatronics, Rochester, NY.
1990	Advanced UNIX Programming at Xerox Corporation
1990	C seminar for Kodak
1993	Computer Security consulting, Academic Medical Center Consortium
1996	Computer Security consulting, Academic Medical Center Consortium

Professional Activities

Conferences Attended

ACM '80 Computer Science Conference, February 1980
Honeywell Large Systems Users Association (HLSUA) Forum XXXI, October 1980
ACM '81 Computer Science Conference, February 1981
ACM '82 Computer Science Conference, February 1982
ACM '82 General Conference, October 1982
USENIX Winter Conference, January 1984
ACM/SIGPLAN Symposium, Language Issues in Programming Environments, June 1985
USENIX Winter Conference, January 1986
ACM/SIGCOMM '86 Networking Conference, August 1986
5th FIRST Computer Security Incidence Handling Workshop, August 1993
RIT Community College Conference, 1995
8th FIRST Computer Security Incidence Handling Workshop, August 1996
ACM SIGGRAPH 2001 Conference, August 2001

Publications and Presentations

Contributor, ''Programming'' (Chapter 58), *Handbook of Modern Electronics and Electrical Engineering*, Charles Belove (ed.), 1986, John Wiley & Sons.

Review of *Systems Software:An Introduction to Systems Programming* for IEEE-Software, July, 1986.

Review of *The C Programming Language*, Second Edition, for IEEE-Software, September, 1988.

[1] DEC, VAX, and PDP are trademarks for Digital Equipment Corporation.

[2] UNIX is a registered trademark of The Open Group.

Review of *IDL: The Language and Its Implementation*, for IEEE-Software.

Colloquium, *Computer Music:A Survey and Some Goals*, with John A. Biles, presented at RIT on May 13, 1993.

Presentation, ''Implementation of a First Two Year Curriculum'', with Margaret M. Reek, RIT Community College Conference, 1995

Paper, ''Using System Call Analysis to Stop Evasion Attacks'', with Ashish Samant and Leon Reznik, 1st IEEE Upstate NY Workshop on Communications and Networking, 2004

Paper, ''Improved System Call Classification for Intrusion Detection'', with Ashish Samant and Leon Reznik, GCCIS Conference on Computing and Information Science, 2005

Software Development for Course Support

Developed a PDP-11 instruction-level simulator in for use in DCS' Assembly Language Programming course.

Developed a VAX-11 instruction-level simulator and a VAX Assembly Language assembler in for use in DCS' Assembly Language Programming course.

Maintained and extended a C++ class library of architecture components (originally developed by James Heliotis) for use in writing CPU simulators in DCS' Computer Architecture course.

Developing a MIPS R2000 assembler, linker, and instruction-level simulator for use in DCS' Computer Organization course.

I continue to maintain a number of software packages used by faculty for course support and account maintenance.

7. Deborah Coleman, M.S. – Information Technology, GCCIS

Deborah G. Coleman

31 Long Pond Road • Rochester, New York 14612 • (716) 227-6622 • dgc@it.rit.edu

EXPERIENCE HIGHLIGHTS

- Develop curriculum and teach graduate and undergraduate courses in Information Technology
- Experienced member of software development teams implementing software solutions using various processes, lifecycles, methodologies, and technologies in a variety of application domains
- Excel in requirements engineering using data, process, and object oriented methodologies for analysis and design of diverse business applications
- Improved organizational efficiency and data quality through the employment of business process analysis, data analysis, workflow analysis, and deployment of enterprise architecture solutions
- Managed software projects and teams in the role of project manager and functional manager
- JAD facilitator for large enterprise systems development projects

EMPLOYMENT

9/2001 – Present	*Assistant Professor* Golisano College of Computing and Information Sciences, IT Rochester Institute of Technology, Rochester, NY
9/2001 – 7/2002	*Enterprise Architecture Consultant* Xerox Corporation, Rochester, NY
2/2000 – 8/2001	*Data Architect* Xerox Corporation, Rochester, NY
9/2000 –5/2001	*Adjunct Professor* Rochester Institute of Technology, Rochester, NY
1998 – 2000	*Applications Manager* Unity Health System, ACM Medical Laboratories, Rochester, NY
1995 – 1998	*Data and Process Analyst* Paychex, Incorporated, Rochester, NY
1986 – 1995	*Assistant Director Information Services* Hillside Children's Center, Rochester, NY
1975 – 1985	*Technical Programmer* Eastman Kodak Company, Rochester, NY

EDUCATION

In-progress:	Ph.D, Information Systems, Nova Southeastern University, Ft. Lauderdale, FL
1997	MS, Software Development & Management, Rochester Institute of Technology, Rochester, NY
1994	BS, Computer Science, Empire State College, Rochester NY
1983	AAS, Computer Systems, Rochester Institute of Technology, Rochester, NY

SCHOLARSHIP

- (2005, May) Patterns and Practice: Data, Object, and Interface Design, Deborah Coleman, Carla Lorek, and Bill Murray. DAMA International Symposium, Wilshire Meta-Data Conference 2005.
- (2005, April 7) Conference presenter, Dimensions of Interactive Software Requirements: Synergistic Opportunity. SoutheastCon05, Ft. Lauderdale, Florida.
- (2005, April) Dimensions of Interactive Software Requirements: Synergistic Opportunity. SoutheastCon 2005. IEEE. Proceedings.
- Featured Speaker: Academe Meets Practice in Data Education, Deborah Coleman (2004, March), Upstate New York Data Management Association.
- (2004) FEAD Grant Recipient, Ph.D studies.
- (2003, October) Dynamic Enterprises Demand Advanced Curriculum in Software Development and Management Deborah Coleman & Steve Zilora, ACM Proceedings of the 4th annual conference on information technology curriculum.
- Presenter: "Dynamic Enterprises Demand Advanced Curricula in Software Development & Management" (2003, October). CITC4 Conference, Lafayette, Indiana,
- Software Development Management: Abilities, Expertise, and Styles (2002). Deborah Coleman & Donald Joy, Proceedings CITC3 Conference, Rochester, New York.
- Presenter: Software Development Management: Abilities, Expertise, and Styles. CITC3 Conference, Rochester, New York (October 2004).
- Deborah Coleman and Elissa Weeden, essay co-authors for the 2003 Woman in Computing Award given to Eydie Lawson (2003).
- Re-Engineering Information Systems: A Multi-Disciplinary Approach, Deborah Coleman (1994 & 1995) Clinical Technology Conference, Cambridge, MA.
- Re-Engineering Computer Information Systems, Deborah Coleman (1995) Institute on Mental Health Management Systems, Poughkeepsie, NY.
- Data Management Association (DAMA), Upstate New York Chapter, Vice President Education, 1998, 1999, 2000, 2002, 2003, 2004.
- Academic Reviewer (2003), Prentice Hall, Java How to Program, 4th and 5th edition.

Academic Achievement Awards

- 2003 Exemplary Teaching Award in Distance Learning
- Eisenhart Outstanding Teacher Award Nominee, RIT, 2000-2001 academic year

Academic Service

- Institute Graduate Council (2005)
- GCCIS College Curriculum Committee (2005)
- IT Graduate Curriculum Committee (2003, 2004)
- IT Governance Committee (2003, 2004, 2005, chair 2003)
- IT Graduate Futuring Committee (chair 2003, ad-hoc on-going)
- GCCIS & IT Women in Computing Committee & Sub-Committee: Explorer's program (2004)
- IT Department Organization Sub-Committee (2003)
- IT SD&M, Programming, & Database specialty groups (on-going)
- RIT Contributor: Global Outreach Education Whitepaper (2004), Wiley McKenzie
- RIT Distance Learning Teaching Award Selection Committee (2004)
- RIT Biomedical Computing Program, Medical Informatics Advisory Board member (2004)

Courses Taught

- 201 Freshman Seminar
- 217 Java Programming
- 461 Fundamentals of Data Modeling
- 710 Object Technologies
- 720 Data Object Development
- 725 Component Development
- 752 Themes in Software Development and Management
- 820 Economics of Software Development
- 821 Database Integration

New Course Development

- 752 Themes in Software Development & Management – contributing developer
- 461 Fundamentals of Data Modeling – contributing developer
- 821 Enterprise Data Architecture - developer
- xxx HCI Research Methods – developer (in-progress)
- Enterprise Architecture Concentration in SDM – contributing developer

Masters in IT Capstone Committees

- 10 completed as committee chair
- 5 completed as committee member

PROFESSIONAL DEVELOPMENT

Ph.D Coursework

(Through November 2005) Nova Southeastern University, Ft. Lauderdale, Florida.
Research Methods, Research Methods Project, Knowledge Management, Human-Computer Interaction, Human-Computer Interaction Project, Database Systems, Database Systems Project, The System Development Process, The System Development Process Project.

Seminars and training

Web Foundations (RIT) , Leadership Excellence and Practice (Xerox), Enterprise Architecture Development (Steven Spewak), Business Process Analysis (Brian Dickinson), Computer Systems Design (Brian Dickinson), Bachman Analyst (Bachman), Bachman Terrain (Bachman), Improving Project Management Skills (American Management Association), Joint Application Design for Information Systems (Ed Brochu, Bachman), Total Quality Management (Hillside Childrens Center), Peer Reviews (Xerox), Requisite-Pro Requirements Management (Xerox), Oracle 7 application development suite of tools (Oracle), Information Quality Improvement (Larry English), Zachman Framework and Enterprise Architecture (John Zachman), Essential Data Modeling (Alec Sharp), Common Model and Data Warehousing (Michael Brackett), Use cases: Creating a software engineering culture: Karl Wiegers,, XML and Corporate Portals (Peter Aiken), Information Engineering (Clive Finklestein), Enterprise Modeling for CIM Systems Architect: An OO approach (Delvin Grant), Enterprise-wide Data Warehouse Development (Allan Kolber).

Software Tools

Microsoft Office Automation Software, Microsoft Project, Data modeling tools: Bachman, Cayenne, ERwin, Visible Analyst, EasyCase; Object modeling tools: Rational Rose, TogetherSoft Control Center; Database: dBase III & IV, Access, Oracle, Informix, MySQL, Programming languages: several 3GL and 4GL languages, Operating systems: XP, Windows, DOS, UNIX, OS400; Miscellaneous software: front-end database reporting tools, web development tools, Photoshop, html and text editors.

8. Christopher Egert, Ph.D. – Information Technology, GCCIS

Christopher A. Egert, Ph.D.
Curriculum Vitae
December 5, 2005

Information Technology Department • B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology • 102 Lomb Memorial Drive • Rochester, NY 14260-2000
Office: (585) 475-4873 • Fax: (585) 475-2181 • E-mail: cae {*at*} it.rit.edu • Web: http://www.it.rit.edu/~cae

EDUCATION

Ph.D., Computer Science and Engineering, September 2003, University at Buffalo (SUNY)
Minor in Digital Media (Department of Media Study/Department of Music)
Dissertation: ***The Integrated Online Seminar System: An Architecture and Implementation of a Media-Centric Environment for Web-Based E-Learning***
Advisor: Deborah K. W. Walters

M.S., Computer Science, November 1993, Rochester Institute of Technology
Concentrations: Programming Languages and Parallel Computing
Master's Project: ***Parallel Computing Libraries and Servers for Distributed SUN Systems***
Advisor: Andrew T. Kitchen

B.S., Computer Science, June 1990, Rochester Institute of Technology
Concentrations: Operating Systems and Networking
Minor in Computer/Electrical Engineering Technology

RESEARCH INTERESTS

Computer Mediated Communication, Entertainment Technology, Computer Supported Cooperative Work, Computer Supported Collaborative Learning, Web Technologies, Computing Education, Operating Systems Design and Implementation, Distributed Systems, Desktop Virtual Reality, Behavior-Based Robotics and Agents, Embedded Systems, and Computer-Human Interaction

PROFESSIONAL EXPERIENCE

9/2004-present	**Assistant Professor**, Information Technology Department B. Thomas Golisano College of Computing and Information Sciences Rochester Institute of Technology (Rochester, NY) Responsible for teaching courses and performing basic research within the Interactive Media (IM) group.
1/2004-6/2004 8/2000-6/2003	**Visiting Lecturer/Adjunct Instructor**, Dept. of Computer Science and Engineering University at Buffalo (Buffalo, NY) Taught small and large enrollment courses in operating systems, introductory computer programming, computer organization, and programming languages. Also supervised numerous independent study students.
1/2004-6/2004 1/2003-6/2003	**Adjunct Instructor**, Department of Media Study University at Buffalo (Buffalo, NY) Taught graduate and undergraduate sections of a course in server-side web Programming.

6/1999-8/1999	**Professional Development Short Course Instructor**, Department of Media Study University at Buffalo (Buffalo, NY) Taught a small enrollment short course in interactive multimedia application development. The course was targeted for corporate clients located in the Buffalo area.
6/1998-8/1998, 6/2001-8/2001, 6/2002-8/2002	**Summer Course Instructor**, Millard Fillmore College University at Buffalo (Buffalo, NY) Taught both small and medium enrollment courses in computer literacy.
2/1992-present	**Software Consultant**, INTROTECH (North Tonawanda, NY) Developed custom software solutions and database systems for public and private sector clients.
11/1989-8/1990	**Software Engineer**, ASYST Software Technologies (Rochester, NY) Designed and implemented DOS and AT&T System V device drivers for data acquisition peripherals.
6/1988-11/1988	**Software Engineer**, Moore Research Center (Grand Island, NY) Designed and implemented an API for shared memory communications between Motorola VME and IBM PC systems for large-scale print systems.

ADDITIONAL EXPERIENCE

8/1997-6/2000	**Graduate Assistant**, Department of Media Study University at Buffalo (Buffalo, NY)
8/1994-6/1997	**Teaching Assistant**, Department of Computer Science University at Buffalo (Buffalo, NY)
6/1984-12/2001	**Program Supervisor/Program Leader** North Tonawanda Youth Center North Tonawanda Department of Youth, Recreation, and Parks (North Tonawanda, NY)

AWARDS

2005	*Best Paper Award*, CCSE Eastern Conference Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1*",* *Eastern Conference of the Consortium for Computing Sciences in Colleges,* New Rochelle, NY, In Press, October 14-15, 2005
2001	*Excellence in Teaching Award*, University at Buffalo
1998	Received a *"Best Paper" Award*, WebNet 1998 Flanagan, M. and Egert, C., "The Course Submission System: Providing Seminars on the Web", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, Orlando, FL, pp. 313-317, November 7-12, 1998

JURIED- AND PEER-REVIEWED JOURNAL AND CONFERENCE FULL PUBLICATIONS

1. Decker, A., Ventura, P., and Egert, C., "Through the Looking Glass: Reflections on Using Undergraduate Teaching Assistants in CS1", *The Technical Symposium on Computer Science Education,* Houston, TX, In Press, March 2006

2. Bierre, K., Ventura, P., Phelps, A., and Egert, C., "Motivating OOP by Blowing Things Up: An Exercise in Cooperation and Competition in an Introductory Java Programming Course", *The Technical Symposium on Computer Science Education,* Houston, TX, In Press, March 2006

3. Phelps, A., Egert, C. and Bierre, K., "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students", *Frontiers in Education,* Indianapolis, IN, In Press, October 19-22, 2005

4. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1*", Eastern Conference of the Consortium for Computing Sciences in Colleges,* New Rochelle, NY, In Press, October 14-15, 2005

5. Ventura, P., Egert, C., and Decker, A., "Ancestor Worship in CS1: On the Primacy of Arrays", *Conference on Object Oriented Programming Systems Languages and Applications (OOPSLA) Educators Symposium*, Vancouver, British Columbia, Canada, October 24-28, 2004

6. Egert, C., Flanagan, M., and Walters, D., "Web Based Collaboration for Introductory Programming Courses", *Proceedings of the International Conference on Engineering Education*, Taipei, Taiwan, http://www.ineer.org/Events/ICEE2000/ Proceedings/papers/WB4-1.pdf, August 14-16, 2000

7. Egert, C., Flanagan, M. and Walters, D., "Extending IOS's Collaboration via Web-Enabled Whiteboards", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, San Antonio, TX, pp. 158-161, October 30-November 4, 2000

8. Walters, D. and Egert, C., "Can Considerations of Learning Styles Improve Web-Based Learning?", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, San Antonio, TX, pp. 961-962, October 30-November 4, 2000

9. Flanagan, M. and Egert, C., "Courseware Quality and the Collaborative Classroom: Implementing IOS Courseware to Generate Seminar Style Interactions", *IMEJ, The Interactive Multimedia Journal of Computer-Enhanced Learning*, 2(1), http://imej.wfu.edu/articles/2000/1/06/index.asp, April, 2000

10. Walters, D., Egert, C., and Cuddihy, E., "Learning Styles and Web-based Education: A Quantitative Approach", *Proceedings from the 9th Annual FACT Conference on Instructional Technology*, Buffalo, NY, pp. 115-117, May 30-June 1, 2000

11. Flanagan, M. and Egert, C., "Assessing the Success of Seminars on the Web", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, Honolulu, HI, pp. 382-386, October 25-28, 1999

12. Smith, N., Egert, C., Cuddihy, E., and Walters, D., "Implementing Virtual Robots in Java3D using a Subsumption Architecture", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, Honolulu, HI, pp. 975-980, October 25-28, 1999

13. Cuddihy, E., Egert, C., Song, Y., and Walters, D., "Criteria for VRML-based Tools Supporting Intelligent Agents and Their Environments", *AAAI-98 Workshop on Software Tools for Developing Agents*, Madison, WI, pp. 115-116, July, 27,1998

14. Flanagan, M. and Egert, C., "The Course Submission System: Providing Seminars on the Web", *Proceedings of the AACE World Conference on the WWW and the Internet (WebNet)*, Orlando, FL, pp. 313-317, November 7-12, 1998

15. Hexmoor, H., Egert, C., and Cuddihy, E., "A Fair Judge of Learning: Experiments with a Robot Manipulator Using a Pen", *Robolearn-97 Workshop Proceedings at Florida Artificial Intelligence Research Society Conference (FLAIRS-97)*, Daytona Beach, FL, 1997

JURIED- AND PEER- REVIEWED CONFERENCE EXTENDED ABSTRACTS

1. Phelps, A. and Egert, C., "Educational Practices for Technology Students in Entertainment Domains*", American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005

2. Egert, C., Ventura, P., and Decker, A., "Putting the 'Fun' Back in Fundamentals: Using Games to Teach Object-Oriented Design Early*", American Society for Engineering Education St. Lawrence Section Conference,* Binghamton, NY, 2005

EDITOR-REVIEWED TRADE PUBLICATIONS

1. Phelps, A. and Egert, C., "A Balrog in the Browser*", Director Online,* http://director-online.com/buildArticle.php?id=1160, October, 2005

SUBMITTED JURIED- AND PEER- REVIEWED PAPERS PENDING REVIEW

1. Vullo, R., Egert, C., and Bogaard, D., "Molly: Bringing Back Simplicity to Web Site Development and Web Research", *Submitted to WWW20006-WebEng*, 2006

INVITED TALKS / PRESENTATIONS

1. Egert, C., "Awareness and Notification in Collaborative E-Learning Environments", *1st Annual B. Thomas Golisano College, Rochester Institute of Technology's Conference on Computing and Information Sciences,* Rochester, NY, January 21, 2005

2. Egert, C., "Design and Implementation of Linux Device Drivers for Robotic Control Systems", *Guest Speaker – University at Buffalo Seminar Series for Machine Learning and Agent Development* (Moderator: Henry Hexmoor), Buffalo, NY, January 1997

CONFERENCE WORKSHOPS

1. Phelps, A., Egert, C., Bierre, K., and Parks, D., "An Open-Source CVE for Programming Education: A Case Study*", The 32nd International Conference on Computer Graphics and Interactive Technologies (SIGGRAPH),* Los Angeles, CA, July 31-August 5, 2005

TECHNICAL REPORTS

1. Egert, C., "The Integrated Online Seminar System: An Architecture and Implementation of a Media-Centric Environment for Web-Based E-Learning", *Ph.D. Dissertation,* Buffalo, NY, September 2003

2. Egert, C., "Parallel Libraries and Servers for Distributed SUN Systems", *RIT Master's Degree Project Document,* Rochester, NY, November 1993

GRANT SUBMISSIONS AND AWARDS

1. "Web based Collaborative Learning for Improving Freshman Level Programming Courses", University at Buffalo Educational Technology Center "Ed-Tech" Grant (grant supervised by Deborah Walters, Advisor), Summer 1999, $3,300 – Status: Awarded

RESEARCH GROUP MEMBERSHIPS

2005-present	M.U.P.P.E.T.S. Research Team, Rochester Institute of Technology
2005-present	Lab for Social Computing, Rochester Institute of Technology
2003-present	Innovations in Computing Education Virtual Research Group
2003-present	tiltfactor.org Virtual Research Group
1997-2000	Integrated Digital Explorations in the Arts and Sciences (IDEAS) Center, University at Buffalo
1995-1997	GLAIR Robotics Lab, University at Buffalo

RESEARCH PROJECTS

1998-present **Integrated Online Seminar System**
Dissertation Research Platform
Knowledge Media Lab/IDEAS Center, University at Buffalo (1998-2004)
Computer Mediated Experiences Group, Rochester Institute of Technology (2004-present)
Designed and implemented a media-centric, web-based collaborative e-learning environment for my dissertation research. The system overcomes several technical limitations inherent to traditional text-based collaborative systems when media content is the focus of communication. At a technical level, the system provides solutions for the submission, integration, and presentation of multimedia content within the e-learning environment. The system also provides asynchronous tools for the non-destructive editing of submitted media content as part of the collaborative process. At a social level, the system provides flexible indicators for identity, awareness, and notification. At a usability level, the system solves problems with session management and provides a framework for client and server-based usability data capture.

1999-present **Multimedia-Enabled Online Assessment Environment**
Knowledge Media Lab/IDEAS Center, University at Buffalo
Designed and implemented a flexible system for administering online psychological and educational assessments. The system allows researchers to generate XML-based tests, which can incorporate media content and media interactions as part of the assessment process. The system also provides support for automating the processing and presentation of collected experimental data.

The system facilitated online experiments to determine whether web-based learning could be enhanced by matching visual and aural multimedia content to a student's perceived and measured learning style. In addition, the system also allowed for the creation of several online interactive experiments designed to determine the effect of different user interfaces upon interactions within a 3D virtual desktop environment. Finally, the system facilitated the administration of critical thinking and comfort level assessments. A faculty member at UB utilized the system as a means for studying predictors for success within the introductory computer science course.

1999 **Pixel Flicker Visualization System for Neural Network Data**
Knowledge Media Lab/IDEAS Center
Designed and implemented a multimedia application for visualizing medical (stroke patient) neural net data. The application utilizes human perceptual sensitivity to color and motion, allowing users to quickly identify and segment interesting neural network regions within a multi-dimensional dataset.

1998 **Behavior-Based Robot Simulation**
Knowledge Media Lab/IDEAS Center
Developed an educational system designed to teach students how to implement large-scale systems in Java3D and to demonstrate an object-oriented approach to behavior-based robotic design. The system was also utilized as a prototype for further research into the design and implementation of robotic platforms for landmine removal (the UXO remediation project).

1997-1998 **Virtual Environment Support Architecture for Cognitive Agents**
IDEAS Center/Collaboration with members of the SNePS research group
Developed and implemented an architecture and communication protocol between a SNePS (Semantic Network Processing System) cognitive agent and a VRML environment. The system served as a basis for several research initiatives into the investigation of cognitive agent support for simulation and entertainment purposes.

1997 **Device Driver Implementation for Penny Robot**
GLAIR Robotics Lab
Designed and implemented Unix character device drivers and support libraries for controlling a stationary desktop robotic arm. The development effort was part of a larger initiative to create a testing platform for numerous machine-learning algorithms.

INTERDISCIPLINARY COLLABORATION

2004-2005 **Six Circles (Technical Director)**
Collaboration with Mary Flanagan (Hunter College)
Six Circles is a turn-based, Internet game in which the players explore issues of cooperation and competition by constructing geometric objects. The game belongs to the genre of entertainment pieces known as "serious games", which explore important issues beyond fun. *Six Circles* was commissioned to explore HIV awareness as well as raise funds for creation of an HIV Education Center in the township of Khayelitsha, South Africa. Contributions as technical director include the design of the game engine and the drag and drop interaction system for game play. *Six Circles* opened at Artists' Space, SOHO NYC in December 2004.

1999-2004 **Phage and Collection (Technical Director)**
Department of Media Study – Collaboration with Mary Flanagan
Phage and *collection* are digital art pieces for personal computers. Both applications scan a user's personal computer for media content, including images, video, text, and sound. After processing, the applications present the user with the results in the form of a dynamic, spatialized, three-dimensional world. The pieces are designed to model and expose the representation of the private relationship with the computer to the public. Whereas *phage* is a stand-alone art piece, *collection* provides a networked performance. Contributions as technical director included the design and implementation of the scan algorithm, the visualization algorithm, and the development of a communications protocol for media content. *Phage* and *collection* have been shown at a number of digital art exhibitions. *Phage* has been mentioned in *Newsweek Online* and *Collection* has been exhibited as part of the *Whitney Museum of American Art Biennial Exhibition* (March 8-May 26, 2002) exhibition as well as the *Guggenheim* exhibition entitled *Seeing Double: Emulation in Theory and Practice* (March 18-May 26, 2004).

1997-2000 **Multi-User Virtual Environments for Narrative Spaces (Technical Director)**
Department of Media Study – Collaboration with Mary Flanagan
Designed and implemented a series of multi-user VRML environments for use in narrative art exhibitions, including *The Perpetual Bed* and *Matsu:goddess.* For each piece, the multi-user technology had to support interactions atypical of traditional multi-user VRML worlds. In *The Perpetual Bed,* users engaged in chat conversations in which the text became a persistent part of the 3D virtual world. In *Matsu:goddess,* the system supported interactions in which digital "offerings" were included within the online world. Both pieces challenged traditional notions of user interface and interactivity supported by VRML world browsers. Both pieces where shown at numerous art exhibitions.

1997-2000 **Physical Environments for Narrative Spaces (Technical Director)**
Department of Media Study – Collaboration with Mary Flanagan
Designed and implemented a series embedded systems solutions for narrative and performance art pieces that required physical interactions between a participant and computing devices. Art pieces included *Corporate Ladder* and *Career Moves.* In *Corporate Ladder,* the installation required use of a proximity system such that a user's location with respect to the installation controlled the

presentation of the work. In *Career Moves*, an embedded system controlled game play interactions between the user and the installation.

1997-2000, 2005 ***The Adventures of Josie True*** **(Technical Director/Game Engine Architect)**
Department of Media Study – Interdisciplinary team lead by Mary Flanagan
The *Adventures of Josie True* project is a web-based historical adventure game targeted for girls ages 9-11. The project's goal is to provide participants with fun activities designed to support the development of math and science skills. The project also provides girls with historical role models that demonstrate important contributions to society and culture made by women. The *Josie True* project was an interdisciplinary effort consisting of over 30 digital artists, illustrators, computer scientists, web developers, educators, and interface designers. Technical director responsibilities included the initial development of the game engine architecture as well as training members of the programming team. *The Adventures of Josie True* received NSF funding and has been profiled in both the *Chronicle of Higher Education* and the *NY Times*.

TEACHING

Completed Capstone/Thesis Students at the Rochester Institute of Technology (Fall 2004 – present)

Student	**Supervised Research or Project** **(MA = Masters Committee Advisor, MC = Masters Committee Member**
Filler, Daniel	Automated Book Publishing: An Automated Layout System for Self-Publishing *(MA Winter Quarter 20042 – Summer Quarter 20044)*
Wijaya, Rossiani	Web-based test scoring and results delivery system for Rochester Institute of Technology *(MA Winter Quarter 20042 – Fall Quarter 20051)*

Current Capstone/Thesis Students at the Rochester Institute of Technology (Fall 2004 – present)

Student	**Supervised Research or Project** **(MA = Masters Committee Advisor, MC = Masters Committee Member**
Bernhardt, Matthew	Mouse tracking enhancements to the Molly website system *(MC Fall Quarter 20051 – Present)*
Chriscaden, Christine	Mathquest *(MA Summer Quarter 20044 – Present)*
Costino, Carlo	Game Engine Architecture for Time-Based Media Authoring Platforms *(MA Fall Quarter 20051 – Present)*
Gamin, Michael	MMORPG Community *(MA Fall Quarter 20051 - Present)*
Gritmon, Jennifer	A Usability Study of an Online Parent/Teacher Collaborative Environment *(MA Fall 20051 - Present)*
Milizia, Peter	Dynamic Reputation Manager for Multiplayer Game Environments *(MC Fall Quarter 20041 - Present)*
Morse, James	Increasing Social Capital within Ecumenical Organizations using Virtual Community-building Techniques *(MA Fall Quarter 20051 – Present)*
Revello, Michael	Generating Illuminated Textures Using Photon Mapping *(MC Winter Quarter 20042 – Present)*
Serbonich, Amy	The Pet Shelter: Find a pet. Meet a pet. Adopt a pet. *(MC Summer Quarter 20044 – Present)*
Stanley, Cher	Nude Descending a Staircase: An Interactive Narrative *(MC Summer Quarter 20044 – Present)*

Supervised Independent Study Students at the Rochester Institute of Technology – (Fall 2004 – present)

Student	Supervised Research or Project
Dolan, Joe	Investigation of Technical and Social Design Issues in Blogging Software *(Spring Quarter 20043)*
Kirshner, Adam	RTF/XML Processing for On-Demand Document Publication *(Summer Quarter 20044)* Server Side Programming *(Fall Quarter 20051)*
Sujan, Mehak	Investigation of new server side technologies for Tomcat *(Winter Quarter 20042)*

Multi-Institutional Student Service while at the Rochester Institute of Technology – (Fall 2004 – present)

Student	Supervised Research or Project OR – Outside Reader / Outside Evaluator for Student work [Advisor and Institution listed], OC – Outside Collaborator for Multi-Institutional Work [Advisor and Institution Listed])
Haydenek, Sara	Simple Physics and Collision API for Introductory Programming Students *(OC Fall 2004 – Spring 2005 University at Buffalo Carryover: Adrienne Decker)*
Rufe, Ken	Evaluation of JOGL for Simulation and Game Programming *(OC Spring 2005 University at Buffalo Carryover: Adrienne Decker)*

Supervised Students at the University at Buffalo – (Fall 2000 – Spring 2004)

Student	Project (IS = Registered Ind. Study, TR = Registered Ind. Study Team Research, SP = Supervised Projects)
Aghareza, Ali	"Resume on Demand" Web Services for Mobile Technologies using .NET *(SP Summer 2002)*
Baker, Christopher	Game Engine Architecture and Implementation *(IS Spring 2003, IS Spring 2004)*
Broklawski, Marc	2D Graphics Programming for Visualization Systems *(IS Spring 2001)*
Dukhon, Marina	Interdisciplinary Study of Desktop Virtual Reality User Interfaces *(TR Fall 2000 – Spring 2001)*
Haydanek, Sara	Preliminary Investigative Studies *(IS Spring 2004)*
Mann, Nicholas	Interdisciplinary Study of Desktop Virtual Reality User Interfaces *(TR Fall 2000 – Spring 2001)*
Rindfleisch, Timothy	Game Engine Architecture and Implementation *(IS Spring 2003)* 2D Physics API for Computer Science Education *(IS Fall 2002)*
Skulski, Jonathan	Extending the BSD File System to Support File Revision Control *(IS Spring 2004)*
Szymanski, Joseph	Visualizing Classical IPC Problems using Lego-based Robotics *(SP Fall 2002)*
Thomas, Melissa	Operating Systems Design and Implementation *(IS Spring 2002)*
Toy, Jason	Game Engine Architecture and Implementation *(IS Spring 2004)*
Wiesemann, Michael	Design and Implementation of Web-based Psychological Testing Platforms *(SP Spring 2002)*
Wilson, Zachary	Interdisciplinary Study of Desktop Virtual Reality User Interfaces *(TR Fall 2000 – Spring 2001)*
Zehler, Aaron	Game Engine Architecture and Implementation *(IS Spring 2004)*

Courses Taught at the Rochester Institute of Technology

Quarter	*Course*	*Division*	*Class Size*
Winter 20052	Independent Study (4002-899)	Graduate	2
Winter 20052	HCI1: Human Factors (4002-425)	Undergraduate	35
Winter 20052	Interactive Digital Media (4002-330)	Undergraduate	31
Fall 20051	Independent Study (4002-599)	Undergraduate	1
Fall 20051	Game Engine Design and Development (co-taught)	Ugrad/ Grad	4/3
Fall 20051	Web Database Integration (4004-751)	Graduate	5
Fall 20051	Interactive Digital Media (4002-330)	Undergraduate	31
Spring 20043	Independent Study (4002-899)	Graduate	1
Spring 20043	Web and Database Integration (4004-751)	Graduate	26
Spring 20043	Introduction to Programming for New Media I (4002-230)	Undergraduate	15
Winter 20042	Independent Study (4002-599)	Undergraduate	1
Winter 20042	Interface Design (4002-426)	Undergraduate	31
Winter 20042	Interactive Digital Media (4002-330)	Undergraduate	13
Fall 20041	Web and Database Integration (4004-751)	Graduate	12
Fall 20041	Interactive Digital Media (4002-330)	Undergraduate	32

Courses Taught at the University at Buffalo

Session	*Course*	*Class Size*	*Teaching Asst.*
Spring 2004	Server-Side Web Programming: Advanced Web Site Design and Implementation (DMS456/DMS612)	22 (ugrad/grad)	0
Spring 2004	Independent Study (CSE499)	5	0
Spring 2004	Introduction to Programming Languages (CSE305)	51	2
Spring 2004	Introduction to Computer Programming I (CSE113B/C)	49/66	3
Spring 2003	Server-Side Web Programming: Advanced Web Site Design and Implementation (DMS456/DMS612)	11 (ugrad/grad)	0
Spring 2003	Independent Study (CSE499)	2	0
Spring 2003	Computer Organization (CSE341)	58	2
Fall 2002	Independent Study (CSE499)	2	0
Fall 2002	Introduction to Computer Programming I (CSE113)	81	2
Summer 2002	Introduction to Computer Literacy (CSE101)	23	0
Spring 2002	Independent Study (CSE499)	1	0
Spring 2002	Introduction to Operating Systems (CSE421)	44	3
Fall 2001	Introduction to Operating Systems (CSE421)	56	2
Summer 2001	Introduction to Computer Literacy (CSE101)	25	0
Spring 2001	Introduction to Operating Systems (CSE421)	37	1
Spring 2001	Independent Study (CSE499)	4	0
Fall 2000	Introduction to Operating Systems (CSE421)	73	2
Fall 2000	Independent Study (CSE499)	4	0
Summer 1999	Short Course – Adv. Macromedia Director	5	0
Summer 1998	Introduction to Computer Literacy (CSE101)	48	0

Teaching Assistantships at University at Buffalo

Session	*Course*	*Class Size (approx.)*	*Course Type*
Spring 1997	Introduction to Operating Systems (CS521)	60	Graduate
Fall 1996	Language Processors / Compilers (CS443)	20	Undergraduate/Graduate
Fall 1996	Great Ideas in Computer Science I (CS111)	150	Undergraduate
Spring 1996	Computer Architecture (CS506)	50	Graduate
Fall 1995	Introduction to Operating Systems (CS521)	50	Graduate
Spring 1995	Great Ideas in Computer Science II (CS112)	100	Undergraduate
Fall 1994	Introduction to Computer Literacy (CS101)	100	Undergraduate

CURRICULAR DEVELOPMENT

4/2005-present Co-author of the "Masters Degree in Game Design and Development" degree proposal document with Andy Phelps, Stephen Jacobs, Jessica Bayliss, Joe Geigel, and Nan Schaller

11/2004-present CME (IM) Group Committee lead to develop a CME(IM)/HCI track for the "Masters in Human Computer Interaction" degree program

Rochester Institute of Technology – MS HCI Degree Interactive Media Track Courses Developed

1/2005	4004-802	Perspectives on Computer Mediation (Primary Author)
1/2005	4004-804	Building Tools for Creative Practice (Co-Author)
1/2005	4004-806	Innovation, Invention, and Computer Mediated Experience (Co-Author)

Rochester Institute of Technology – MS Game Design and Development Courses Developed

10/2005	4002-793	Business and Legal Aspects of the Game Development (Co-Author)
9/2005	4002-792	Development Processes in the Games Industry (Co-Author)
9/2005	4002-887	Capstone Design – MS Game Design and Development (Co-Author)
9/2005	4002-888	Capstone Development – MS Game Design and Development (Co-Author)
1/2005	4002-836	Game Engine Design and Development (Primary Author)
10/2004	4002-790	Emerging Themes in Entertainment Technology (Primary Author)

Rochester Institute of Technology – Interactive Media Courses Revised

9/2004-2/2005 Participated in the redesign efforts of 4002-330 (Interactive Digital Media) as part of overall redesign effort. Helped with introduction of ActionScript 2.0 coding as standard practice for these students.

9/2004-11/2005 Primarily responsible for curricular revisions to 4004-751 (Web Database Integration). Expanded content included integration of non-browser Clients, MVC frameworks, and ORM database management as well as administrative tasks for the web author.

SERVICE

International/National Conferences

2003-2005	Paper Reviewer – SIGCSE Technical Symposium on Computer Science Education

Book Reviews

2005	Reviewer – Prentice Hall Introductory Programming Title
2005	Reviewer – Prentice Hall Human Computer Interaction Title

Rochester Institute of Technology – Departmental Service

9/2005-present	Member – Graduate Curriculum Committee

University at Buffalo – Departmental Service

1/2004-4/2004	Member – Undergraduate Teaching Assistant (UTA) hiring committee
1/2000-1/2001	Member – "Crashlab" deployment group and steering committee

University at Buffalo – General

1998	Consultant – techARTS (arts and technology program for girls) program

PROFESSIONAL AFFILIATONS

Association for Computing Machinery (ACM) and its special interest groups:
- SIGCHI – Computer-Human Interaction
- SIGCSE – Computer Science Education
- SIGITE – Information Technology Education
- SIGGRAPH – Computer Graphics and Interactive Techniques

9. Joseph Geigel, D.Sc. – Computer Science, GCCIS

JOE GEIGEL
CURRICULUM VITAE

CONTACT INFORMATION

Work	Rochester Institute of Technology Department of Computer Science 102 Lomb Memorial Drive Rochester, NY 14623-5608 USA	E-Mail	jmg@cs.rit.edu (work) joe@jogle.com(personal)
		Web page	http://www.cs.rit.edu/~jmg
		Telephone	+1-585-475-2051 (work)

EDUCATIONAL BACKGROUND

Year	*Degree*	*University*	*Major*
2000	D.Sc.	George Washington University, Washington DC	Computer Science
1985	M.S.	Stevens Institute of Technology, Hoboken, NJ	Computer Science
1983	B.S.	Manhattan College, Bronx, NY	Mathematics (Computer Science)

EMPLOYMENT HISTORY

Dates	*Title*	*Organization*	*Department*
12/01-present	Assistant Professor	Rochester Institute of Technology Rochester, NY	Computer Science
01/00-12/01	Senior Web Technologist	BroadwayOnLine.com New York, NY	Information Technology
01/97-12/99	Research Scientist	Eastman Kodak, Co. Rochester, NY	Imaging R&D
7/94-12/96	Research Programmer	Pittsburgh Supercomputing Center Pittsburgh, PA	Biomedical Research Initiative
9/91-6/94	Graduate Research Assistant	George Washington University Washington, D.C.	Computer Science
5/92-9/92	Research Intern	Bellcore Morristown, NJ	Research & Development
9/90-9/91	Software Consultant	AT&T Bell Laboratories Whippany, NJ	Government Systems
9/85-9/90	Lead Engineer	Harris Semiconductor/RCA-GE Solid State Somerville, NJ	Design Automation
9/83-6/85	Graduate Teaching Assistant	Stevens Institute of Technology Hoboken, NJ	Mathematics

ACADEMIC EXPERIENCE

Rochester Institute of Technology

2001-Present Teaching Courses in Computer Graphics, Introductory Programming in Java and C++, and Computer Science Theory

GWU Graphics Group

1995-2000 Designed and implemented a model for the simulation of the photographic development process for use on computer generated images.
Advisors: Dr. F. Kenton Musgrave, Dr. John Sibert

1991-1994 Performed research in functional sound synthesis as it relates to the generation of soundtracks for computer generated animations
Advisor: Dr. James Hahn

Pittsburgh Supercomputing Center

1994-1996 Responsible for design and development of software tools for visualization, search, and analysis of protein structure and sequence databases. Also responsible for making these tools available via the Internet
Supervised by: Dr. David Deerfield II

New York University

1988-1990 As part of an Independent Study, Implemented a stochastic, point-spattering renderer that creates charcoal and pastel-like images
Advisor: Dr. Ken Perlin

Stevens Institute of Technology

1983-1985 Taught recitations in Mathematics (Calculus, Differential Equations). Also designed and taught an intersession course on *Programming Methods Using FORTRAN.*

INDUSTRY EXPERIENCE

BroadwayOnLine.com

2000-2001 Designed and developed theatre related networked applications using the latest Internet Technologies. Emphasis on 3D graphics and database processing

Eastman Kodak Co.

1997-1999 Performed research in the area of indexing, analysis and use of multimedia content in storytelling systems with emphasis in audio analysis, speech recognition, and albuming technologies.

Kodak representative for MPEG Multimedia Standards Committee.

1997-1998 Responsible for definition, design, and implementation of a software framework, based on the FlashPix file format, for defining interactive images.

Bellcore

Summer 1992 Developed a general, distributed GUI system for a computer network simulation tool.

AT&T Bell Laboratories

1990-1991 Responsible for maintenance and enhancements of software tools used in the creation and simulation of dataflow graphs used in digital signal processing.

RCA Solid State / GE Solid State / Harris Semiconductor

1985-1990 Responsible for the specification, design, implementation, and support of SARA, an INGRES based system that automates the creation of job files for IC mask production. The task involved close interaction with the users as well as technical supervision of a contract programmer.

RESEARCH SUMMARY

Computer Graphics

- **Image Synthesis Based on Photographic Principles**

  Publications:

  - Joe Geigel and Nan Schaller, "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics*, 29(2) pp 257-265, April 2005.
  - Joe Geigel and Nan C. Schaller, "Virtual Photography – A Framework for Teaching Image Synthesis", Educators program from the 31st annual conference on Computer graphics and interactive techniques, August 2004.
  - Joe Geigel, "Tone Reproduction for Computer Graphics Using Photographic Principles", *Doctoral Dissertation*, The George Washington University, Department of Computer Science, Washington, DC 20052, May, 2000
  - Joe Geigel and F. Kenton Musgrave, "A Model for the Simulation of the Photographic Development Process on Digital Images", *Computer Graphics (SIGGRAPH 97 Proceedings)*
  - Joe Geigel and F. Kenton Musgrave, "Simulated Photographic Development of Synthetic Images" (technical sketch) , *SIGGRAPH 96 Visual Proceedings,* pg 152.

  Presentations:

  - Joe Geigel, "A media based framework for tone and color reproduction in Computer Graphics", RIT CS Colloquium Series, November 4, 2004.
  - Joe Geigel,"Rethinking Digital Photography: Beyond 24 Bit RGB", IEEE 2004 Western New York Image Processing Workshop, September 2004.
  - Joe Geigel, "Tone Reproduction for Computer Graphics Using Photographic Principles", RIT CS Colloquium Series, February 17, 1999
  - Joe Geigel, "Photographic Tone Reproduction ", Cornell Program of Computer Graphics, March, 1999

Mutimedia

- **Automatic Album Page Layout Using Genetic Algorithms**

  Publications:

  - Joe Geigel and Alexander Loui, "Using Genetic Algorithms for Album Page Layout", *IEEE Multimedia*, Vol 10, No. 4, Oct-Dec 2003, pp 16—27
  - Joe Geigel and Alexander Loui, "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging 2001*, January 21-26, 2001
  - Joseph M. Geigel and Alexamder Loui, "System and Method for Automatic Layout of Images in Digital Albums, US Patent Pending, Dec 2000

  Presentations:

  - Joe Geigel, "Genetic Album Pages: Evolving Personalized Page Layout For Visual Content", RIT CS Colloquium Series, November 5, 2002.

- **Functional Sound Synthesis for Computer Generated Animations**

  Publications:

  - J.K. Hahn, J. Geigel, J.W. Lee, L. Gritz, T. Takala, and S. Mishra, "An Integrated Approach to Sound and Motion*", Journal of Visualization and Computer Animation*, Volume 6, No. 2, pp 109-123, 1995.
  - J.K. Hahn, L. Gritz, R. Darken, J. Geigel, J.W. Lee, "An Integrated Virtual Environment System", *Presence*, Vol 2, No 4, Fall 1993, pp 353-360.
  - T.Takala, J.K. Hahn, L. Gritz, J.Geigel, J.W. Lee, "Using Physically Based Models and Genetic Algorithms for Functional Composition of Sound Signals, Synchronized to Animated Motion", *International Computer Music Conference*, Tokyo, Sept 10-15, 1993.

  Technical Reports:

  - Hesham Fouad and Joe Geigel, The Virtual Audio Server Programmer's Guide, The George Washington University, Institute for Information Science and Technology, GWU-IIST-96-18, September, 1996.

  Animations:

  - J.K. Hahn, L. Gritz, J. Geigel, J.W. Lee, T.Takala, "Timbre Trees" (computer animation), *SIGGRAPH Video Review*, Issue 93, 1993.

Virtual Reality

- **Virtual Theatre**

  Publications:

  - Joe Geigel and Marla Schweppe, "What's the Buzz?: A Theatrical Performance in a Virtual Space", *Advancing Computing and Information Sciences*, Cary Graphics Arts Press, Rochester, NY, 2005, in press.
  - Joe Geigel and Marla Schweppe, "Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", Educators program from the 32nd annual conference on Computer graphics and interactive techniques, Los Angeles, CA, August 2005.
  - Joe Geigel and Marla Schweppe, "Theatrical Storytelling in a Virtual Space" , *ACM Workshop on Story Representation, Mechanism and Context*, New York, NY, October 2004, 39 - 46.

  Grants:

  - Joe Geigel and Marla Schweppe, "Virtual Theatre: An art and technology collaboration", RIT Provost Learning Innovation Grant, 2004-2005, $7500

- Joe Geigel, "Virtual Theatre – Creation of a Distributed VR Performance Space", RIT GCCIS FEAD Grant, 2004-2005, $5000.

- **3D Seating Charts for Theatre**

  On-Line References:

  - *Robert Viagas*, "Theatre.com Expands 21st Century Broadway Seat Locator", *BroadwayOnLine.com*, December 19, 2000, http://www.broadwaytv.com/news/public/newsbrief.asp?newsid=10059

Bioinformatics

- **PsdbView: visualization of Protein Structure**

  Publications:

  - Deerfield II, D.W., Holland-Minkley, A.M., Geigel, J., Nicholas Jr, H.B., "Classification of the Environment of Protein Residues*", J. Prot Chem.* 16:441-447, 1997.

  On-Line References:

  - David W. Deerfield II, Joe Geigel, "The Protein Structure Databases (PSdb)", http://www.psc.edu/~deerfiel/PSdb/PsdbPaper/PSdb.html

User Interfaces

- **Distributed GUI Design**

  Publications:

  - Yi-Bing Lin and Joe Geigel, "A Graphical User Interface for Network Simulation", *The Journal of Systems and Software*, Volume 36, pp 181-190, February 1997.
  - Dennis Mok, Dan Daly, Joe Geigel, Krishna Kant, Yi-Bing Lin, and Victor Mak, "COPS: A Computer Operations Performance Simulation System", *IEEE 26th Annual Simulation Symposium*, April 1993.

PUBLICATION SUMMARY BY YEAR

2005 Joe Geigel and Marla Schweppe, "What's the Buzz?: A Theatrical Performance in a Virtual Space", *Advancing Computing and Information Sciences*, Cary Graphics Arts Press, Rochester, NY, 2005, in press.

Joe Geigel and Marla Schweppe, "Virtual Theatre: A Collaborative Curriculum for Artists and Technologists", Educators program from the 32nd annual conference on Computer graphics and interactive techniques, Los Angeles, CA, August 2005.

Joe Geigel and Nan Schaller, "Using Photography as a Metaphor for Teaching Image Synthesis", *Computers and Graphics*, 29(2) pp 257-265, April 2005

2004 Joe Geigel and Marla Schweppe, "Theatrical Storytelling in a Virtual Space" , *ACM Workshop on Story Representation, Mechanism and Context*, New York, NY, October 2004, pp 39-46.

Joe Geigel and Nan C. Schaller, "Virtual Photography – A Framework for Teaching Image Synthesis", Educators program from the 31st annual conference on Computer graphics and interactive techniques, August 2004.

2003 Joe Geigel and Alexander Loui, "Using Genetic Algorithms for Album Page Layout", *IEEE Multimedia*, Vol 10, No. 4, Oct-Dec 2003, pp 16—27

2001 Joe Geigel and Alexander Loui, "Automatic Album Page Layout Using Genetic Algorithms for Electronic Albuming", *Proceedings of Electronic Imaging 2001*, January 21-26, 2001

2000 Joseph M. Geigel and Alexamder Loui, "System and Method for Automatic Layout of Images in Digital Albums, US Patent Pending, Dec 2000

Joe Geigel, "Tone Reproduction for Computer Graphics Using Photographic Principles", *Doctoral Dissertation*, The George Washington University, Department of Computer Science, Washington, DC 20052, May, 2000

1997 Joe Geigel and F. Kenton Musgrave, "A Model for the Simulation of the Photographic Development Process on Digital Images", *Computer Graphics (SIGGRAPH 97 Proceedings)*

Deerfield II, D.W., Holland-Minkley, A.M., Geigel, J., Nicholas Jr, H.B., "Classification of the Environment of Protein Residues", *J. Prot Chem.* 16:441-447, 1997.

Yi-Bing Lin and Joe Geigel, "A Graphical User Interface for Network Simulation", *The Journal of Systems and Software*, Volume 36, pp 181-190, February 1997.

1996 Joe Geigel and F. Kenton Musgrave, "Simulated Photographic Development of Synthetic Images" (technical sketch) , *SIGGRAPH 96 Visual Proceedings*, pg 152.

Hesham Fouad and Joe Geigel, The Virtual Audio Server Programmer's Guide, The George Washington University, Institute for Information Science and Technology, GWU-IIST-96-18, September, 1996.

1995 J.K. Hahn, J. Geigel, J.W. Lee, L. Gritz, T. Takala, and S. Mishra, "An Integrated Approach to Sound and Motion", *Journal of Visualization and Computer Animation*, Volume 6, No. 2, pp 109-123, 1995.

1993 J.K. Hahn, L. Gritz, R. Darken, J. Geigel, J.W. Lee, "An Integrated Virtual Environment System", *Presence*, Vol 2, No 4, Fall 1993, pp 353-360.

T.Takala, J.K. Hahn, L. Gritz, J.Geigel, J.W. Lee, "Using Physically Based Models and Genetic Algorithms for Functional Composition of Sound Signals, Synchronized to Animated Motion", *International Computer Music Conference*, Tokyo, Sept 10-15, 1993.

Dennis Mok, Dan Daly, Joe Geigel, Krishna Kant, Yi-Bing Lin, and Victor Mak, "COPS: A Computer Operations Performance Simulation System", *IEEE 26th Annual Simulation Symposium*, April 1993.

TEACHING EXPERIENCE

Course Instructor

University	*Course*	*Term-Year*
Rochester Institute of Technology	4003-232: Computer Science 2	W 2003, W2002, Sp 2002
	4003-233: Computer Science 3	F 2003
	4003-334: Computer Science 4	F 2003, Sp 2003, F2002
	4003-380: Introduction to CS Theory	F 2004, F 2003, Sp 2002, F 2002
	4003-571/4005-762: Computer Graphics II (*)	W 2004, F 2004, Sp 2004, W 2002, W 2001, Su 1999
	4003-572/4005-763: Computer Animation – Algorithms & Techniques (*)	W2004, W 2003, Sp 2003
	4003-590/4005-769: Virtual Theatre (*)	Sp 2005, Sp 2004
Stevens Institute of Technology	Programming Methods Using FORTRAN.(*)	W 1984

(*) Indicates course that I designed

Teaching Assistant

University	*Course*	*Term-Year*
Stevens Institute of Technology	Calculus I	F 1984, F 1985
	Differential Equations	Sp 1984, Sp 1985

MS Project/Thesis Advisor

Role	*Student*	*Project/Thesis Title*	*Completed*
Chair	Usman Alim	Lattice Boltzmann Model for the Visual Simulation of Smoke	On-going
Chair	Dennis Colburn	Cg Translator for RenderMan shaders	On-going
Chair	Raun Krisch	Real Time Photographic Tone Reproduction for Computer Graphics	On-going
Chair	Yi-Ping Lin	Reducing Time for Rendering Computer Animation: Using Frame Coherence with Multi-processors	On-going
Chair	Benjamin Miller	Dynamic Handling of Falls in Real-time	On-going
Chair	Michael Murdoch	Nonverbal Vocal Interface For Graphical Navigation	On-going
Chair	Todd Newell	Scripting Interface to the Molecular Biology Toolkit	On-going
Reader	Michael Lucyshyn	Rendering of Polynomial Surfaces Using Recursive Ray Tracing and Linear Pixel Shuffling	8/2005
Chair	Ryan Becker	Genetic Music	8/2005
Chair	Patrick W. Henstebeck	Web-Based 3-D Theatre Seating Charts and Ticket Reservation Application	5/2005

Reader	Jiexing Wang	The Rendering of Realistic Clouds using Procedural Approaches	5/2005
Observer	Mary Skalicky	Advanced Feature Extraction for Automatic Annotation of Images	4/2005
Chair	Greg Beauchesne	Realtime Volumetric Illustration	12/2004
Reader	Yong Han	The Synthesis and Rendering of Realistic Grassland Scenes	11/2004
Chair	Katherine Law	Emotion in Flocking Models	06/2004
Reader	Xiao Wang	NPRender, a Non-Photorealistic Image Renderer	09/2003
Observer	Sarah Reilly	ISTAR: Out of the Digital Shoebox – A Digital Image Storage and Retrieval System	05/2002
Reader	Robert Gougher	The Virtual Darkroom for Lightwave 3D	05/1999

Graduate Independent Studies Sponsored

Student	*Independent Study Title*	*Quarter*
Usman Alim	Visualization of Smoke	Fall 2003
Katherine Law	Volumetric Effects in Computer Graphics	Fall 2003
Benjamin Miller	Investigation of Subsurface Scattering	Spring 2003

Undergraduate Independent Studies Sponsored

Student	*Independent Study Title*	*Quarter*
Jon Heise	Networking Support for Virtual Theatre	Spring 2005
Roget Thiede	QT C++ Toolkit Presentation	Spring 2005
Chris Galinski	Realtime Ocean Wave Simulation	Winter 2004
Joshua Jasne	DirectX/Game-Programming	Winter 2004
Scott Douglas	Open GL Shader Language	Fall 2004
Kevin Lee	Non-Photorealistic Rendering Techniques	Fall 2004
Eli Tayrien	Real time physics simulation	Fall 2004
Derek Brinkman	Music Driven Animation, LOD, and Physics Engine Implementation	Winter 2003
Jon-Michael Porter	Audio Programming in DirectX for Games	Winter 2003
Roger Thiede	Using QT to rewrite a CS4 Project	Fall 2003
Lomax Escarmant	Construction of a UT Cave (continuation)	Fall 2003
Jason Bentley	Cell Lighting & Outlining	Fall 2003
Aleksandra Misyulya	Construction of a UT Cave	Summer 2003

Joshua Jasne	Particle System Effects	Summer 2003
Ian Reardon	3D Terrain Modeling Using Direct X	Fall 2002
Jason Bentley	Advanced Particle Systems and Physics Simulation	Spring 2002
Derek Brinkman	Advanced Earth and Sky Modeling in Computer Graphics	Spring 2002
Antonio Lenzo	Human Head and Hair Study in OpenGL	Spring 2002
Ian Reardon	Advanced Object Modeling and Loading	Spring 2002
Jason Repko	Light Field Rendering	Spring 2002

PROFESSIONAL SERVICE AND ACTIVITIES

Standards Activities

Kodak representative for MPEG-7, 1998-1999.

Conference Committee Activities

Participant in SIGGRAPH Curriculum Workshop, SIGGRAPH 2003, San Diego, July 26, 2003

Participant in SIGGRAPH Curriculum Workshop, SIGGRAPH 2004, Los Angeles, August 7, 2004.

Participant in SIGGRAPH Curriculum Workshop, SIGGRAPH 2005, Los Angeles, July 30, 2005.

Reviewer

Paper Reviewer for Journal of Electronic Imaging

Paper Reviewer for *IEEE Systems, Man and Cybernetics*

Book Reviewer for Morgan-Kauffman Computer Graphics Series

Course Reviewer for SIGGRAPH 2004 and SIGGRAPH 2005.

Paper Reviewer for SIGGRAPH 2005.

University/College/Department Committees

Member, Computer Science Department Introductory Course Sequence Committee, 2001-2004

Member, Computer Science Department Special Interest Group in Graphics, 2002-present

Member, Computer Science Department Ad Hoc Assessment Committee, 2003-present

Head of Graphics Cluster, Computer Science Department, Graduate Faculty, 2003-present

Member, Computer Science Department Curriculum Committee, 2001-2002, 2004-2005

Member, Computer Science Department Ad Hoc Committee on Curricular Issues, 2005-present

Member, GCCIS Computer Science Chair Search Committee, 2005-present

Memberships and Activities in Professional Societies

Member, ACM, 1985-present. Member of SIGGRAPH

Member, IEEE Computer Society, 2000-present

ON-LINE MUSINGS

Theatre

- **OnBroadway WWW Information Pages** – creator and maintainer, 1994-2001
- **Jogle's Favorite Theatre Related Resources** – creator and maintainer, 1994-2001

Music

- **Rec.music.misc Best of Polls** – organizer and maintainer, 1988 -1997

10. Anne Haake, Ph.D. – Information Technology, GCCIS

Curriculum Vitae

ANNE REEVES HAAKE, Ph.D.

Place of Birth:	Rochester, New York
Citizenship:	U.S.A.

EDUCATION

Colgate University	B.A.	Biology	1979
University of South Carolina	M.S.	Developmental Biology	1981
University of South Carolina	Ph.D.	Developmental Biology	1985
Rochester Institute of Technology	M.S.	Software Development & Management	1999

PROFESSIONAL TRAINING AND EXPERIENCE

1-5/1986	Instructor: Biology, University of South Carolina, Columbia, South Carolina
9/90 - 3/91	Adjunct Faculty in Biology, Rochester Institute of Technology
6/1986 -6/92	Instructor and Fellow of Dermatology, University of Rochester, Rochester, New York
7/92-6/93	Senior Instructor of Dermatology, University of Rochester, Rochester, New York
7/93-7/00	Assistant Professor of Dermatology, University of Rochester, Rochester, New York
7/96-7/00	Assistant Professor of Oncology in Dermatology University of Rochester Cancer Center
9/98-7/00	Adjunct Assistant Professor of Biomedical Engineering, University of Rochester, Rochester, NY
3/00-5/00	Adjunct Professor in Information Technology, Rochester Institute of Technology, Rochester, NY
9/006/-05	Assistant Professor in Information Technology, Rochester Institute of Technology, Rochester NY
12/02-04	Adjunct Faculty in Biological Sciences, Rochester Institute of Technology
7/05-present	Associate Professor in Information Technology, Rochester Institute of Technology

HONORS AND AWARDS

Summa Cum Laude, Phi Beta Kappa, Colgate University
Charles A. Dana Scholar, Colgate University

1983	Best Paper Award-First Place 25th Southeastern Developmental Biology Conference
1984	Best Paper Award-Second Place South Carolina Academy of Science
1985	Best Paper Award-First Place, South Carolina Academy of Science
1992	Resident/Fellow Award for Best Research Presentation, Eastern Regional Society for Investigative Dermatology

PROFESSIONAL ACTIVITIES & GRANTS

1986-87	Dermatology Foundation Fellowship Award/Herbert Laboratories Fellowship Human Fetal Skin Development, University of Rochester, $25,000

1987-88	Dermatology Foundation Fellowship Award/The Upjohn Company Fellowship, Human Fetal Skin Development, University of Rochester, $25,000
1989-92	Training Program in Dermatological Research
1992-97	Principal Investigator NIH FIRST (R29) Award "Regulatory Role of RA Gene Networks in Human Fetal Skin", $316,576
1993-95	Co-Principal Investigator "Monoclonal antibodies to Human Epidermis" NIH-USPHS R01 Competitive Research Grant, Lowell Goldsmith, M.D., PI, $512,244
1993-99	Co-Principal Investigator "Molecular Basis of Darier's Disease" NIH-USPHS R01 Competitive Research Grant, Lowell Goldsmith, M.D.,PI, $587,785
1994-95	Co-Principal Investigator Development of In Vitro Models for Skin Disorders of Cornification Bausch and Lomb Research Grant, $12,000 with Sophie Worobec, MD
1995-96	Principal Investigator: Is Dermal Papilla Cell Death a Major Disease Mechanism in Alopecia Areata? Research Grant National Alopecia Areata Foundation, $22,000
1996-97	Principal Investigator: Is Dermal Papilla Cell Death a Disease Mechanism in Alopecia Areata: In Vivo Studies Research Grant National Alopecia Areata Foundation, $10,000
1997-98	Principal Investigator NIH/NIAMS Research Grant "Molecular Basis for Darier's Disease" $189,946
1996-98	Principal Investigator Rochester Area Pepper Center Pilot Project EF-1alpha in Human Skin Aging $12,000
	Senescence and Apoptosis in the Skin: In Vivo and In Vitro -$8,500
11/01	Attendee- Computational Genomics Conference, Baltimore, MD
8/01	Participant-Techniques in Bioinformatics and Comparative Genomics Workshop BioPharmaceutical Technology Center Institute, Madison, WI
10/27/01	Participant: Industrial Advisory Board for Bioinformatics. Rochester Institute of Technology
2001	Contributor to Bioinformatics Program Curriculum Proposal
1/02	Attendee- Practical Tools For Innovation:O'Reilly Bioinformatics Technology Conference.
2/02-2/03	Co-PI: National Science Foundation CCLI award. "Bioinformatics Computing: An Exportable Curriculum" Gary R. Skuse, Ph.D., PI.
6/02-12/02	Co-PI: GCCIS FEAD grant. "Research and Development of Notes on Cognitive Psychology with an IT Perspective" with Evelyn Rozanski, Ph.D.
6/02	Co-PI: National Science Foundation Bioinformatics Workshop Supplement Award, Gary R. Skuse, PI,$36,754
8/02	Participant: Computational Approaches to Analyzing Gene Expression Data Workshop BioPharmaceutical Technology Center Institute, Madison, WI
8/02;7/03	Instructor: Bioinformatics Workshop for Educators. Rochester Institute of Technology
7/1/03	Co-PI: Provost's Learning Innovations Grant, RIT, "An Innovative Learning Environment for Usability Testing" $4450
7/1/03-6/30/04	Co-PI: RIT Faculty Development Grant: "Development of a Draft for Book on the Integration of Cognitive Psychology with Computing",$7,000
9/1/03-6/30/06	Co-PI: Xerox University Affairs Grant: "Eye Tracking to Enhance Usability Testing", $60,000.
9/1/03-6/30/04	Co-PI: RIT Laboratory for Applied Computing Seed Grant: "Eye-Tracking the Learnability of Edutainment Interfaces", Ph.D., $14,000.

6/2004	Instructor: Usability Professionals Association Tutorial, "Eye Tracking: Ready for the Usability Toolbox". 13th Annual Conference, Minneapolis, MN
9/2004	Instructor: Human Factors & Ergonomics Society Conference Workshop, "Eye Tracking: Ready for the Usability Toolbox". New Orleans, LA
4/2005	Instructor: CHI2005 Tutorial, "Eye Tracking Demystified: Application to HCI Usability Evaluation", Portland, OR, April 2005 (tutorial accepted 9/2004).
6/2005	Instructor: Usability Professionals Association Tutorial, "Eye Tracking: Ready for the Usability Toolbox". 14th Annual Conference, Montreal Canada
9/2005	Instructor: Human Factors & Ergonomics Society Conference Workshop, "Eye Tracking: Ready for the Usability Toolbox". Orlando, FL
8/2004-present	Co-Author, "Computing in Bioinformatics", textbook under contract with McGraw-Hill Higher Education.
9/05-present	Principal, EyesOnUsability, LLC.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

Society for Developmental Biology: past member
Society for Investigative Dermatology: past member
Usability Professionals Association: current member
Association for Computing Machinery: current member
SIGCHI: current member

TEACHING ACTIVITIES

Teaching Assistant: Univ. of South Carolina Department of Biology 1979-1985
Prepared Laboratory Lectures and Materials; Supervised Laboratory Exercises and Instruction for Undergraduate Biology and Nursing School Majors
Courses: Introductory Biology I and II, Microbiology, Anatomy, Cell Biology, Biochemistry, Embryology, Histology

Lecture Instructor: Introductory Biology I; University of South Carolina, Spring 1986
Prepared Syllabus, Lecture Materials and Exams; Lectured to Undergraduate Biology students

Adjunct Faculty: Rochester Institute of Technology
Tissue Culture; Fall and Winter Quarters, 1990-1991
Prepared lectures, exams and delivered lectures to undergraduate Biology and Biotechnology Students

Lecturer to Dermatology Residents: UR School of Medicine and Dentistry, 1987 –2000
Topics: "Human Fetal Skin Development"; "Basic Science-Skin"; "Function of Retinoids in Epidermal Biology" "The Search for the Darier's Disease Gene" "Patched Gene in BCNS" "Apoptosis Role and Regulation"

Lecturer to Second Year Medical Students: "Role of Apoptosis in Skin Biology", 1994

Lecturer to Surgery and ENT Residents: "Normal and Abnormal Skin Anatomy and Pathophysiology; Basic Science Approaches" 1994, 1995

Laboratory Instructor in Histology of the Skin: Medical Students, UR School of Medicine and Dentistry Fall, 1992, 1996-1999

Lecturer: Toxicology Graduate Program Toxicology 521-Organ Systems, 1996-1999.

Guest Lecturer in Cell Biology: Biology Department, University of Rochester, Spring 1997

Instructor: Paper Reading Sessions University of Rochester

Cell Biology	1998-2000
Biomedical Engineering	1999-2000

Mentor for High School Career Exploration Program:

Jigar Tartaria, Student
Fairport High School Internship Program 1998

Adjunct Faculty, Department of Information Technology
Rochester Institute of Technology, Spring 2000
Course: Human Factors in Information Systems

Assistant Professor Dept. of Information Technology
Courses: Human Factors in Information Systems, Interface Design, Programming for Information Technology 1 (Java), Freshman Seminar, Foundations of HCI (graduate)

Adjunct Faculty, Department of Biology
Rochester Institute of Technology, Winter 2001
Course: Introductory Developmental Biology

Adjunct Faculty, Department of Biology
Rochester Institute of Technology, Winter 2002/2003, Spring 2003/2004
Course: Introduction to Bioinformatics Computing, Advanced Bioinformatics Computing

ADVISOR OF UNDERGRADUATE/GRADUATE/POST GRADUATE RESEARCH

Advisor of Medical Student Dermatology Research Elective
Richard Dow 10/3/90-11/20/90

Research Advisor and Master's Thesis Committee Member: Christin Alexander, B.S., M.S (Dept. of Biology, SUNY Brockport). 1992-1994

Mentor: Howard Hughes Summer Fellowship Karissa Wright-1997

Advisor of Undergraduate Research: Advantage Scholars Summer Internship Program
1993-97 (Mana Mosammaparast, James Fryer, Ronela Codreanu, Esther Lim)

Mentor: Biology Dept. Undergraduate Independent Study -Esther Lim-1996-97

Mentor: Undergraduate Independent Study in Biology -Elizabeth Tong 1998-1999

Mentor: Undergraduate Independent Study in Biology – Dev Patwa 1999-2000

Mentor: Postdoctoral Fellowship-Corinne Ferraris, Ph.D., 1994-95

Advisor: Undergraduate Independent Study in Information Technology-Tiesa Nika Smith, 2001

Advisor: Undergraduate Independent Study in Information Technology-Ryan Bateman, 2004

GRADUATE COMMITTEES

1994-2000	Member, Dermatology Training Grant Committee
1994-2000	Member, Department of Biochemistry Ph.D. Thesis Committee
1997-99	Member, Department of Microbiology & Immunology Ph.D. Thesis Committee
1999-2000	Member, Department of Environmental Medicine, Ph.D. Thesis Committee
1999-2000	Member, Department of Experimental Pathology, Ph.D. Thesis Committee
Completed	Member, M.S.I.T. Committee; Jeannie Christiansen Thesis Title: "Telemedicine Applications at the University of Rochester Medical Center Strong Memorial Hospital and a Practical Implementation in conjunction with the New York State Department of Corrections."
Completed	Member, M.S.I.T. Committee; Yael D. Agriss. Thesis Title: "Synchronous communication tools: enablers for deaf/ hard of hearing people".
Completed	Member, M.S.I.T. Committee; Vera Berenbaum Thesis Title: "The Effect of Software Requirements Analysis on Quality Management, Project Success and Product Success."
Completed	Member, M.S.I.T. Committee; Carol Inglese Project Description : Cycle Buddy Application": a database-driven website to support women undergoing in vitro fertilization treatments".
Completed	Chair, Member, M.S.I.T. Committee; Chin-Rang Yang

	Project Title: An Internet Disease Diagnostic Application Based on Gene Expression Patterns of DNA Microarrays
2001-present	Chair, M.S.I.T. Committee; Kui Shao (Merck) Project Title: A Database-Based Retrieval System of Transmembrane Domain Positions and Sequences of G-Protein Coupled Receptor
Completed	Member, M.S.I.T. Committee; Rohit Nehete Project Title: Mobile Banking Application
Completed	Member, M.S.I.T. Committee; Bryan D. French Project Title: Succession Planning System and Human Resources Intranet
Completed	Chair, M.S.I.T. Committee; Josephine Lim (Cisco) Project Title: A Study On The Impact Of Information Technology On Mass Customization—An Evolving Trend And Effective Strategy For Companies Who Want To Be Successful In The E-Business Arena.
2002-present	Member, M.S.I.T. Committee; Qinghu Ren (University of Rochester) Project Title: A Website for Customer Oligonucleotide Synthesis Contains Web-Integrated Database, Bioinformatics Tools and Database Search Engine.
Completed	Member, M.S.I.T. Committee; Diane Daniels Project Title: Using Multimedia in Educational Applications
2002-present	Member, M.S.I.T. Committee; Lana Pinchman Thesis Title: Web Sites Adaptivity Technologies and Guidelines
Completed	Member: M.S.I.T. Committee; Kate Thompson Project Title: Remote Usability Testing
Completed	Member: M.S.I.T. Committee; Susan M. Saeger Thesis Title: User Centered Design Method Selection for Software Development
Completed	Member: M.S.I.T. Committee; Gary Scialdone Thesis Title: Information Technologies for the Health Care Delivery System
2003-present	Chair: M.S.I.T. Committee; Chin-Yi Chu Project Title: Encyclopedia of Androgen Receptor
2003-present	Member: M.S.I.T. Committee; Anthony Vigliotti Project Title: Eye-tracking in Usability Testing
Completed	Member: M.S.I.T. Committee; Douglas Golub Project Title: MediSked: Web-based Scheudling/Billing/Payroll Software for Medicaid Providers
Completed	Member: M.S.I.T. Committee; Melissa Spike Project Title: Still Images: The Effect of Their Quality When Embedded in Animations
Completed	Member: M.S.I.T. Committee; Eri Shulga Thesis Title: Video Games: Changing the Way We View Home Entertainment
Completed	Member: M.S.I.T. Committee; Angelia Wilson Thesis Title: The Next User Interface Metaphor
Completed	Member: M.S.I.T. Committee; Yusuke Oda Thesis Title: The Design of Interface and Function of Cellular Phones for Old People
Completed	Member:M.S.I.T. Committee; Ryan Andreotta Project Title: Eye Tracking Edutainment Environments: Operational and Strategy Learning
Completed	Member: M.S.I.T. Committee; Lisa Wellman Project Title: R & E Associates Website: Design and Evaluation Member: M.S.I.T. Committee; Courtney Sheldon Project Title: Initial Guidelines for Designing Portlet Based Interfaces
Completed	Member: M.S.I.T. Committee; Lars Rosenquist Project Title: PDA Punch List
2004-present	Member: M.S.I.T. Committee; Inho Kim Project Title: Web Application: User-Friendly Online Shopping Store
2004-present	Member: M.S.I.T. Committee; Chad Lapa

	Project Title: Eye Tracking to Investigate Banner Blindness
2004-present	Co-Chair: M.S.I.T. Committee; Jianming Duan Project Title: The Head and Neck Cancer Microarray Database (HNCmdb)
2004-present	Chair: M.S.I.T. Committee; Julia M. West Project Title: TBA
Completed	Member M.S.I.T. Committee; Humuyan Zafar Project Title: Societal Impact of Instant Connectivity: A Study Using the Community Embodiment Model (CEM)
2004-present	Chair: M.S.I.T. Committee; Anthony Russell Project Title: TBA
2004-present	co-chair: Chair: M.S.I.T. Committee; Christopher Vignare Project Title: TBA (collaborative project at URMC in Medical Informatics)
2005-present	Member: Bioinformatics MS Committee; Kevin Galens Project Title: Knowledge Based Structure Modeling of the Third Hypervariable Region of Antibodies
2005-present	Member: Bioinformatics MS Committee: Priya Soundararajan Project Title: TBA
2005-present	Member: Bioinformatics MS Committee: Renikko Alleyne Project Title: TBA

INSTITUTIONAL COMMITTEES: ROCHESTER INSTITUTE OF TECHNOLOGY

2000-present	Member, Institute and COS Bioinformatics Internal Advisory Board
2001-2003	Member, Department of Information Technology Graduate Curriculum Committee
2001-2004	Member, Department of Information Technology Strategic Planning Committee
9/03-6/04	Member, Bioinformatics Faculty Search Committee
2004-2005	Member, Department of Information Technology Scholarship Committee
2004-present	Member, GCCIS Ph.D Steering Committee
2004-present	Member, Institute Academic Support Committee
2004-present	Member, GCCIS Medical Informatics Advisory Board

INVITED NATIONAL AND INTERNATIONAL LECTURES & SEMINARS

"RA Affects Morphogenesis, Differentiation, and Apoptosis in Developing Human Skin" National Institutes of Health, May 1995

" Control of Apoptosis and Proliferation During Human Fetal Skin Development" Bowman Gray Medical School, August 1996

"The Skin Equivalent: Application for Basic Research" Visiting Professor and Lecturer: The Bowman Gray School of Medicine of Wake Forest University, August 15-16, 1996

"Search for Darier's Disease and other Genodermatoses: Genetics and Pathobiology" Second Meeting on Animal Models and Biomedical Tools: Mouse Skin and Hair Mutations. The Jackson Laboratory, Bar Harbor, Maine September, 1996.

"The Skin Equivalent: An In Vitro Model" Series on Science and Technology. The Lab for Laser Energetics, University of Rochester, January 1997.

" Overview of Epidermal Apoptosis" Residents and Fellows Special Forum 58th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1997.

"Apoptosis in Skin Aging" 46th Symposium on the Biology of Skin: Aging of the Skin: Basic Mechanisms and Approaches to Prevention and Reversal. Snowmass Village, Colorado, July 1997.

"Keratinocyte Apoptosis: Implications for Aging and Cancer" Gerontological Society of America Cincinnati, Ohio November, 1997.

"Apoptosis: Function and Regulation in Human Skin" VII Journee Thematique Signaux proteiques facteurs d'organization et de desorganisation tissulaire. Institut Albert Bonniot Ontogenese et Oncogenese Moleculaires May, 1998, Grenoble France.

"Apoptosis: Roles in Skin Homeostasis and Disease " Dermatology 2000, Singapore, June 1998.

"The Skin Equivalent As a Model for the Study of Stage- and Age-Specific Control of Apoptosis" IBC's Third International Symposium on In Vitro Testing Methods for Skin Care and Cosmetic Products. November, 1998, Washington, DC

"Synergy in BioMedical and Information Technologies" Faculty Candidate Colloquium , Department of Information Technology, Rochester Institute of Technology, April, 2000.

"User-Centered Design & Usability Testing: Keys to the User Experience" International Council on Systems Engineering, Eastman Kodak Co., May, 2004.

UNIVERSITY OF ROCHESTER RESEARCH LECTURES/SEMINARS

Research in Progress Seminars (RIPS)-Presentations 1996-1999
Biomedical Engineering Graduate Program-Fall, 1998
Strong Children's Research Center-1994, 1996

SCIENTIFIC PEER REVIEW

Grants

1995, 96	Reviewer, NIH Ad Hoc Study Section
1995	Reviewer, North Carolina Biotechnology Grant
1995,1996	Reviewer, Allegheny Singer Research Institute Grant
1995-2000	Reviewer, Strong Children's Research Center Grants
1997	Reviewer, Israel Research Foundation Grant
1997-2000	Reviewer, The Wellcome Trust Research Training Fellowship

Journals

1993-2000	Reviewer, Journal of Investigative Dermatology
1996-2000	Reviewer, Archives of Dermatology
1996-2000	Reviewer, Developmental Dynamics
1996-2000	Reviewer, Journal of Histochemistry & Cytochemistry
1997-2000	Reviewer, Experimental Cell Research
1999-2000	Reviewer, Journal of Photochemistry & Photobiology

PAPERS/PUBLICATIONS

1. Haake AR. Localization of fibronectin during feather and scale morphogenesis; comparison of normal and scaleless mutant chick embryos. Master's Thesis, University of South Carolina, 1981.

2. Haake AR. Immunohistochemical and biochemical analysis of keratinization in normal and experimentally recombined tissues of the chick integument. Doctoral Dissertation, University of South Carolina, 1985.

3. Haake AR. Issues and Approaches in Usability Engineering: Application to Telemedicine. Capstone Paper, SD& M Program, Information Technology, Rochester Institute of Technology.

Peer-Reviewed

4. Haake AR, Sawyer RH. Avian Feather Morphogenesis: Fibronectin-containing anchor filaments. J Exp Zool 221:119-123, 1982.

5. Haake AR, Konig G, Sawyer RH. Avian Feather Development: Relationships between morphogenesis and keratinization. Dev Biol 106:406-413, 1985.

6. Haake AR, Sawyer RH. Differences in the histogenesis and keratin expression of avian extra-embryonic ectoderm and endoderm recombined with dermis. Dev Biol 113:295-304, 1986.

7. Haake AR, Lane AT. Retention of Differentiated Characteristics In Human Fetal Keratinocytes *In Vitro*. In Vitro Cellular & Developmental Biology 25:592-600, 1989.

8. Haake AR, Scott GA. Physiological distribution and differentiation of melanocytes in human fetal and neonatal skin equivalents. J Invest Dermatol. 96;71-77, 1990.

9. Scott GA, and Haake AR. Keratinocytes Regulate Melanocyte Number in Human Fetal and Neonatal Skin Equivalents. J Invest Dermatol. 97;776-781, 1991.

10. Haake AR, and Polakowska RR. Cell Death by Apoptosis in Epidermal Biology. J. Invest. Dermatol. 101:107-112, 1993.

11. Polakowska RR, Piacentini M, Bartlett R, Goldsmith LA, and Haake AR. Apoptosis in Human Skin Development: Morphogenesis, Periderm and Stem Cells. Developmental Dynamics 199:176-188, 1994.

12. Polakowska, RR, and Haake, AR., Apoptosis: The skin from a new perspective Cell Death and Differentiation, 1:19-31, 1994.

13. Haake AR, and Polakowska, RR. UV-induced apoptosis in skin equivalents: inhibition by phorbol ester and Bcl-2 overexpression. Cell Death and Differentiation, 2:183-193, 1995

14. Ikeda, S, Wakem, P, Haake, AR, Ewing, N, Polakowska, R., Sarret, Y., Trattner, A, David, M., Shohat, M., Schroeder, DW, Epstein, EH, Goldsmith, LA. Localization of the gene for Darier's Disease to a 5 cM interval on chromosome 12q J. Invest. Dermatol. 103:478-481, 1995.

15. Wakem P, Ikeda S, Haake A, Polakowska R, Sarret Y, Tuskis A, Duvic M, Berg D, Bassett A, Kennedy JL, Epstein E, and Goldsmith LA. Sublocalization of the Darier's Disease gene on chromosome 12q and exclusion of NOS1 as a candidate gene. In Press, J Invest Dermatol, 1995.

16. Haake, AR , and Cooklis MA. Incomplete Differentiation of Fetal Keratinocytes in the Skin Equivalent Leads to the Default Pathway of Apoptosis Exp. Cell Res. 231:83-95, 1997.

17. Haake AR and Polakowska RR. Pathways to Programmed Cell Death: Apoptosis and the Skin. Current Opinion in Dermatology 4;247-255, 1997.

18. Ferraris C, Cooklis M, Polakowska RR, and Haake AR. Induction of Apoptosis Through the PKC Pathway in Cultured Dermal Papilla Fibroblasts: Relationship to Cell Cycle State. Exp Cell Res, 234:37-46.

19. O'Malley M, Haake AR, Goldsmith LA, and Berg D. Localized Darier's Disease: Implications for Genetic Disease Arch Derm 133:1134-1138, 1997.

20. Pincelli, C., Haake AR, Benassi L, Grassilli E., Magnoni C., Ottani D., Polakowska R, Franceschi C., and Giannetti A. Autocrine Nerve Growth Factor Protects Human Keratinocytes form Apoptosis Through its High Affinity Receptor (TRK): A Role for Bcl-2. J. Invest. Derm. 109:757-764, 1997.

21. Virgili F, Santini MP Canali R, Polakowska R, Haake AR, and Perrozzi G. Bcl-2 Overexpression in the HaCaT Cell Line is Associated with a Different Fatty Acid Composition and Sensitivity to Oxidative Stress. Free Radicals Biol and Medicine 24:93-101, 1998.

22. Haake AR, Roublevskaia I, Cooklis M. Apoptosis: A Role in skin Aging? J Invest Dermatol Symposium Proceedings, 111:101-108, 1998.

23. Inui, S, Lee Y-F, Haake AR, and Chang C. Induction of TR4 Orphan Receptor by Retinoic Acid in Human HaCaT Keratinocytes. J. Invest. Dermatol. 112:426-431, 1999

24. Burns RP Jr., Nasir A, Haake AR, Barth RK, Gaspari AA: B7-1 Overexpression by Thymic Epithelial Cells Results in Transient and Long-Lasting Effects on Thymocytes and Peripheral T Helper Cells but Does Not Result in Immunodeficiency. Cell Immun 194:162-177, 1999.

25. Roublevskaia IN, Polevoda BV, Ludlow JW, and Haake AR. Induced G2/M arrest and apoptosis in human epidermoid carcinoma cell lines by semisynthetic drug Ukrain. Anticancer Res. 20:3163-3168, 2000.

26. Roublevskaia IN, Haake AR, Ludlow JW, and Polevoda BV. Induced Apoptosis in Human Prostate Cancer Cell Line LNCaP by Ukrain. Drugs Exptl. Clin. Res. XXVI(5/6): 107-112, 2000.

27. Roublevskaia IN, Haake AR, and Polevoda BV. Bcl-2 Overexpression Protects Human Keratinocyte Cells From Ukrain-Induced Apoptosis But Not From G2/M Arrest. Drugs Exptl. Clin. Rest XXVI(5/6): 165-172, 2000.

28. Haake AR, and Skuse G. Formulating Bioinformatics Curricula. CITC3 Proceedings, Rochester Institute of Technology, September 2002.

29. Rozanski EP, and Haake AR. The Many Facets of HCI. CITC4 Proceedings, Purdue, October 2003.

30. Yacci, M., Rozanski E.P. . & Haake, A (2004). Eye Tracking to Measure Learning from Edutainment. Position Paper. SIGCHI Social Learning in Gaming Workshop, Vienna, Austria.

31. Yacci MA, Haake AR, and Rozanski, EP. Operations and Strategy Learning in Edutainment Interfaces. Proceedings: AACE conference on Educational Multimedia, Hypermedia and Telecommunications. Lugano, Switzerland, June, 2004

32. Gopal S, Haake AR, Price Jones R, and Tymann P. On the Need for Compute-Centric Bioinformatics. (submitted)

33. Rozanski EP, Karn KS, Haake AR, Vigliotti AM, and Pelz JB. Simplified eye tracking enhances problem understanding and solution discovery in usability testing. Proceedings of Human Factors and Ergonomics Society, 2005.

34. Karn KS, Lapa CJ, Rozanski EP, Haake AR, and West JM. Doing More, Looking Less: Task/No-task Differences in Where Users Look. Submitted to CHI, 10/2005.

Chapters in Books

35. Sawyer RH, Haake AR. Regulation of keratinization in the avian integument. In: Coordinated Regulation of Gene Expression. (eds.: R.M. Clayton and D.E.S. Truman). Plenum Press, New York, 1985.

36. Davies, PJA, Basilion, JP and Haake A.R. Intrinsic biology of retinoids in the skin. In: Biochemistry and Physiology of the Skin (2nd Edition; LA Goldsmith, Ed) p.385-409, 1991

37. Haake AR, Goldsmith LA "The Skin". In: Embryos, Genes and Birth Defects (P. Thorogood, Ed., John Wiley & Sons), 251-280, 1997.

38. Haake AR and Holbrook KA. The Structure and Development of Skin
In: Fitzpatrick's Dermatology in General Medicine, 5th Edition (McGraw-Hill) Chapter 7: 70-114, 1999.

39. Haake AR, Scott G, Holbrook K. "Structure and Function of the Skin: Overview of the Epidermis and Dermis". In: Biology of Skin, Woodley, D (Ed); Parthenon Publ, 2001.

40. Chu, D.H., Haake, A.R., Holbrook K., and Loomis, C.A. The Structure and Development of Skin
In: Fitzpatrick's Dermatology in General Medicine, 6th Edition (McGraw-Hill) Chapter 6: 58-88, 2003.

41. Rozanski EP and Haake, AR. "Human Computer Interaction" In: The Electrical Engineering Handbook, 3rd Edition, CRC Press, (in press).

PAPERS OR POSTERS PRESENTED AT PROFESSIONAL MEETINGS

1. Haake AR, Sawyer RH. Distribution of fibronectin during feather and scale morphogenesis in normal and scaleless chick embryos. Poster – 23rd Southeastern Developmental Biology Conference, 1981.

2. Haake AR, Sawyer RH. Distribution of fibronectin during normal and abnormal feather morphogenesis. 21st Annual Meeting of the Southern Society of Anatomists, 1981.

3. Haake AR, Sawyer RH. Localization of fibronectin during normal feather morphogenesis. Annual Meeting of the American Society of Zoologists, 1981.

4. Haake AR, Sawyer RH. Different responses of avian extra-embryonic ectoderm and endoderm to dermal induction. 25th Southeastern Developmental Biology Conference, 1983.

5. Haake AR, Sawyer RH. Different responses of avian extra-embryonic ectoderm and endoderm to dermal induction. South Carolina Academy of Science, 1984.

6. Haake AR, Knapp LW, Sawyer RH. 2-Dimensional gel analysis of avian scale beta keratins. Poster – 27th Southeastern Developmental Biology Conference, 1985.

7. Haake AR, Knapp LW, Sawyer RH. 2-dimensional gel analysis of beta keratin polypeptides in normal and scaleless mutant skin. South Carolina Academy of Science, 1985.

8. Haake AR, Lane AT. Morphogenesis and differentiation of human fetal skin in rotation-mediated aggregation cultures. J Invest Dermatol 90:566, 1988, Society for Investigative Dermatology meeting.

9. Haake AR, Scott G, Lane AT. The Skin Equivalent System Is A Valuable Model To Study Keratinocyte-Melanocyte Interactions in Fetal and Neonatal Skin. J Invest Dermatol 92:438a, 1989, Society for Investigative Dermatology meeting.

10. Scott G, Haake AR. Keratinocytes Regulate Melanocyte Number in Human Fetal and Neonatal Skin Equivalents. SID 52nd Annual Meeting, May 3, 1991, Seattle, WA.

11. Haake AR, Dow R, Goldsmith LA. Different Physiologic Responses of Fetal and Neonatal Skin Equivalents to Retinoic Acid. SID 53rd Annual Meeting, April 29-May 2, 1992.

12. Polakowska R, Haake AR, Graf B, Goldsmith LA. Identification of Human TGaseI Regulatory Sequences. SID 53rd Annual Meeting, April 29-May 2, 1992.

13. Haake AR, Polakowska RR, Goldsmith LA. Alu Sequences are Differentially Expressed in Human Fetal Keratinocytes. SID Eastern Regional Meeting, 10/92.

14. Zareba G, Goldsmith LA, Haake AR, Clarkson TW. Methylmercury Incorporation into Human Hair Grown on Nude Mice. SID Eastern Regional Meeting, 10/92.

15. Haake AR, Polakowska RR. Ultraviolet light-induced programmed cell death (apoptosis) in skin equivalents. SID 54th Ann. Meeting, 1993

16. Goldsmith LA, Wakem P, Polakowska R, Haake AR, Ewing N, Sarret Y, Trattner A, Shohat B, David M, Schroeder W, Duvic M, Ikeda S, Epstein EH. Exclusion of candidate genes in Darier's Disease using Positional cloning. SID 54th Ann. Meeting, 1993

17. Haake AR, Piacentini M, Goldsmith, LA., Polakowska, R.R. The role of apoptosis in human skin development. International Society of Developmental Biologists 12th International Congress, Vienna, Austria, 1993.

18. Polakowska, R.R., Piacentini, M., Goldsmith, L.A., Haake, A.R. A regulatory model of apoptosis in epidermal development and differentiation. Cell Death in Cancer and Development, AACR, Chatham, MA, 1993.

19. Haake AR , Bartlett R, Polakowska RR, Worobec S, Goldsmith LA. Is Darier's Disease a Defect of the Cell Death Pathway? SID 55th Ann. Meeting, 1994.

20. Wakem P, Ikeda S, Haake A, Ewing N, Polakowska R, Sarret Y, Trattner A, Shohat B, Schroeder DW, Epstein, EH. Localization of the Darier's Disease Gene. SID 55th Ann. Meeting, 1994.

21. Haake AR, Polakowska RR, Goldsmith LA. "State of Epidermal Differentiation Controls Response to Retinoic Acid" 10th International Symposium on Cellular Endocrinology: Molecular and Cell Biology of Apoptosis in Development, Disease, and Cancer. Lake Placid, New York, 1994

22. Worobec S, and Haake AR "Development of In Vitro Models for the Study of Disorders of Cornification" Eastern Regional Society for Investigative Dermatology New York, 1994.

23. Alexander C and Haake AR "Induction of Elongation Factor-1 Alpha by Retinoic Acid in Fetal Keratinocytes" 56th Annual Meeting, Society for Investigative Dermatology, Chicago,1995.

24. Wakem P, Ikeda S, Haake AR, et al., "Further Sublocalization of the Darier's Disease Gene" 56th Annual Meeting, Society for Investigative Dermatology, Chicago, 1995.

25. Haake AR, Graf BA and Polakowska RR "Bcl-2 Downregulation is not Required for Keratinocyte Terminal Differentiation" 56th Annual Meeting, Society for Investigative Dermatology, Chicago, 1995.

26. Ferraris C, Polakowska RR, and Haake AR. "Selective Induction of Apoptosis in Cultured Dermal Papilla Fibroblasts by Different PKC Inhibitors" Cold Spring Harbor Symposium "Programmed Cell Death" Cold Spring Harbor, Sept. 1995.

27. Worobec, SM, Haake AR, Epstein H. "The Formation of Skin Equivalents Expressing the Ichthyosis Vulgaris Phenotype. (Am. Acad. Dermatology, 1996)

28. Haake AR, Ferraris C, Cooklis M, Polakowska R. Incomplete Response to Differentiation Signals Leads to Programmed Cell Death of Fetal Keratinocytes 57th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1996.

29. Ferraris C, Polakowska R, Cooklis M, and Haake AR. Induction of Apoptosis Through the PKC Pathway in Cultured Dermal Papilla Fibroblasts: Relationship to Cell Cycle State. 57th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1996.

30. Roublevskaia I, Wakem P, Haake A, Polakowska, Epstein E., Goldsmith L. Linkage Mapping Narrows the Darier's Disease (DAR) Candidate Region. 58th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1997.

31. Haake AR, Polakowska R., Cooklis M, Codreanu R. 58th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1997.

32. Zareba G, Stoler M, Codreanu R, and Haake AR. 58th Annual Meeting, Society for Investigative Dermatology, Washington D.C. 1997.

33. Haake AR, Roublevskaia, Cooklis M, Lim E. "EF-1alpha in Skin Aging" Rochester Conference on Health: Successful Aging and the New Millennium. September 1997.

34. Haake AR "Skin Aging: In Vivo and In Vitro Studies" 1998 National Claude D. Pepper Older Americans' Independence Center Meeting. April, 1998.

35. Haake AR, Roublevskaia I, Cooklis M: "EF-1 alpha Controls Keratinocyte Proliferation and Apoptosis" 59th Annual Meeting, Society for Investigative Dermatology, Cologne Germany 1998.

36. Inui S, Itami S, Haake AR, Goldsmith LA, Yoshikawa K, Chang C. "Induction of TR4 Orphan Receptor by Retinoic Acid in Human HaCAT Keratinocytes" 60th Annual Meeting, Society for Investigative Dermatology, Chicago, Illinois May 1999.

37. Haake AR, Roublevskaia IN. "Elongation Factor 1-α Is a Cytoskeletal-associated Protein Which Functions in Keratinocyte Signal Transduction" 60th Annual Meeting, Society for Investigative Dermatology, Chicago, Illinois May 1999.

38. Haake AR, Shenkut E, Tripp K, and Pentland AP. "Inhibition of COX-2 Potentiates Epidermal Keratinocyte Apoptosis". Annual Prostaglandin Conference. Florence, IT, June, 2000.

39. Haake AR, and Skuse G. "Formulating Bioinformatics Curricula" CITC3 Rochester Institute of Technology, September 2002.

40. Rozanski, E.P., Vigliotti, A.M., Karn, K.S., Haake, A.R., Pelz, J.B. and Dalal, N. Eye tracking: A tool for the discount usability toolbox. *Abstracts of the 12th European Conference on Eye Movements*, 2003.

41. Yacci MA, Haake AR, and Rozanski, EP. Operations and Strategy Learning in Edutainment Interfaces. Proceedings: AACE conference on Educational Multimedia, Hypermedia and Telecommunications. Switzerland, 2004.

42. Yacci MA, Rozanski EP, and Haake AR. Eye Tracking to Measure Learning from Edutainment Social Learning from Gaming, Workshop, SIGCHI 2004, Vienna, Austria, April 2004.

43. West, JM, Haake AR, Karn KS and Rozanski EP: Mathematical Analyses and Expository Visualizations of Gaze Sequences using eyePatterns. European Conference on Eye Movements. Berne, Switzerland, August, 2005.

44. Lapa CJ, Rozanski EP, Haake AR, Sekella C, and Karn KS. Understanding Banner Blindness: Using Eye Tracking to Improve Website Design. European Conference on Eye Movements. Berne, Switzerland, August, 2005.

11. Chris Jackson, M.F.A. – Computer Graphics Design, CIAS

CHRIS B. JACKSON

Assistant Professor
School of Design
College of Imaging Arts and Sciences

Rochester Institute of Technology
73 Lomb Memorial Drive
Rochester, New York 14623-5603

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Curriculum Vitae

Profile

Over 10 years computer graphics design experience includes:

- Assistant Professor in the School of Design at Rochester Institute of Technology since September 2000
- Research in latest technological trends from a visual arts and design perspective
- Extensive experience in instructional writing and interaction design of multimedia training for worldwide corporations
- Over 20 distinguished national and international awards for online communication
- Expert knowledge of printing and graphic design technologies
- Master in Fine Arts degree in Computer Graphics Design

Interests

Authoring Experiences – study the user's experience as an inseparable element of a functional system or product through practical and experimental approaches.

Digital Storytelling – design nonlinear, interactive stories for entertainment, promotional, journalistic, and instructional applications.

Interactive Design for Children - explore design issues and project development for young people. Study theories of child development and apply that theory to interactive design for children.

Education

Master of Fine Arts
Computer Graphics Design
Rochester Institute of Technology, Rochester, NY
1996

Bachelor of Fine Arts
New York State Teaching Certification
Major: Graphic Design
Minor: Art Education
Alfred University, Alfred, NY
1991

Experience

Teaching

Assistant Professor
Rochester Institute of Technology
Computer Graphics Design graduate program
September 2000 to present

Courses (created custom lectures and labs)

- 2D Computer Animation
- 3D Computer Graphics
- Advanced Computer Graphics
- Authoring Multimedia
- Graphical User Interface
- Instructional Multimedia
- Introduction to Interactive Media Design
- Raster Imaging
- Special Effects (Motion Graphics)
- Typography for New Media
- Vector-based Multimedia

Instructor
Dynamic Graphics Educational Foundation
DGEF Training Center, Peoria, Illinois
March 2000 to December 2001

Course

- Multimedia I
  Designed and taught a 3-day hands-on workshop where attendees integrated text, graphics, audio and video into complex multimedia projects. In-class assignments included work with Director, Photoshop, Premiere, Sound Edit, and Ray Dream 3D Studio.

Adjunct Professor
Rochester Institute of Technology
New Media Design and Imaging undergraduate program
September 1997 to May 1999

Courses (created custom lectures and labs)

- 3D Form and Space
- Design Imaging and Form

Corporate Consulting

Instructional Design Consultant
Eastman Kodak Company
November 2000 to present
Provide training and multimedia design solutions and services to support and enhance the performance of Kodak employees and products.

Experience

Professional Employment

Technology Development Specialist
Eastman Kodak Company
August 1997 to July 2000

Design and develop multimedia applications for a variety of internal departments. Job responsibilities include:

- Project management
- Information architecture
- Instructional writing
- Graphical user interface design
- 3D modeling and animation
- Object-oriented programming
- Database construction and communication
- Development of learning assessment tools
- Usability testing

Computer Graphics Designer
Creative Approaches, Inc.
June 1996 to August 1997

Design and develop multimedia applications:

- Graphical user interface design
- Construction of multimedia (text, graphics, video, sound)

Clients: Eastman Kodak, Harris RF Communications, XEROX

Founder / Graphic Designer
Hierographics
September 1992 to June 1996

Hierographics was a design company that assisted non-profit organizations with:

- Logo identity and branding
- Sales and marketing literature
- Annual and promotional campaigns

Clients: New York Library Association (NYLA), Smith Opera House, Abbey Industries, Pioneer Library System (PLS)

Art Director
In House Graphic Design, Inc.
May 1991 to August 1994

Art director and graphic designer of:

- Corporate identities
- Marketing literature
- Annual reports

Clients: Goulds Pumps, Inc., Holiday Inn, BOCES

Awards

The following is a list of professional awards received. Each interactive multimedia project was submitted to the *Society for Technical Communications (STC) Annual Technical Publication Competition.*

The awards are listed by the level of merit, the year received, and the project title.

International Online Competition

Best in Show
2003 – X-ray Safety: An Interactive Guide

Distinguished
2005 – Creative Craft of Post Production
2003 – Color and Light in Motion Imaging
2001 – KODAK Digital Science – Scanner 3000 Series

Local Chapter Online Competition

Best in Show
2005 – Creative Craft of Post Production
2001 – KODAK Digital Science – Scanner 3000 Series

Distinguished
2005 – Creative Craft of Post Production
2004 – The Art of Lighting for Film
2003 – X-ray Safety: An Interactive Guide
2003 – Color and Light in Motion Imaging
2001 – KODAK Digital Science – Scanner 3000 Series
2001 – Ergonomics Awareness: Computer Workplaces

Excellence
2004 – What is Cinematography?
2003 – OSHA for Managers
2003 – The Nature of Film
2002 – Lockout/Tagout for Other Employees
2002 – Selling Solutions: An Interactive Guide to Retail Selling
2002 – Electrical Cord-Connected Equipment Safety
2001 – KODAK Minilab Training (Version 1.0)

Merit
2005 – Electrical Safety Awareness

Publications

"Flash: Animation in the Third Dimension"
co-authored with Professor Jim Ver Hague
ACM SIGGRAPH Proceedings 2005
Paper that explores the possibilities of utilizing 3D space to enhance content delivery and the user's experience

"Best of Show" in *Intercom*, Volume 50, Issue 7
editor Maurice P. Marton. July/August 2003
Article on designing interactive teaching using online tutorials

American Corporate Identity, Volume 10
editor David E. Carter. 1995
Two logo designs selected for publication (Dimensions in Dance and DiDuro Chiropractic)

Conferences

SIGGRAPH 2005
Los Angeles, California
Educator's Forum / "Learning Environments"
Presented paper entitled *"Flash: Animation in the Third Dimension"*
co-authored with Professor Jim Ver Hague

Spectrum 2005
Rochester, New York
Presented paper entitled *"Authoring Experiences."*

Spectrum 2002
Rochester, New York
Presented paper entitled *"Beyond Point and Click: Designing Interactivity."*

Reviewing Activities

Focal Press
Paul Temme, Editor
Review and provide feedback on forthcoming animation and motion graphics publications

Relevant Skills

Computer Software Skills *(MAC and PC platform):*

Design and Imaging
- Adobe – Illustrator, In Design, Photoshop
- Macromedia –Fireworks, Freehand

Animation and Motion Graphics
- Adobe – After Effects, Premiere
- Macromedia – Flash

Multimedia Design and Development
- Macromedia – Authorware, Director, Flash

Web Design and Development
- Adobe – ImageReady
- Macromedia – Dreamweaver

3D Modeling and Animation
- Maxon Cinema 4D XL
- Bryce and Poser

Audio and Video
- Adobe – After Effects, Audition, Premiere
- Macromedia – Sound Edit 16
- Sonic Foundry – Sound Forge

Affiliations

- ACM SIGGRAPH
- Macromedia User Group (Rochester Chapter)
- Macromedia Flash User Group (Rochester Chapter)

12. Stephen Jacobs, M.A. – Information Technology, GCCIS

STEPHEN JACOBS

Assistant Professor
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623

Information Technology
Office: 70-2557
Phone: 716.475.7803
E-mail: sj@mail.rit.edu

Degree	Field	Institution	Date
Certificate	Computer Programming	Computer Learning Center	3/81
Certificate in Interpreting for the Deaf	New York Interpreters for the Deaf. 1983	Certificate in Interpreting for the Deaf	1983
BA	Liberal Arts	New School For Social Research	6/87
MA	Media Studies	New School For Social Research	6/88
Post-Graduate Coursework	Computer Animation	RIT	9/92-6/94

Major Research and Scholarly Activities:

2000-Present. Computer Game Design and Development, Research of Integration and Teaching:

Curriculum

Professional leave/sabbatical to research the industry and its practices and develop curriculum 2002-2003

Create and teach five new graduate courses, History and Analysis of Computer Games, Interactive Narrative, Game World Design, On-line Identity, Community and Social Behavior, Building On-Line Communities.

Develop a Computer Game Design and Development Graduate Concentration and a Degree Proposal Professor Andrew Phelps and other colleagues.

Publications:

"The Basics of Narrative for Games," *Game Writing: Narrative Skills for Videogames*, Charles River Press, 2006 Chapter Author

"The Needs of the Audience," *Game Writing: Narrative Skills for Videogames*, Charles River Press, 2006 , Chapter Editor

"Writesizing", Game Developer, November, 2004, (on Writing for Computer Games, published in the premiere trade journal of the field)

"What The Tech!", Annual Radio Shows on the Game Industry and on Serious Games, year, 2002 2003, 2004, 2005.

Presentations:

Panelist, "Game Developer Isn't in the Yellow Pages," Serious Games Summit, Washington, DC, 2004.

"The Challenges of Audience as Author: Multiplayer Online Games and Virtual Worlds." Media Ecology Association Annual Convention, Rochester, NY 2004. Panel Presenter and Moderator

"Digital Poetry and Poetics." Media Ecology Association Annual Convention, Rochester, NY 2004, Presented the history of multimedia, games and poetry as a panelist.

Professional Positions:

Executive Board Member of the Writers' Special Interest Group of the International Game Developer's Association since 2004. Represented executive board, and coordinated SIG presence at the Austin Game Writer's Conference, October 2005. Host and moderate monthly virtual organization al meetings. SIG's main point of contact for the Game Developers Conference, the largest professional conference in the industry.

Steering Committee Member of the International Association of Game Educators and Researchers, since 2004. Hosting Listserv.

Member National Academy of Video Game Testers & Reviewers (nominated, status to be determined 12/05)

2001-Present. Technological Literacy, Research of Application, Integration and Teaching.

Began academic and professional development work in the field of technological literact as an outgrowth of CAROL project in 2002. Became Director of a CASCI Lab in Technological Literacy in 2004.

What the Tech! **Radio Show, Research of Integration, Application and Teaching.** The show began as an outside effort in 2002 and was brought in as the first project for the Lab For Technological Literacy in the fall of 2004, with $100,000 of seed funding from RIT and GCCIS. The show is in hiatus and new round of funding is currently under consideration by Joe Clayton and Sirius Satellite Radio. CO-PI on NSFIE grant proposal for What The Tech! 2003

320 goes to High School**, Research of Teaching:** The Lab suggested an initiative that would bring IT's "Introduction to Multimedia course" to an upper level High School audience as "the next wave" of "Computer Literacy". Simultaneously, the Dean's office was approached by the Wayne County school district, which was looking for a college course to offer their Juniors and Seniors. The project was initiated in 9/05 but closed in 11/05 when Wayne county pulled the funding to budget cuts made in response to skyrocketing fuel costs. Project is scheduled to resume next academic year

Get a Move On**! Research of Integration, Application and Teaching**: Traveling exhibition on the History of Motion Capture Technology and its place in diffusion into Entertainment, Computing, Sports Medicine, Homeland Security and Popular Culture. Includes large scale, multimedia web development and development of physical computing hardware and software. The web design aspect of the project will be undertaken as a project by the New Media Project Capstone class in winter and spring quarters with Professor Oyzon as course faculty and myself as client representative for the Eastman House. Co-PI on NEH Planning Grant 2005

DOIT: A technology training and employment program for underserved High School Students. Program is a partnership between LTL, RIT K-12's PRI2m Program and Science Linkages in the Community. RIT Faculty and COOPS would work with students to train them in hardware, networking and on-line community development and management and deploy hardware, software, training and wireless networks to Community Technology Centers and their immediate neighborhoods. PI on NSF preliminary Grant Submitted 11/05.

Summit of local Homeland Security focused companies. Research of Integration and Application. Currently in the hands of Guy Johnson and Newton Howard.

Bootcamps in technology for working journalists. In early discussion stages with UNS.

NSF Grant Application, Digital Government Program: Co-PI on First-in-Class application to NSF's Digital Government program. Proposal described collaboration between the IT Lab, WXXI and the City of Rochester to explore Interactive Television technology to bridge the digital divide and provide more effective access to City services. Proposal grew out of research conducted during trips to National Association of Broadcasters Conference and Consumer Electronics Show.

Publications:

Creator, Producer, Director: What The Tech, September 2002-June 2005
84 original one hour shows, over 100 broadcasts. Technology radio magazine for WXXI AM 1370. Weekly one-hour show on a wide range of technology and science topics aimed at the average individual with an interest in those areas. Goals of the show in-line with the NSF funded NAE study on technological literacy in America, Technically Speaking aired 1:00-2:00 p.m. Saturday and 11:00 p.m. on Monday. Archived audio is available at http://www.wxxi.org/whatthetech Currently working with RIT and Sirius Satellite Radio Board Member Joe Clayton to acquire new funding.

Presentations:

"Nationwide Technological Illiteracy and What The Tech!: Can One Radio Show Save the Country?" Media Ecology Association Annual Convention, Rochester, NY
2004 Paper on the research on technological illiteracy and its influence on the design of the radio show.

2003 "Information Architecture: What's it all about Webbie?", HighEdWeb Professionals Conference, Rochester, NY

"Interactive Television, We Really Mean It This Time" CITC3, Rochester, NY 2002
Presentation on the History of the Digital Television Standard ATSC, the interactive aspects of that technology and its application to the IT Curriculum.

Publications:

Jacobs, Stephen, Interactive Television, We Really Mean It This Time Proceedings CITC3, Rochester, NY. 2002

1995-2001 CAROL: University as Community Technology Resource, Research of Application, Integration and Teaching

CAROL was an exercise in using the Internet as a tool to create a consortium of organizations working toward a common goal. CAROL grew out of work done by Professor Gordon Goodman and myself and brought graduate (and sometimes undergraduate) classes in IT together with local arts and cultural non-profit organizations. This collaboration created over 20 web sites for local museums and cultural organizations, the Arts and Cultural Council of Rochester and a community-wide on-line events calendar. In doing so it…

- Provided real-world experience in web architecture, design and implementation for over 300 RIT from not only the IT department, but also Computer Science, Graphics, Film, Photography and New Media as well.
- Familiarized and/or trained staff of participating organizations in web creation and design

- generated numerous co-ops, independent studies and Masters Capstone Projects
- brought NYSCA and NEA grants to the Arts and Cultural Council of Greater Rochester Was recognized by local, regional and international organizations including the ACM as a pioneering. model project for building and serving communities on the Internet
-

Presentations

ACM/SIGGRAPH' 98, Educators Conference, Orlando, Fl. 1998
"The CAROL Project: Bringing Web Design Students and Arts Institutions Together to Learn from Each Other" with Professor Gordon Goodman.
http://www.siggraph.org/s98/conference/edu/edu12.html

ACM/SIGGRAPH' 98, sigKIDS/Community Outreach, Orlando, Fl. 1998
"CAROL, The Class Project That Became a Community." with Professor Gordon Goodman. http://www.siggraph.org/s98/conference/sigkids/proj.html

Circuits@NYS, Governor's Conference on Art & Technology, Palisades, NY. 1998
"Reflecting on Technology and Artistic Practice: Restructuring Service" Panelist in a discussion on technology and community.
http://www.circuitsnys.org/program/friday/pm1_reflect2.html

ACM '97: 50th Anniversary Conference and Exhibition, San Jose, CA. 1997
"Using the Web to Improve Collaboration for Culture and Art." Exhibited a booth devoted to CAROL. Participated in the design of materials distributed at the conference. Arranged all exhibition logistics. Gave daily presentations to conference attendees on the CAROL project with Professor Goodman. http://www.acm.org/acm97/.

Academic Publications:

Goodman, Gordon and Jacobs, Stephen, CAROL: Students Working on Real-World Projects Empowering Local Cultural Non-Profits. Proceedings ACM/SIGGRAPH '98, Orlando, FL. 1998

Goodman, Gordon and Jacobs, Stephen, "CAROL (Culture and Arts of Rochester On-Line)". Proceedings ACM/SIGGRAPH '98, Orlando, FL. 1998

Jacobs, Stephen, Electronic Books Project. Proceedings ACM/SIGGRAPH '94, Orlando, FL. 1994

Curriculum Developed and Courses Taught:

Created new courses: *History and Analysis of Computer Games, Interactive Narrative, On-line Community and Social Behavior, Building On-Line Communities, Seminar in Thesis/Project Development, Design for Interactive Multimedia, Writing for Interactive Multimedia,*

Co-Developed*: MS Degree Proposal in Computer Game Design and Development, Game World Design, Design of the Graphic User Interface and New Media Capstone 1 and 2.*

Revised Courses: *Interactive Multimedia Development, Human Factors, Network-Based Multimedia, Project in Interactive Multimedia* and *Topics in Interactive Multimedia Emerging Trends and Technologies in Telecommunications, Fundamentals of Interactive Multimedia,*

Revision Team Member: *Electronic Imaging, Introduction to Multimedia.*

Taught (not listed above): *Theories of Interactive Computing, Electronic Imaging, Survey of Computer Science* and *Software Scripting.*

Thesis/Capstone Committees: 50 certified graduates for the department, 20 as chair. 13% of the total MSIT graduates.

Courses Taught in Reverse Chronological Order:

2005-2006:

On a research portfolio with a reduced course load funded by the GCCIS Lab for Technological Literacy.

Winter		
Interactive Narrative	(Blended)	(4004-728)
New Media Perspectives		(2083-201)
Fall		
History and Critical Analysis of Computer Games		(4004-731)
Seminar in Thesis and Project Preparation		(4002-893)

2004-2005:

On a research portfolio with a reduced course load funded by the GCCIS Lab for Technological Literacy.

Summer		
On-line Community and Social Behavior	(Distance)	(4004-734)
Spring		
Game World Design	(Blended)	(4004-425)
Winter		
Interactive Narrative	(Blended)	(4004-728)
New Media Perspectives		(2083-201)
Fall		
History and Critical Analysis of Computer Games		(4004-731)

2003-2004: Professional Leave. Did research and developed courses in the area of computer games.

2002-2003:

Spring	
Human Factors	(4002-425)
New Media Team Project 2	(4002-565)
Writing for Interactive Multimedia	(528/728)
Winter	
Introduction to Multimedia	(4002-320)
Current Themes in Information Technology	(4002-718)
New Media Team Project 1	(4002-560)
Fall	
Introduction to Multimedia	(4002-320)

Current Themes in Information Technology		(4002-718)
One Course waiver for work with grad students		

2001-2002: Medical Leave

2000-2001

Spring		
Writing for Interactive Multimedia		(528/728)
Network-Based Multimedia		(06-02-535)
Design of the Graphic User Interface		(4002 560)
Seminar in Thesis/Project	(Overload, Distance)	(06-02-893)
Winter		
Interface Design		(06-02-426)
Network-Based Multimedia		(06-02-535)
Interactive Multimedia Development		(06-04-742)
Seminar in Thesis/Project	(Overload, Distance)	(06-02-893)
Fall		
Human Factors		(06-02-425)
Network-Based Multimedia	(Redesigned)	(06-02-535)
Enabling Trends & Technology Telecom	(Distance)	(06-02-860)
Seminar in Thesis/Project	(Overload, Distance)	(06-02-893)

1999-2000

Spring		
Network-Based Multimedia	(Redesigned)	(06-02-535)
Seminar in Thesis/Project	(Overload, Distance)	(06-02-893)
Design of Interactive Media		(06-02-537)
Enabling Trends & Technology Telecom	(Distance)	(06-02-860)
Winter		
Writing for Interactive Multimedia		(528/728)
Seminar in Thesis/Project	(New Course, Overload)	(06-02-893)
Design of Interactive Media		(06-02-537)
Interactive Multimedia Development		(06-04-742)
Fall		
Introduction to Multimedia	(2 labs)	(06-02-320)
Enabling Trends & Technology Telecom	(Redesigned, Distance)	(06-02-860)
Topics in Interactive Media		(06-04-747)

1998-1999

Spring		
Writing for Interactive Multimedia	(New Course)	(528/728)
Human Factors		(06-02-425)
Design of Interactive Media		(06-02-537)
Winter		
Writing for Interactive Media		(528/728)
Interactive Multimedia Development		(06-04-742)
Design of Interactive Media		(06-02-537)

Fall

Topics in Interactive Media		(06-04-747)
Electronic Imaging	(2 Sections)	(06-02-320)

1997-1998

Spring

Project in Interactive Media	(Team Taught)	(06-04-743)
Electronic Imaging,	(Team Taught)	(06-02-320)
Human Factors		(06-02-425)
Writing for Interactive Media	(New Course)	(528/728)

Winter

Theories of Interactive Computing	(Overload, Distance)	(06-04-745)
Interactive Multimedia Development		(06-04-742)
Design of Interactive Media	(New Course)	(06-02-537)
Electronic Imaging,		(06-02-320)

Fall

Electronic Imaging	(2 sections)	06-02-320)
Fundamentals of Interactive Media		(06-04-741)

1996-1997

Spring

Electronic Imaging	(2, team redesign)	(06-02-320)
Project in Interactive Media	(Redesigned)	(06-04-743)

Winter

Survey of Computer Science		(06-02-200)
Interactive Multimedia Development	(Redesigned)	(06-04-742)
Topics in Interactive Media	(Redesigned) at Xerox	(06-04-747)

Fall

Topics in Interactive Media.		(06-04-747)
Human Factors		(06-02-425)
Theories of Interactive Computing	at Xerox	(06-04-745)

1995-1996

Spring

Topics in Interactive Media.		(06-04-747)
Project in Interactive Media		(06-04-743)
Interactive Multimedia Development	at Xerox	(06-04-742)

Winter

Interactive Multimedia Development		(06-04-742)
Software Scripting	(2 sections)	(06-02-203)

Fall

Introduction to Interactive Media		(06-04-741)
Software Scripting		(06-02-203)
One Course release for 1st quarter teaching		

Professional Development:

Consultant Harbortown Games, Master Guru Educational Game, July 2003
Interface redesign for port of educational board game to CD-ROM and Web.

Independent Consultant, Binney and Smith Incorporated. January-April, 2002
Consulted on Hardware and Software specifications and Design for a children's digital art toy for the company's Crayola Brand. Cannot be more specific as work was under NDA and project was killed due to proprietary technology costs.

Anabasis Software & Break It, Fix It Ride It, August, 2000-January, 2002
Human Factors, Interface Design System Tools Design, content editing, business plan development and PR for Multimedia Tools (Anabasis) and Multimedia Training Product (Break-It, Fix-It, Ride-It) companies. Product was reviewed 4 1/2 mice out of 5 by Macworld Magazine and selected as their featured product for educational software in the Christmas 2001 buyer's guide.

Discerning Nature, 1995-1997
Information Architecture and Interaction Design for multimedia edutainment title on Raptors.

Technology Trade Book Technical Editor:

Joe Lowery's Beyond Dreamweaver by Joseph Lowery, 2002. New Riders Publishing
The Dreamweaver Bible by Joseph Lowery, 1998. IDG Books.
Web Site Programming with JAVA by David Harms, Barton C. Fiske, Jeffery C. Rice, 1996. McGraw-Hill.

Technology Journalism:

Note: The abbreviated listings below do not list any work done before fall of 1995. Nor does it list individual articles in the case of publications for which the title of contributing editor or above is held. This is done for the sake of brevity, as a complete listing of published articles would run to over 200 individual listings. Sample pieces will be provided with documentation.

Editor and Publisher:

Gadget Boy Gazette/Gadget Boy, 1995-2000
Consumer Electronics and Home Computing web site on-line since 1995 with occasional contributions from other writers. Articles from the site were republished in the Democrat and Chronicle from 03/20/2000-09/04/20.

Contributing Editor: (Regular Columnist)

CNET Consumer Electronics' Future Tech, 2000-2001*:*
Monthly technology futurist pieces.

Television 2.0, 1999-2001
Features on the Interactive Television Industry published six times/year

Television Business International, 1995-2000
"The Next Big Thing" (formerly "Hard Tech") a column on interactive television and convergence industry news, published 10 times/year, plus occasional features.

Freelance Writing:
(a constrained list)
Wired, 6/98, "Multimedia: The Voyager Returns"
Wired, 12/97 "Electronic Word: The Sixth Coming"
Democrat and Chronicle, 9/96 "Advice Forum: Home Business Equipment"
Fast Forward, 12/95 "Snappy Review"
Wired, 12/95 "Updata: The Importance of Play and those Kansas Toasters"
Fast Forward, 10/95 "MTV On-Line Chat Live on TV"
Wired, first Japanese Issue, 6/95 "David vs. Goliath"

Workshops:

IBM Customer Relationship Management Recruitment Meeting: "Today's IT students and IBM, Perceptions and Misconceptions" Chicago, Ill, 8/98

Writers and Books: Fall Festival of Reading "Beyond the Book" panel discussions on "New Technologies and the Reading Experience" and "The Web and Other New Tools for Writers" Rochester, NY 9/98

Arts and Cultural Council for Greater Rochester: "Internet Basics" Rochester, NY. 8/98

Arts and Cultural Council for Greater Rochester: "Internet Hands-on Workshop" Rochester, NY. 6/97

Rochester Chapter of the Project Management Institute: "The Internet: Affecting You and Your Project Team Focus." Rochester, NY 4/97

Rochester Rotary Club: "Everything You Wanted to Know About the Internet, But Were Afraid to Ask", Rochester, NY 11/96

N.Y.S.T.E.A 33rd Annual Conference: "Internet Basics" Rochester, NY 3/96

Writers and Books: "Writing Wired" workshop on uses of the Internet and the World Wide Web for writers. Rochester, NY 11/95

Association for Information and Image Management: "Internet Jeopardy" Panel Discussion. Rochester, NY 11/95

Writers and Books: "3rd Annual Writing in Rochester week" panel discussion on uses of the Internet and the World Wide Web for writers. Rochester, NY 9/95

Honors and Awards:

Nominated for Eisenhart Award for Excellence in Teaching, 1998
Arts Volunteer of the Year, with Professor Goodman, 1998
FEAD Grant, white paper on IT with Professors Lasky and Lawley, 1998
Productivity Grant, current speech recognition packages, with Professor Bills, 1998
Nominated for Provost's Award for Excellence in Teaching, 1996

Conference Attendance:

- ACM SIGGRAPH, 2006, (anticipated)
- Electronic Entertainment Exhibition, 2006 (anticipated)
- Game Developers Conference and Serious Games Summit, 2006
- Consumer Electronics Show, 2006 (anticipated)
- Austin Game Writers Conference and Game Conference, 2005
- Game Developers Conference and Serious Games Summit, 2005
- Serious Games Conference, 2004, (Panel Member)
- Media Ecology Association, 2004, (Presented, Panel Member)
- Game Developers Conference and Serious Games Summit, 2004
- HighEdWeb Professionals Conference, 2003 (Presented)
- Game Developers Conference 2003
- CITC3, 2002 (Presented)
- Consumer Electronics Show 2001
- Pop!Tech 2001 Online, Everywhere, all the time
- National Association of Broadcasters Conference, 2000 (for First-in-Class)
- Consumer Electronics Show, 2000 (for First-in-Class)
- Pop!Tech, October '99 Technology and Culture
- Computer Game Developers Conference, March 1999
- ACM/SIGGRAPH, August 1998 (Presented & Exhibited)
- ACM '97, March 1997 (Presented & Exhibited)
- ACM/SIGGRAPH, August 1996
- National Association of Broadcasters Conference, 1996
- 1st Annual Netscape Developer's Conference, 1996
- Consumer Electronics Show, 1996
- ACM/SIGGRAPH, August 1994 (Presented & Exhibited)

Service:

External Associations and Businesses:

Board Member, City Paper, 2005-2006
Board Member, Hillel of Rochester Area Colleges, 2004- present
ACM/SIGGRAPH: Course reviewer for national conference 1996-1998
New York State Council for the Arts: Consultant, statewide data project, 1998
Internet Marketing and Advertising Association: Advisory Board, 1997-1998
Rochester Association of Internet Developers*: Founder* & Board Member, 1995-1997
SoftLock Services: Market Advisor, 1995-1997
Discerning Nature*: (Local CD-ROM developer)* Advisory Board member, 1995-1997

Institute:

Committees:

Provost's Liaison Committee for CAST Dean: Spring Quarter 2001
RIT on-line Committee: Committee member 19971-2000
New Media Degree Committee: 19971-1999

Guest Lectures:
Digital Poetry, "History of Multimedia Poetry" 2004
Project Lead the Way, "IT Today", July 2000
New Media Program, 1999-2001
CDM Faculty Workshop, Making Web Pages, 962
Faces of Change Conference: Exhibitor 1996

Networking:

First-in-Class visit to Microsoft Research, arranged and coordinated, 1/2000

College:

GCCIS Tenure Committee, 2004-Present
GCCIS Conference Sub-Committee, 2004-2005
CAST Eisenhart Committee: Co-Chair for academic year 1997-1998. Served as advisor 1998-1999 committee. (standard practice for previous year's chair)
Computer Science Technical Communication Course: Wrote a draft course for the committee. 8/94

Department:

Committees:

IT Graduate Curriculum Committee: 2002-2003, Present
Accreditation Committee: Spring Quarter 2001
Industrial Advisory Board Committee: 1996-2001, anticipated return this year
Multimedia Cluster (and curriculum sub-committees): 1997-2000
MS in InformationTechnology Committee: 1997-1998
Curriculum Committee: 1995-1998, 2000-20002

Other:
IT Lecture Series: Scheduled a series of presentations by Faculty for Faculty and Students. 1995-1997
Computer Music, guest lecture, "The Key" MIDI Music System, 1996 & 1997

Previous University Teaching and Related Experience:

Adjunct Faculty, Information Technology, Rochester Institute of Technology 1994-95
Taught *Fundamentals of Interactive Multimedia* and *Interactive Multimedia Development* on-site at Xerox. Taught *Electronic Imaging* on-campus.

Adjunct Faculty, Applied Computing Technology, National Technical Institute for the Deaf 1991- 1995

Designed and taught the courses *Desktop Publishing* and *Data Processing Career Sampling*. Assisted in developing and teaching lecture and lab sections of *Microcomputer Hardware I and II*, *Networking I and II* and the three mainframe courses *Beginning Computer Operations*, *Job Control Language*, and *Multiprogramming and Spooling*. Coordinated the original design and bid process for new, dual topology and multiple operating system network lab. Attended computer operations industry conference to recruit employers for the CO-OP program. Redesigned and rewrote department's co-operative internship marketing piece.

Adjunct Faculty, Liberal Arts, Rochester Institute of Technology 1990-1994

Taught available classes, including *Written Argument*, *Mass Communication*, *Human Communication* and *Effective Technical Communication*. Courses included segments in group work, CD-ROM and Internet-based research techniques, and oral presentation.

Adjunct Faculty, English Learning Center, National Technical Institute for the Deaf 1989-1994

Tutored students in English course work and computer applications one-to-one. Taught *English Composition* and *Media Analysis* classes.

Training Coordinator & Marketing Specialist, Computer Performance, Inc. 1988-1992

Programmed and managed technical seminars and classes. Lectured and participated in panel discussions on desktop video. Wrote and designed mass mailings and marketing pieces. Created animations and presentations for international conference management corporation. Promoted and coordinated international art and video competition. Maintained traveling gallery of computer art and animation in the United States and Europe. Compiled, titled and edited video loops for display. Created and updated computer art slideshow.

Media Placements: (does not include my own pieces)

Print:

Tampa Tribune, July 29, 2005"Feeding the iPod"
Democrat & Chronicle, April 5, 2005 Article about Monroe County's Fiber Optic Network
Brighton-Pittsford Post, January 12, 2005 "Spam"
Washington Post, Nov. 6, 2004 The Dawn of HD Radio
Contra Costa Times in Walnut Creek, CA July 25, 2004 "Here Comes the MP3 Revolution"
Wall Street Journal March 22, 2004"Get the Picture—Buyer's Guide to the Camera Phone
Knight Ridder Papers Syndicate, Effect on consumers' from switching from VCR to DVD technology, June 16, 2002
Democrat and Chronicle "Electronic shredder" technology developed by Xerox Corp., June 4, 2002
Democrat and Chronicle Game-programming master's concentration, March 2, 2002
New York Times You've Got Maelstrom: Dealing With Too Much E-Mail" July 5th, 2001
*US News and World Report "*Digital Photography: Newer Cheaper Cameras" July 2001
*Washington Post "*Digital TV Technology" May 2001
*Rochester Business Journal, "*Annual Best of the Web Judging" 10/10/99
*Rochester Business Journal, "*Annual Best of the Web Judging" 11/11/98
*Rochester Business Journal, "*Voice Recognition Software" 10/13/98
*Christian Science Monitor," *Battling Internet Pornography" 10/13/1998
Brighton-Pittsford Post, Coverage of Volunteer of the Year award. 9/98
News & Events "Newsmakers: Presentation at Governor's Conference" 8/6/98
*News & Events, "*Students Design Web site for 150th anniversary of women's rights", 7/9/98
News & Events, "Media Hits" 2/5/98
News & Events, "RIT Boasts New Look*"* 1/22/98
News & Events "Professor tests techy toys under Web Alias 'Gadget Boy'" 11/6/97
Christian Science Monitor quoted in article on "Internet Conspiracies" 10/7/97
Rochester Business Journal article on "CPA Site Certification" 10/24/97
Rochester Business Journal article on "Futurists Playing Push-Pull on the Web" 5/2/97
Lake Affect Magazine, Cited in "Cyberlife on the North Coast*" 5/97*
Democrat and Chronicle quoted in "Xerox Software Suit" 5/1/97
Pittsburgh Post Gazette, quoted in "Conquering the Web" 3/16/97
Democrat and Chronicle quoted in story on "RIT Finds the Way to San Jose" 3/16/97
Daily Record, quoted in story "RIT chosen to Exhibit at ACM '97 Expo" 2/25/97
ArtScene, Write-up *in* WWW.CAROL.ORG, Winter-Spring 1997 issue
Washington Post "Software Enables Employers to Monitor Internet Use" *1/12/97*

Rochester Business Journal article on “Best of the Web” contest 10/18/96
Rochester Business Journal listed as judge in “Best of the Web” contest ad 9/96
American Careers, quoted in “Cybercareers”, Fall ’96 issue
Winnipeg PC User Group, Inc Newsletter Reprinted Gadget Boy Column 8/96 issue
Democrat and Chronicle quoted in story on "Museums hope CAROL makes name on Web" 3/24/96
Democrat and Chronicle quoted in story on "Caught in the Web" 3/24/96
Democrat and Chronicle quoted in story on "Sun possibly buying Apple" 1/24/96
Democrat and Chronicle quoted in column on the future of the Internet 1/1/96
Rochester Business Journal quoted in story on Web Page Design 12/22/95
Rochester Business Journal quoted in story on "Cyberfuture” 10/6/95
Democrat and Chronicle mentioned in article on "Roch. Internet Web Develop. Assoc" 9/25/95
Guitar Player Magazine quoted in article on "the Internet guitar scene" 9/95
News and Events mentioned in article on Internet Developers Association 9/8/95
Rochester Business Journal quoted in story on Windows ‘95 customer service overload 8/31/1995
News and Events mentioned in article on Eastman House Site Summer/95

Electronic

WXXI-AM radio show, Democrat and Chronicle, Aug. 22 and Sept. 14, 2003
WXXI 1320 Connection Hour Interview on Technology’s diffusion into Business and Entertainment .August 8, 2002
WHAM-AM . Western New York Business Report, interview on "Microsoft Ruling" 10/1/99
WHAM-AM . Western New York Business Report, interview on "Linux" 9/9/99*WHAM-AM* . Western New York Business Report, interview on "Microsoft Anti-Trust Hearing" 10/19/98
WHAM-AM . Western New York Business Report, interview on "Communications Decency Act",10/31/97
WORK-TV, “Internet Privacy” 12/12/96
WXXI-AM, 60 minute 1370 Connection interview on the Internet 9/23/96
WGRC TV, Internet Security/Privacy 8/21/96
WHAM-AM . Western New York Business Report, interview on "Telecommunications Bill" 2/9/96
WHAM-AM . Western New York Business Report, interview on "Win ‘95 Virus" 2/5/96
WXXI-AM Bookshelf, 30 minute interview on "writing on-line" 1/12/96
WHAM-AM . Western New York Business Report, interview on "slow sales of PCs" 12/18/95
WROC-TV 8 11 PM news story, interview on "Rochester on the Net “ 12/9/95
WHEC-TV 10 11 PM news story, interview on "reasons to have computer in home" 11/1/95
WOKR-TV 13 6 and 11 PM news story, interview on "security on the 'Net," 9/2/95
WHAM-AM Western New York Business Report, interview on "Windows '95" 8/24/95
WOKR-TV 13 interview on "Kodak CEO taking questions on-line" 8/16 & 8/17/95

13. Steve Kurtz, M.F.A., M.S. – Information Technology, GCCIS

Curriculum Vita

NAME: Stephen Kurtz

CURRENT ACADEMIC RANK: Professor

TENURE STATUS: Tenured

Date of original appointment to this faculty, followed by dates and ranks of advancement:

Dates	Ranks of Advancement
September, 1982	Educational Development Faculty
September, 1987	Assistant Professor
September, 1993	Associate Professor
September, 2000	Professor

Degrees with fields, institutions, and dates:

Degree	Field	Institution	Date
BA	Psychology	University of Miami	1965
MFA	Imaging Arts	R. I. T.	1979
MS	Computer Science	R. I. T.	1987

Conferences, workshops, and professional development programs in which you have participated to improve teaching and professional competence in IT:

August, 2004. ACM SIGGRAPH conference on computer graphics and interactive techniques. Los Angeles, CA
October, 2003. Pop!Tech Conference, Camden, ME
October, 2002. Pop!Tech Conference, Camden, ME
October, 2001. Pop!Tech Conference, Camden, ME
July 1999. QuickTime Live conference, Los Angeles, CA
June, 2000. Workshop on Macromedia Multiuser Server Technology

Consulting—list agencies and dates, and briefly describe each project:

Capability Maturity Model – 1997-1998
Project leader of a team that designed and produced an interactive multimedia CD-ROM to teach the first level of the Capability Maturity Model to software engineers.This project was commissioned by Xerox Corp and the Rochester Institute of Technology.

Break It, Fix It, Ride It 1998-1999
Lead programmer and project leader of a team to develop interactive mountain bike repair CD-ROM. Developed dynamic menuing system and adaptable player for display of large amount of written and graphic instructional media. Applied HCI and instructional technology principles to create effective performance support system.

Anabasis Software 2000 - 2001
Multimedia programmer for the development of an authoring system and multimedia player integrating Java, XML, database, and Macromedia Director to deliver just-in-time performance support and training.

Department, college, and/or university committees of which you are a member:

Department Committees
- Graduate & Undergraduate Curriculum Committees
- Co-coordinator of Computer Mediated Experience Groups

GCCIS Committees
- Mid Tenure Committee

Institute Committees
- Provosts Learning Innovation Grant Committee

Principal publications of the last five years; please state in standard bibliographic format.

Doubleday, N. and Kurtz, S. "Shared Extensible Learning Spaces." Proceedings of SIGITE (ACM Special Interest Group on Information Technology Education), Salt Lake City, Utah, to appear October 2004.

Kurtz, S. and Doubleday, N. (2004) "Virtual Worlds, Cognitive Maps." Proceedings of Educators program from the 31st annual SIGGRAPH conference on Computer graphics and interactive techniques. Los Angeles, CA, 2004.

Doubleday, N. R., Kurtz, S. H., and Goodman, G. I. "Using a Multimedia Environment to Introduce Programming to Students of New Media." Proceedings of the 2002 Conference for Information Technology Curriculum (Society for Information Technology Education), Rochester New York, 2002.

Other scholarly activity: grants, sabbaticals, software development, etc.:
Provost's Learning Innovation Grant, May 2003.

Sabbatical to develop materials for learning programming in a multimedia environment, December, 2004

Scientific, professional, and honor societies of which you are a member:
Member SIGITE (ACM Special Interest Group on Information Technology Education)

Courses taught this and last academic year term-by-term. (This year is the year in which this report was prepared; last year was the year prior to this.) If you were on sabbatical leave, please enter the information for the previous year. Please list each section of the same course separately.

20031	4002-231	Programming II for New Media
	4002-538/738	Multiuser Media Spaces
20032	Sabbatical	
20033	4002-230	Introduction to Programming for New Media
	4002-538/738	Multiuser Media Spaces
20041	4002-231	Programming II for New Media
	4002-538/738	Multiuser Media Spaces

Other assigned duties performed during the academic year, with average hours per week. Indicate which, if any, carry extra compensation. If you are course coordinator for courses taught by other than full-time faculty, please indicate here which courses.

As *Co-coordinator for the Computer Mediated Experience* academic area I schedule courses, evaluate faculty and otherwise support the chair in administrative duties and provide leadership and direction to my group.

Number of students for which you serve as academic advisor: 60

Estimated percentage of time devoted to scholarly and/or research activities: 30%

Please give a brief description of your major research and scholarly activities:

Shared Extensible Learning Spaces (SHELS)

SHELS is an evolving set of strategies and tools for virtualization: the representation of complex concepts in interactive media spaces. Typical projects involve the modeling of dynamic and self-organizing systems. Our tools are extensible, reusable building blocks, which tend to blur the distinction between author and audience. User/authors participate by extending the system at the level most appropriate to their skills and objectives. We design our environments to facilitate active learning and encourage inquiry and scholarship at every level.

Diagnostic Learning Lab for New Media Programming Students

We are developing a Diagnostic Learning Lab to support our existing studio-style programming classes for New Media students. It will be a place where students can come for assistance if they do not fully understand or cannot complete studio exercises or class materials. It will be staffed by student Diagnostic Teachers who will be trained in the use of materials and software developed by our group. They will use our tools to diagnose a student's unsuccessful strategies and provide additional activities to build suitable skills.

14. Andrew Phelps, M.S. – Information Technology, GCCIS

Andrew Phelps
Department of Information Technology
Rochester Institute of Technology
102 Lomb Memorial Drive, Rochester, NY 14623-5608
(585)-475-6758
amp@it.rit.edu
http://andysgi.rit.edu/

Education:

- Master of Science in Information Technology, Rochester Institute of Technology, conferral date May 1999.
- Bachelor of Fine Arts in Computer Animation, Bachelor of Fine Arts in Painting, Bowling Green State University, conferral dates May 1997. Graduated Magna Cum Laude.

Teaching Experience and Professional Positions:

- Tenure-track faculty at the Rochester Institute of Technology Department of Information Technology, 1999 – present.
- Member of the Advisory Board for the International Association for Game Education and Research. http://www.iager.org. 2004-present.
- Served as Contributing Editor for the International Game Developer's Association Special Interest Group on Online and Downloadable Games. 2002-2003. 2003-2004.
- Elected and served on the National Curriculum Committee under the Society for Information Technology Education (SITE). 2001-2002.
- Invited to and participated in the Macromedia Director MX Beta Team (codename "Foster"). This is a closed beta available by invitation only to recognized expert users of the Director product line. Invited by Bob Tartar of Macromedia Developer Relations.
- Invited to and participated in the Macromedia Director MX 2004 Beta Team (codename "Woody"). This is a closed beta available by invitation only to recognized expert users of the Director product line. Invited by Macromedia Developer Relations.
- Elected and served as a Co-Chair of the External Authoring Interface (EAI) Working Group for the Web 3D Consortium (formerly the VRML Consortium). http://www.web3d.org/. May 1999 –May 2001.
- Named Co-Editor of the Virtual Reality Modeling Language (VRML) –Part2: External Authoring Interface proposal (ISO/IEC FDIS 14772-2:2001) for 2000-2001.
- Elected and served on the V-Learn Board of Directors. V-Learn is a non-profit organization sponsored by the Contact Consortium and several academic institutions including Cornell, HIT Lab, Harvard, and many others, which is responsible for investigating the use of 3D Web-based technologies for educational purposes. May 2000 – Sept 2003.

Publications & Conference Presentations:

- "MUPPETS: The Multi-User Programming Pedagogy for Enhancing Traditional Study" presentation at the Serious Games Summit, Washington DC, October 2005.
- "MUPPETS: The Multi-User Programming Pedagogy for Enhancing Traditional Study: An Environment for both Upper and Lower Division Students" IEEE Frontiers in Education 2005. October 2005. Indianapolis, Indiana.

- “Mastering the 3D Experience” Reviewed presentation at Macromedia MAX 2005. Anaheim, California. October 2005.
- “MUPPETS: The Multi-User Programming Pedagogy for Enhancing Traditional Study” Serious Games Summit, Game Developer’s Conference 2005. March 2005.
- “An Open-Source CVE for Programming Education: A Case Study. A Presentation of Work from the M.U.P.P.E.T.S. project.” Half-Day Course. A Phelps, C Egert, K. Bierre, D. Parks. SIGGRAPH 2005, Los Angeles, California. August 2005. Course Materials available online: http://muppets.rit.edu.
- “MUPPETS: A Classroom Case Study” by K. Bierre, A. Phelps. CITC 4, with reproduction in the conference proceedings and the ACM Digital Library.
- "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study " by A Phelps, K. Bierre and D. Parks. CITC3, with reproduction in the conference proceedings and the ACM Digital Library.
- "Evaluating Technical Students in Entertainment Technology". A Phelps, C Egert. Presentation at the St. Lawrence American Society for Engineering Education (ASEE) Conference, SUNY Binghamton, April 2005.
- “Simulating Water with Shockwave 3D” Director-Online User’s Group. October 2004.
- "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study" A Phelps, K Bierre, and D Parks. Presentation at the Computer Gaming Technologies Conference, April 2004. Hosted by Algoma University College. Toronto, Canada.
- "Online and Downloadable Games IGDA State of the Industry Report" Contributing editor for the technology section of the International Game Developer's Association (IGDA) annual report on web & downloadable games. Presented at Game Developer's Conference (GDC) in March. 2004.
- "Using JavaScript Syntax in Director MX 2004 for 3D Filesystem Visualization" A Phelps. Macromedia DevNet Center for Director. Macromedia, Inc.
- "Fun & Games with Multi-Language Development" A Phelps & D Parks. ACM Queue, Feb. 2004.
- "The Battle For Your Living Room" Panel Discussion where I served as expert on the gaming industry. SoftEdge 2003 Conference, sponsored by the Reuters Venture Capital Group at New School University, New York, NY. Oct. 2003.
- "O'REILLY Alpha Geek" - by personal invitation I was one of Tim O'Reilly's geek speakers at the O'Reilly Emerging Technologies Conference 2003. I spoke about multi-user worlds and games and their relationship to social software.
- "Methodologies for Quick Approximation of 2D Collision Detection Using Polygon Armatures" by A Phelps and A Cloutier. Published both at the Directors Online User's Group [DOUG] and the Macromedia DevNet forum.
- "Generating Perlin Noise with Director MX" by A Phelps. Published by the Macaromedia DevNet Center. http://www.macromedia.com/devnet/mx/director/articles/perlin_noise.html
- “Games and Information Technology" Sept. 2002. Paper presented at the Society for IT Educators 3rd annual conference.
- “An Empirical Comparison of Baccalareate Programs in Computing" Sept. 2002. Co-Authored with Barry Lunt (BYU), Han Reichgelt(GSU), Tina Ashford(MSC), Erick Slazinsky(Purdue), and Cheryl Willis(U. of Houston). Paper at the American Society for Engineering Education (ASEE) 2003 conference in January. WINNER: “2003 ETD Best Session Award”.
- "An Empirical Comparison of Baccalaureate Programs in Computing" (with Lunt, et. al); Proceedings of the 2003 International Conference on Engineering and Computer Education (ICECE 2003), Santos, Brazil, March 2003.
- “An Empirical Comparison of Baccalareate Programs in Computing" Sept. 2002. Co-Authored with Barry Lunt (BYU), Han Reichgelt(GSU), Tina Ashford(MSC), Erick Slazinsky(Purdue), and Cheryl Willis(U. of Houston). Paper presented at the Society for IT Educators 3rd annual conference.
- “10 Things Wrong with Games in the Academic Community” May 2002. Talk presented at the Computer Gaming Technologies Conference in Algoma, Canada.

- "3DISO: Adapting Isometric Scrolling to 3D Environment using Shockwave 3D" featured at the Director Online User's Group. http://www.director-online.com. Online, February 2002.
- Served as a member of the Paper Review Panel for the Web3D 2002 Conference, sponsored by SIGGRAPH and SIGCHI.
- "Teaching Old Turtles New Tricks: Artificial Life Simulation Using Director" featured in the Director Online User's Group (DOUG) http://www.director-online.com. Online, April 2001.
- "LingoLand: Simple Terrain Simulation in Lingo" featured in the Director Online User's Group (DOUG) http://www.director-online.com. Online, April 2001.
- "Perspective Based Mazes: The Director Dungeon Crawl" featured in the Director Online User's Group (DOUG) http://www.director-online.com. Online, March 2001.
- "Sexy Spheres and Silly Shadows: Raytracing in Lingo" featured in the Director Online User's Group (DOUG) http://www.director-online.com. Online, February 2001.
- Guest Lecture appearance in the course of Dr. Martin Danahay, University of Texas at Arlington, speaking on the narrative qualities in games and virtual worlds. April 2001.
- Presentation on the use of 3D Virtual Worlds as medium for storytelling at the SLS 2000 Conference, sponsored in part by Georgia Tech, held at the Colony Square Hotel, Atlanta GA, fall 2000. Presentation published in the conference proceedings.
- Presentation at the Avatars 2000 conference on the use of persistent database techniques in world construction. www.ccon.org/conf00/html/
- Presentation on the use of 3D games as an educational tool at the V-Learn 2000 conference physical node at the Cornell Theory Center, Ithaca NY. October of 2000. www.vlearn3d.org
- Named Co-Editor of ISO / IEC 14772-2:xxxx "External Authoring Interface". This specification will be the first addition to the VRML Standard ISO/IEC 14722-1:1997. This addition and its relevant annexes were approved by the ISO in the SC24 subcommittee meeting in Paris, France, Summer 2000, which I attended to successfully defend and edit the document. This document is listed in full at http://www.web3d.org.
- Numerous reviews of technological gadgets at GadgetBoy, writing under contract as staff. http://www.gadgetboy.com.
- Numerous reviews of gaming platforms and the game industry at TrailBreaker.com for their gaming funnel and industry buying guide. http://www.trailbreaker.com. Writing as an independent consultant.
- "Lego Robots Will Appeal to Dad Too" Rochester Democrat & Chronicle, April 2000.
- "Everquest: A New Level of Addiction" Rochester Democrat & Chronicle, May 2000.
- Computer Artist of the Month at Computer Graphics World Online (http://www.cgw.com). CGW is a monthly printed and online magazine focusing on the animation, visualization, and game design markets' use of 3D graphics technology.
- "Introduction to the External Authoring Interface" 90 minute conference course at the SIGGRAPH Web3D 2000 conference in Montery, California, Febuary 1999. Web3D2000 is a joint event sponsored by ACM through SIGGRAPH and SIGCOMM.
- Artwork presented at the SIAM Geometric Modelling Conference in Albuquerque, New Mexico by Christen Barghiel of Side Effects Software Inc (SESI) as a demonstration of a new computer graphics modelling technique known as "surface pasting".
- Presentation at the Avatars 99 conference held in cyberspace through ActiveWrolds® multi-user server technology entitled "Multi-User Tech Talk". For more information please see http://www.ccon.org/conf99/index.html.
- Presentation at the Digital Biota 3 conference at San Jose State University for work in multi-user, Java/VRML based networked virtual reality environments. Sponsored by the Contact Consortium, San Jose State University Department of Mathematics and the NASA Ames Research Center. November 1999. Work presented researched and developed 1998-1999. Information on the conference available at http://www.biota.org.
- "Fish" featured for photorealistic rendering techniques in the Side Effects Gallery, http://www.sidefx.com/, Summer 1999.
- "Ancient Elf" featured in the Side Effects Gallery, http://www.sidefx.com/, October 1998.

- "Dragon Tutorial" featured online at 3D-Café, www.3dcafe.com, May 1997. "Dragon Tutorial" also featured at MaxTrends® and the BoboLand® websites.
- "Sector 7G" featured in *Inside 3D-Studio MAX*, by Elliott and Miller, New Riders Publishing, 1996, page 412.
- "Andyweb Screenshot", "Fly3" featured in *3D Computer Graphics and Animation: From Starting Up to Standing Out*, 1997, by Mark Giambruno, New Riders Publishing, color insert and page 435.
- Wide collection of computer generated graphics work featured in *Selecion de HOT! Shareware*, a monthly publication in Spain. January 1997.

Press and Public Appearances:

- "Some Colleges Take Games Seriously" by Claudia Deutsch. *The New York Times*. Featured my work in games education, full page in the business section. Also had pictures of me and my students.
- Work on games education featured in the "Voice of America", and is available for download at http://www.voanews.com.
- Work in games education featured at http://austin.bizjournals.com Sept. 2, 2002.
- Work in games education featured at http://dailynews.att.net (transcript of ABC radio program "Cyber Shake") July 24, 2002.
- Interviewed for special presentation on Games Education for National Public Radio *"All Thing Considered"* (locallyWXXI-AM). May 22, 2002. Broadcast nationally.
- Appeared on TechTV, a technical news service available in the Silicon Valley area to promote and discuss games education. May 2002.
- *"*Older Gamers Now the Norm*"* by D&C staff and wire reports. *Democrat and Chronicle* Oct 9, 2002.
- *"*Older Gamers Now the Norm*"* also featured on http://www.slashdot.org. October 2002.
- Interviewed for German National Public Television to promote and discuss RIT's programs in games education. This interview was rebroadcast in Germany, Switzerland, and Australia.
- *"*Schools Grooming Game-Makers of the Future*"* *Associated Press*, March 31: Story on RIT's computer game program picked up nationwide.
- "Schools Grooming Game-Makers of the Future". USA Today. More coverage of my work with games education. http://www.usatoday.com/life/cyber/tech/review/2002/4/01/game-developers.htm (differs in content with some of the above).
- Write-up of NSF Grant work with the Cornell Theory Center and RIT featured in The Cornell Chronicle. http://www.news.cornell.edu/Chronicles/8.23.01/Chronicle.pdf.
- Referenced in "Images of the Future" by Tyler Hamilton appearing in the Toronto Star with four quotes as a gaming and 3D expert, for the "Day in 3-D" edition. April 21st 2001. http://www.thestar.ca.
- Work on Games Education featured in the following papers (includes article placements by *The New York Times* and *USA Today*): *News* (Birmingham, AL), *Daily Herald* (Arlington, IL), *Daily News* (McKeesport, PA), *Frederick* (MD), *News-Post, Island Packet* (Hilton Head Island, SC), *Journal and Courier* (Lafayette, IN), *Kentucky News Era* (Hopkinsville), *Knoxville* (TN), *News, Sentinel, Lodi* (CA), *News-Sentinel, Metro* (Philadelphia), *Metro West Daily News* (Farmington, MA), *Montgomery* (AL) *Advertiser, Porterville* (CA), *Recorder, Record Search Light* (Redding, CA), *San Francisco Examiner, Santa Cruz* (CA), *Sentinel, Santa Maria* (CA), *Times, Signal* (Santa Clarita, CA), *South Bend* (IN), *Tribune, Springfield* (OH), *News-Sun, Tahoe Daily Tribune* (South Lake Tahoe, CA), *Times Observer* (Warren, PA), *Berkshire Eagle* (Pittsfield, MA), *Herald News* (Fall River, MA), *Leader* (Corning), *Register-Guard* (Eugene, OR), *Citizen* (Auburn), *News and Observer* (Raleigh, NC), *Niagara Gazette* (Niagara Falls), *Walla Walla* (WA), *Union Bulletin, Daily Journal* (Manassas, VA), *Dispatch* (Moline, IL), *Montgomery Journal* (Rockville, MD), *News and Record* (Greensboro, NC), *Northern*

Virginia Journal (Alexandria, VA), *Prince George's Journal* (Lanham, MD), *Rock Island* (IL), *Argus, Detroit News, International Herald Tribune* (Paris, France), *Davis* (CA), *Enterprise, Kalamazoo* (MI), *Gazette, Marin Independent Journal* (Novato, CA), *San Antonio* (TX), *Express News, Sioux City* (IA), *Sunday Journal, Sunday enterprise* (Brockton, MA), *Sunday Leader-Herald* (Gloversville), *Sunday News Journal* (Wilmington, DE), *Telegraph herald* (Dubuque, IA), *West Sound Sun* (Bremerton, WA), *Gazette* (Cedar Rapids, IA), *San Juan* (PR), *Star, Ventura County* (CA), *Milwaukee Journal Sentinel, Times* (Hammond, IN), *Vidette Times* (Valparaiso IN), *Edmonton* (Alberta, Canada) *Journal, Statesman Journal* (Salem, OR), *Sunday Journal* (Albuquerque, NM), *Sunday Times* (Walnut Creek, CA), *Cumberland* (MD), *Times News, Daily Breeze* (Torrance, CA), *Lubbock* (TX), *Avalanche-Journal , Film/Tape World, The Norman* (OK), *Transcript, Modesto* (CA), *Bee, Battle Creek* (MI), *Enquirer, Austin* (Texas), *American-Statesman, News-Capitol And Democrat* (McAlester OK), *IEEE Computer, The Daily News* (Batavia).

Grants:

- Serving as a Co-Principal Investigator on "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study". This work was funded through the RIT Provost's Learning Initiative Grant (PLIG) program. Award of $12,500.
- Serving as Principal Investigator on "MUPPETS: Proposal for C# and DirectX Support for MS Enabled Curricula". Funded through Microsoft Research, Microsoft Corporation, Redmond, Washington. Award of $84,000.
- Listed as Co-Principal Investigator on "MUPPETS: Multi-User Programming Pedagogy for Enhancing Traditional Study". A Phelps, C Egert, K Bierre. Funding pending for $423,567 through the Advanced Learning Technologies program at the National Science Foundation. Consideration given past round 1. Decision pending.
- Served as Co-Principal Investigator on "Development of Speech Recognition and Computer Communications as a Support for Deaf and Hard of Hearing Students" an NTID based grant that is exploring the use of wireless technology in the classroom. This grant is funded through the Department of Education. May 2000.
- Served as a Co-Principal Investigator on "Jumping Genes" – a project involving the use of virtual worlds to aid high school science education. This project is in conjunction with the Cornell Theory Center, Cornell University (Ithaca, New York). 2002. Funding was through the CTC, from the National Science Foundation.

Professional Memberships:

- Currently an active member in the Independent Game Developers Association (IGDA) and a participant in the discussion there for a call for academic leadership in games education.
- Society for IT Education (SITE) – a group concerned with and working towards a national accreditation standard for Information Technology.
- Association for Computing Machinery (ACM), and Special Interest Group in Computer Graphics and Interactive Techniques (SIGGRAPH).
- Web 3D Consortium (W3DC) sponsored by SIGGRAPH as the development body of the Virtual Reality Modelling Language (VRML) and X3D initiatives. W3DC - External Authoring Interface Group - a development community charged with developing an external programming API to the VRML language, and submitting such development to the ISO for ratification.

Honors and Awards:

- Nominated for the Eisenhart Outstanding Teaching Award 2000 – 2001.
- Nominated for the Richard and Virginia Eisenhart Provost's Award for Excellence in Teaching 2000-2001.
- Phi Kappa Phi National Honors Society.
- ASEE Conference for Industry and Education Collaboration Engineering Technology Division (ETD) Best Session Award. 2003.

Courses Developed:

- Developed and proposed a **Masters Concentration in Game Programming**, developed curriculum for 2D and 3D Graphics Programming, new graduate courses in the Information Technology curriculum using hardware accelerated graphics to produce game and virtual systems engines. These courses consist of 2D and 3D Graphics Programming (4002-734 and 4002-735) as well as Game Engine Architecture and Design (4002-836). These courses were so successful that an undergraduate version has been developed (4002-501/502), and partnerships with the Software Engineering department have made these available to students in that program as well.
- Co-designed course and lab materials for a database programming class at the Rochester Institute of Technology, and co-taught the pilot with Dr. William Stratton. Materials centered on use of Java-based networked environments with Oracle database back-ends. I helped develop the initial offerings of 484 and 486 (I was not involved in subsequent development beyond the first offering).
- Introduction to VRML – Co-Listed Graduate and Undergraduate course that introduced students to 3D content on the web. Students produced a simple multi-user world using VRML, JAVA and the EAI. This was a significant modification of previous course materials prepared by Professor Steve Kurtz.
- Co-Developed a Seminar on Artificial Life, which focused on using genetic algorithms as a basis for world simulation and sprite-based character behavior. This work was made publicly available through publication through the Digital Biota Working Group, and has since garnered a lot of academic attention, and was referenced and re-used in course work at Columbia University.

Committee Service at RIT:

- **Department Level Service**
- Information Technology Department Graduate Curriculum Committee, Chair. 2001-2002, 2002-2003. Member, 2004-present.
- Information Technology Department MS-IT Committee, member. 2000-2001.
- Information Technology Department Facilities Committee, member. 2001-2002.

- **College Level Service**
- GCCIS Tenure Committee. 2005-2007.
- B. Thomas Gollisano College of Computing and Information Sciences (GCCIS) Curriculum Committee, member. 2001-2002, 2002-2003, 2003-2004. (Formerly the College of Applied Science and Technology Curriculum Committee).
- GCCIS Dean's Search Committee, member. 2001-2002.
- Taskforce on Liaisons with Information Technology Services. 2001-2002, 2002-2003.

- **Institute Level Service**
- Graduate Council Representative to GCCIS, member. 2001-2002, 2002-2003, 2003-2004. Graduate Council is a standing subcommittee of the Academic Senate.
- Taskforce on Directions for the Laboratory for Applied Computing, member 2002-2003.

- Taskforce on Rewrite of Guidelines for Degree Proposals, member. 2002-2003. This is a joint subcommittee with members from Graduate Council and the Institute Curriculum Committee.

- **Professional Service**
- Program Reviewer for the Ontario Post-Secondary Education Quality Assessment Board with regard to the Masters of Science in Computer Game Technology, proposed by the University of Abertay in conjunction with Algoma University College.
- Conference Organizer and Paper Reviewer for FuturePlay 2005.
- Reviewer for the Star Schools Program, Summer 2005, US Department of Education.
- Conference organizer and paper reviewer, FuturePlay 2005. East Lansing, Michigan.

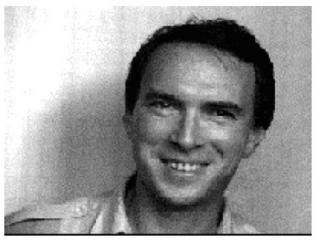
- **Service to the Community**
- Faculty Advisor to the Electronic Gaming Society 2001-present.
- Presentation at the BOCES Development Day Event, Spring 2002. Game Programming. A full-day conference for high-school students to explore career study in higher education. Session presented twice.
- Presentation to visiting BOCES tour groups at RIT on the games industry and college programs in games education. October 2003.

15. Leon Reznik, Ph.D. – Computer Science, GCCIS

CURRICULUM VITAE

I. Summary Information

Name:	**Leonid (Leon) REZNIK**
Current Position:	**Professor**
	Computer Science Department
	Rochester Institute of Technology
Phone:	**585-475-7210**
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Email:	**lr at cs.rit.edu**
WWW Home page:	**http:\\www.cs.rit.edu\~lr**



Qualifications:

- The highest degree - Ph.D. in Engineering specializing in Information and Measurement Systems, 1983 from Leningrad Polytechnic Institute, St. Petersburg, Russia with the thesis topic "Use of a priori Expert's Information in Information and Measuring Systems"
- Academic title of the Senior Research Fellow/Senior Lecturer in Information and Measurement Systems, 1987
- Master's Degree of Electrical Engineer in Computer Control Systems (5.5 years course) from St.Petersburg Aircraft Academy, St.Petersburg, Russia, 1978
- Graduate Certificate in Tertiary Education, Victoria University, Australia, 2001
- College course in Cooperative Learning, University of Minnesota, 1998
- Short courses in UNIX operating system, C programming

a record of effective academic leadership and an evidence of an international reputation:

- Management of industrial, research and development teams and projects (see section II.B and ***over last two years*** – section II.D)
- In 1994 organized and had been leading until 2001 a collaborative research group in fuzzy technology. As a research mentor of this group I was developing the research skills of the group members in the new research area of neuro-fuzzy computing.
  - Was invited to address international conferences, to chair sessions, to serve as a member of program committees, to review a number of research grant applications, theses, and papers (in 1996-2001: 6 invited lectures, reviews of: 1 ARC Large Grant, 1 - Bilateral Science and Technology Collaboration Program (Department of Industry, Science and Technology), 8 theses, more than 50 papers, 4 books)
  - Was invited to teach courses at other universities and industry (Monash University, University of Tasmania, Australia, University of Texas at El Paso, University of Harburg-Hamburg, Germany, Singapore, Malaysia)

Over last two years:

- Served as an NSF reviewer and panellist for ITR and Career Programs,
- reviewed 4 theses, 2 book proposals and a number of papers

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a record of research and publications

26 years of experience in research and work with research and development organizations

- Research collaboration internationally (Australia, Russia, Hungary, Poland)
- Committed to interdisciplinary research (projects include applications in different areas of computer science and engineering and information technology) with main research areas:
  - sensor networks and systems, multimedia and instrumentation systems and networks– intelligent technologies application,
  - fuzzy system analysis and design, neuro-fuzzy control and data analysis,
  - real-time and embedded microprocessor systems,
  - expert systems with application to information analysis
- Published a considerable number of papers: in 1994-2002 published 2 books (authored 1 and coedited 1), 6 book chapters and 48 refereed papers - *see the publication list*
- Compiled and edited as a first editor the volume "Fuzzy System Design: Social and Engineering Applications, Physica Verlag, Heidelberg (Germany) – New York(USA), 1998, which covers a variety of research fields: engineering and information technology, computer and mathematical sciences, business management and psychology

Over last two years:

- Published 1 book, 2 book chapters, 1 journal and 6 conference papers
- Compiled and prepared for publication as the first editor another research book "Soft computing in measurement and information acquisition", which was published by Springer Verlag in 2003

- **Track record of attracting research grants**
  - 2 recent (2001 - 2003) SPIRT (Australian Research Council) grants - joint with the Department of Electrical and Computer Systems Engineering, Monash University, Australia as a Chief Investigator
  - Received 4 small research grants

Over last two years: Received 2 small grants

a record of achievement in teaching and supervision at undergraduate and postgraduate levels;

18 years experience of teaching and training post- and undergraduate students and professionals including 6 years part-time in Russia, 10 years full-time in Australia, in US since January 2002

Teaching areas: Artificial Intelligence, Computer Science, Computer Networking and Data Communications, Measurement and Instrumentation, Electrical Engineering and Telecommunications, Control Engineering.

- Experience in teaching and developing materials for both under- and graduate courses
- Took part in the development of a new undergraduate degree in Multimedia and Telecommunications Engineering and graduate degrees in Computer Systems and Software Engineering
- Prepared for publication and published with Butterworth-Heinemann (now Elsevier), Oxford, England the book "Fuzzy Controllers", 1997. It has been adopted as a textbook for engineering, computer science and information technology courses by several universities around the world

- Organised classes exchange with Monash University Department of Electrical and Computer Systems, delivered short courses on Intelligent Control in Singapore and Malaysia
- Published 3 papers on my teaching experience
- Received good performance assessments from my students and peers
- 5 research students have completed their research degrees under my supervision

Over last two years:

- Initiated and started teaching one new course, significantly modified syllabus of two others,
- Chaired thesis committees for three Master's students (completed)
- Five students developed their courseware into research results, already presented at the international and national conferences
- Examined 4 theses for other universities

a record of achievement in administration in a tertiary institution or equivalent, and experience in implementing equity and diversity policies and programs:

- CRG administration
- Final year student supervision and 1st year coordination
- Member of the faculty Undergraduate and Coursework committee
- Organized and conducted (1994-2000) a biannual international symposium "Fuzzy Logic: From Theory to Real Life"
- Organised presentations at the department and discussions with internationally recognised experts
- Work and teaching experience at UTEP College of Engineering, which has second largest enrollment of minority students in US

Over last two years:

- Initiated and led the preparation of the 1st GCCIS Conference on Computing and Information Sciences
- RIT Council representative
- RIT Faculty Senate Elected Member
- RIT Senate Nominations Committee Chair
- RIT Intellectual Property Committee member
- CS Department Colloquium Committee member
- CS Department Assessment Committee member
- Session chair at CIHSPS2004 - IEEE International Conference on Computational Intelligence for Homeland Security and Personal Safety, Venice, Italy, 21-22 July 2004 and IEEE-FUZZ '04, The 13th IEEE International Conference on Fuzzy Systems, Budapest, Hungary, July 25-30, 2004
- NSF Reviewer and Panelist – ITR and Career Programs
- Textbook and research book reviewer – Pearson Education, USA and World Scientific, Singapore; paper reviewer – IEEE Fuzzy Systems, Fuzzy Sets and Systems; thesis reviewer: University of Tasmania and University of Central Queensland, Australia, Hobart and William Smith Colleges, Geneva, NY

II. Research Projects and Directions

A. Fundamental research

1. Feasibility investigation of applying new emerging intelligent methods such as expert systems, fuzzy logic, neural networks and interval analysis for expression and evaluation of the measurement uncertainty. Fuzzy and interval theory models are examined for describing some uncertainty components. Research towards the creation of a general theory of measurement and perception.

Rationale for research

The evaluation of uncertainty of measurement is a central concern in all quantitative fields of measurements. The International Standards Organization (ISO) "Guide to the Expression of Uncertainty in Measurement" establishes a consistent and widely agreed upon methodology based on probability and statistical theories. Since the early 90's and in particular since publication of the ISO Guide, there has been a widening recognition that uncertainty of measurement is no less critical than the value of the measurement result itself. The rationale for intelligent techniques applications in the modern environment is driven by:

- increasingly higher resolution and higher sensitivity measurements which require more sophisticated physical models for their description,
- extensive pre and post-processing of measurement data so that the final measurement result is many steps removed from the initial measurand(s), and
- increasingly sophisticated mathematical treatment of measurement uncertainty, currently based on the ISO Guide and probability framework.

I believe that a neuro-fuzzy approach can produce models, which can be applied to describe measurement (and more generally perception) uncertainty for both qualitative and quantitative measurements with applications ranging from engineering to the social sciences.

Results achieved so far

- uncertainty sources are classified in regard to the feasibility of intelligent model application,
- fuzzy and neural models are proposed for description of some uncertainty components,
- fuzzy methods are investigated for processing uncertainty and measurement results.

2.Feasibility study of measurement methodology for computer security evaluation

Rationale for research

Information assurance and computer security has become one of the most important aspects of information technology and the hottest research field. The goal of this research and development is to improve system and network security. However, we still do not know how to measure and /or evaluate security and its attributes. Designers often apply information assurance or security technology to systems without the ability to evaluate the impact of those mechanisms on the overall system. And as usual, our inability to measure acts as a main constraint to our ability to improve.

Computer and network system security is recognized as a complex issue with no clear definition, with the research domain having no sharp boundaries. Over recent years and especially months, one could see substantial changes in the security problems pattern and their significance on a national and international scenes. While information assurance and security traditionally has been focused on confidentiality of information, the problems of greatest concern today relate to the availability of information and continuity of essential services, which emphasizes the domain of a new emerging discipline of system survivability.

This area will serve as a major application of the previous research with fuzzy and neural networks models being investigated for applications in measurement and evaluation of computer security properties.

B. Theoretical research

3. Design methodology of embedded intelligent systems

Rationale for research

Current competition on the embedded computer market and product development limitations have resulted in new combinations of design constraints, such as very good performance at very low power and very low cost. Technically, this often translates into fast specialized processors using very small memories. There is a strong need in a design methodology providing tools for the fast capture of the designer's expertise on the one hand and for quick low cost design implementation on embedded microprocessors on the other hand. The proposed design way includes a formulation of design ideas with the help of fuzzy rules initially and their consequent optimization with neural networks and evolutionary programming for specified implementation constraints. This methodology allows combining the fuzzy system capability of capturing and expressing a knowledge frame with the neural network learning and optimization abilities. It should develop a practical, goal-oriented approach with comprehensive consideration of all problems involved in reaching the results from an initial design knowledge formulation to the implementation.

Results achieved so far:

- recommendations on fuzzy system design,
- fuzzy system implementation on general purpose and specialized microprocessors,
- approximation of fuzzy system with neural networks (see below)

4. Investigation of a neural network (NN) application for a fuzzy system (FS) implementation after its formulation by an expert with fuzzy rules.

Rationale for research

This research studies NN capabilities of a practical, cost effective FS implementation and aims at eventual development of a comprehensive methodology, covering all aspects from an initial FS design through to its microprocessor implementation. This approach allows for complementing the convenience of a fuzzy rules design frame with NN flexibility. In order to develop such a methodology different NN types and FS structures have to be analyzed and compared. The main problems, which are addressed are:
what type of NN should be chosen for a FS approximation,
how the NN parameters influence an approximation and implementation quality,
which FS structures are the most suitable for this approach.

Results achieved so far:

- radial basis network and multilayer perceptron are investigated for their feasibility in a FS approximation,
- the choice of some NN parameters (spreading factor, basis functions) has been studied and is proposed to simplify implementation.

5. Development of a practical user-friendly methodology of a fuzzy controller (FC) design

Rationale for Research

Attempts to develop systematic FC design procedures date back to the earliest years of the theory and different approaches have been proposed. Until now, the design process has been mainly conducted in an intuitive, ad-hoc manner. FC design is still more an art than a technology, the area where a designer's experience plays the main role. There is a strong need to develop a unifying methodology covering all FC design aspects from its initial formulation with fuzzy rules by an expert, through to an implementation on a low cost, general purpose microprocessor.

Results so far:

- FC design methodologies have been researched and classified,
- practical recommendations on the choice of FC structure and parameters have been developed,
- an initial choice of parameters (membership functions, scaling factors) has been researched,
- some similarity between the choice and tuning of FC parameters and PID-coefficients have been discovered and proposed to employ in FC design.

C. Applications

6. Fuzzy controller design for industrial applications

A universal adaptive fuzzy controller structure allowing for on-line tuning of the scaling factors (both input and output) has been developed and tested by computer simulation and in real control of a synchronous power generator. The structure of this FC is system independent. Its on-line operation supports the overall control loop robustness under various operating conditions. The structure's application in different projects is expected.

7. Fuzzy logic applications in mobile communications and computing

1. The method of fuzzy logic application for mobile locating and positioning has been proposed. Different implementations have been simulated. Simulation results prove the advantage over the conventional methods. Further research and practical implementation is proposed.
2. Fuzzy handover method is proposed and researched. Further development based on an application of extra information available is anticipated.

8. Fuzzy logic application for electrical power transformer state monitoring and prediction.

In order to predict the additional load that may be placed on a transformer it is necessary to know the temperature regime of different winding parts. The research examines the possibility of neuro-fuzzy models application in an identification of the transformer temperature behavior patterns. The derived models describe the relationship between the spotted temperatures and external factors such as load and ambient conditions. These models are derived as a neuro-fuzzy system, initially formulated as a fuzzy rules frame based on conventional knowledge. Later the models are tuned using measurement results applied to neural networks. The proposed algorithm has been tested by computer simulation and verified by practical experiments with real transformers.

9. AI techniques application in electrical energy contracting in the competitive electricity market.

Neuro-fuzzy techniques are applied in the development of an effective tool allowing market participants to estimate spot prices and to reduce the risk of electricity contracting. Two methodologies are to be investigated. One is based on the application of fuzzy logic techniques to incorporate human attitudes to a market risk analysis and imprecision of linguistic modeling. Another one is based on a combination of fuzzy systems and neural networks and an application of ANFIS systems for modeling the dependence of the spot price upon the predicted demand. The case is tested with real data from the Victorian electricity market.

10. Development and implementation of the industrial fuzzy logic controller for a power generator.

The fuzzy logic controller was designed and implemented in the excitation control of a synchronous generator connected to an infinite bus through a transmission line. The adaptive fuzzy excitation control system replaces both the automatic voltage regulator and the power system stabilizer. It has been achieved through an introduction of the pre-control stage where a single parameter representing the rotor angle and the terminal voltage was introduced. The control system is implemented on a DSP processor and applied to control a laboratory prototype generator. The reported test results demonstrate both efficiency and robustness of the structure developed.

11. Development and implementation of the industrial fuzzy logic controller for a multi-zone domestic HVAC embedded system.

The control system has been designed to facilitate the commercial viability, while also achieving robustness in multi-zone control. The system allows for a distributed control, whereby the fuzzy controllers operation can be disseminated to prevent a large number of zones overloading the master controller. Each fuzzy controller has similar implementation requirements, simplifying software and communication.

D. Projects Initiated over Last Two Years

12. Development of novel contents based enhanced sensor networks protocols utilizing an association information between sensor signals

The project aims at developing new sensor networks protocols for improving accuracy of the results or/and enhancing reliability and security in sensor networks based on an application of association information existing between sensor signals due to close proximity of the networked signal sources. Accuracy improvement is achieved by fusion of the association information between measured variables, which should be available from external sources or generated beforehand, with sensor results. Reliability and security enhancement is achieved by detecting maliciously altered results or malfunctioning channels by comparison of the current results against an association information models. Both fuzzy logic and stochastic models and methods are used for association and sensor information description. The problem of finding the most efficient estimate with association information available is formalized as a fuzzy optimization problem. Potential solutions are investigated and their characteristics are studied.

13. Design of the Sensor Network Anomaly Detection System (SNADS).

SNADS is designed as an implementation platform for contents based security enhancement protocols in sensor networks. SNADS system is designed to be modular, extensible, robust, and scalable. By providing a generic sensor abstraction and sensor-definable configuration mechanisms, SNADS hopes to allow for simple, secure management of arbitrary sensor networks. By supporting network nodes with different hardware and software configurations, SNADS will be a versatile cross platform tool. Modularity is achieved via a central signaling system, which allows components to work together as a number of black box components. This setup allows for simple runtime reconfiguration of the SNADS system and minimizes the damage, which a malfunctioning component can create.

14. Design of a distributed framework for sensor networks anomaly detection.

The project aims at facilitating design and implementation of the sensor networks anomaly detection system, which would allow the integration of sensor data streams from a number of aggregate nodes with data collection components, data display components and anomaly detection components. Components may be added and removed from the system during runtime, and components can be upgrades to a newer version on the fly. The architecture will be scaleable, allowing components to be spread across multiple computing devices. This will be the focus, developing a system of distributed components that can be managed from a central (or several) administrative consoles. User will be able to create components locally or remotely, connect and configure them, replace them, upgrade them, move them from one node to another. Classes will be transferred to the remote nodes as needed.

15. Efficiency, security and reliability enhancement in sensor networks based on change detection

The project is devoted to the development of new sensor networks protocols enhancing efficiency, reliability and security based on detection of any change in sensor signals, which is due to real changes, malfunctioning or malicious actions. The system utilizes a time based multi-layer perceptron neural network methodology to predict sensor outputs in order to determine if the sensor outputs are novel. In addition to the novelty detection system, a modification to a standard neural network function predictor is proposed that allows the novelty detection system to quickly learn to accurately predict next sensor outputs. The parameter choice and the relationship between the threshold values and false alarm and missing attack rates are to be studied and the recommendations to be provided.

16. Mixing features in optical character recognition (OCR)

The project includes experimental study aimed at investigating of mixing of different features as a way of improving efficiency of the OCR procedures performed in small portable devices with limited computational resources. Resources availability restricts a feature vector size and requires a careful selection of a feature extraction method (FOM) in order to optimize the recognition performance. The study includes implementing OCR procedures with handwritten digits after performing different FOMs and/or their combinations. Experiments are aimed at studying the dependence of the OCR accuracy on the feature vector size as well as its contents. All experiments utilized a library of handwritten digits originally extracted from the US Census forms and postal zip codes. Library is available from RIT's public directory maintained by Dr. Anderson. The selected library consists of over four thousand binarized and manually labeled images, which present a healthy mix of all ten digits from 0 to 9.

VI. LIST OF PUBLICATIONS

Summary:

	1994-2002	Over last two years
Books	**2**	**1**
Chapters in books	**6**	**2**
Refereed journal articles	**7**	**1**
Refereed conference papers	**41**	**6**

Books

[1] **L.Reznik, V.Kreinovich/Eds**. *Soft Computing in Measurement and Information Acquisition,* Springer Verlag, Heidelberg-New York, 2003, ISBN 3-540-00246-4, 284 pp.

[2] **L.Reznik, V.Dimitrov, J.Kacprzyk/Eds**. *Fuzzy System Design: Social and Engineering Applications,* Physica Verlag, Heidelberg-New York, 1998, ISBN 3-7908-1118-1, 334 pp.

[3] **L.Reznik** *Fuzzy Controllers* Newnes-Butterworth-Heinemann, Oxford-Boston, 1997, ISBN 0-7506-3429-4, 287 pp.

Chapters in Books

[4] **L.Mari and L.Reznik** *Uncertainty in Measurement: Some Thoughts about its Expressing and Processing* In L.Reznik and V.Kreinovich/Eds. *Soft Computing in Measurement and Information Acquisition*, Springer, Berlin-Heidelberg-New York, 2003, ISBN 3-540-00246- 4, pp. 1-9

[5] **L.Reznik** *General Principles and Purposes of Computational Intelligence* In: Encyclopedia of Life Support Systems, Developed under the Auspices of the UNESCO, EOLSS Publishers, Oxford ,UK, 2002 (available also on-line at http://www.eolss.net/)

[6] **L.Reznik** *Neuro-Fuzzy Control Applications: Looking for New Areas and Techniques?* In:Fuzzy Logic: A Framework for the New Millennium Korotkich V. and V.Dimitrov/Eds. Physica Verlag, Heidelberg – New York, 2002, ISBN 3-7908-1425-3, p.337 - 351

[7] **G. Solopchenko, V.Kreinovich, L.Reznik** *Development of Mathematical Structure of the Modern Measurement Science* In: Measurement Science - a Discussion, K.Kariya and L. Finkelstein /Eds. Ohmsha Ltd. and IOS Press, Amsterdam, Oxford, Tokyo, Washington, 2000, ISBN 4-274-90398-2 and 1-58603-088-4, p.23-36

[8] **L. Reznik** *What Is Intelligent Measurement*? In*:* Computing with Words in Information /Intelligent Systems, L.A. Zadeh and J.Kacprzyk/Eds. Physica Verlag, Heidelberg – New York, 1999, ISBN 3-7908-1217-X, p.78 - 89

[9] **L.Reznik** *Fuzzy Controller Design for Different Applications: Evolution, Methods, and Practical Recommendations* In: *Fuzzy System Design: Social and Engineering Applications,* L. Reznik, V.Dimitrov, J.Kacprzyk/Eds. Physica Verlag, Heidelberg- New York, 1998, p.185-201

[10] **O.Ghanayem and L. Reznik** *A Universal Approach to Adaptive Fuzzy Logic Controller Design With an Application to a Power Generator Excitation Control* In: *Fuzzy System Design: Social and Engineering Applications,* L. Reznik, V.Dimitrov, J.Kacprzyk/Eds. Physica Verlag, Heidelberg – New York, 1998, p. 287-308

[11] **L.Reznik** *Intelligent Measurement: How to Achieve?* In: Gorodetsky A.E. and Kurbanov V.G./Eds. *Physical Metrology: Theory and Application Aspects*, St.Petersburg, KN Publishers, 1996, pp.86 - 106 (in English and Russian)

Journal Articles
(Refereed Journals)

[12] **L.Reznik and K.P.Dabke** *Measurement Models: Application of Intelligent Methods,* Measurement, 2004, vol. 35, pp. 47-58

[13] **L.Reznik and S. Spiteri** Embedded Smart Controller for an Industrial Reefer Refrigeration, Australian Journal of Intelligent Information Processing Systems, vol.7, No.1/2, 2001, pp. 52-57

[14] **A.Little and L.Reznik** *Improving the Approximation Smoothness of Radial Basis Neural Networks* Journal of Advanced Computational Intelligence, vol. 4, No. 6, 2000, pp.417-420

[15] **L.Reznik, O. Gnanayem and A. Bourmistrov** *PID plus Fuzzy Controller Structures as a Design Base for Industrial Applications*, Engineering Applications of Artificial Intelligence, 2000, vol. 13, No.4, p. 419-430

[16] **A.T. Popov, H. Nguyen, L.Reznik** *An Application of Fuzzy Mathematical Morphology to Interval-Valued Knowledge Representation: A Remark* Reliable Computing, 1998, No. 3, p. 283-290 - 20%

[17] **L.Reznik** *Controller Design: The Combination of Techniques*, Neural Network World, 1996, vol. 6, No. 4, pp. 691 - 699

[18] **L.Reznik and A.Little** *Fuzzy Controller Design From A Practitioner's Point Of View - The Review of Methodologies*, Australian Journal of Intelligent Information Processing Systems, 1995, vol.2, No.4, pp.1- 9

[19] **L.Reznik and J.Shi.** *Fuzzy Controller Design From A Practitioner's Point Of View - Membership Fuction Choice* , Australian Journal of Intelligent Information Processing Systems, 1995, vol.2, No.2, pp.38 - 46

[20] **L. Reznik, G. Britov** *On Dynamics of Fuzzy Discrete Systems*. AUTOMATION AND REMOTE CONTROL, 1987, v. 48, 8, p.185-188

[21] **L. Reznik** *Fuzzy Models of a priori Information in the Measurements' Results Processing* AMSE REVIEW, 1987, v.4, 2, p.1-12

[22] **L. Reznik, G. Solopchenko** *The USSR Patent: Method of Complexing of Measurements*, BULLETIN OF PATENTS, 1986, No. 47

[23] **L. Reznik, G. Solopchenko** *Use of a priori Information on Functional Relations between Measured Quantities for Improving Accuracy of Measurement.* MEASUREMENT, 1986, v.3, 2, p.61-69

[24] **G.Britov and L. Reznik** *Optimal Control on the Linear Fuzzy Systems*. AUTOMATION AND REMOTE CONTROL, 1981, v.42, 4, p. 462-465

Conference Papers

Refereed Full Papers and Invited Papers

[25] **L.Reznik, G. Von Pless and T.Karim** *Signal Change Detection in Sensor Networks with Artificial Neural Network Structure* CIHSPS2005 - IEEE International Conference on Computational Intelligence for Homeland Security and Personal Safety, Orlando, FL, USA, 31 March - 1 April 2005, p.44-51

[26] **M. Negnevitsky, M.J-H. Lim, J.Hartnett** *Email Communications Analysis: How to Use Computational Intelligence Methods and Tols?* CIHSPS2005 - IEEE International Conference on Computational Intelligence for Homeland Security and Personal Safety, Orlando, FL, USA, 31 March - 1 April 2005, p.16 - 23

[27] **G. Von Pless, T.Karim and L.Reznik** *Time-Based Multi-Layer Perceptron for Novelty Detection in Sensor Networks*, accepted for publication at the 2004 IEEE/ACM International Conference on Machine Learning and Applications (ICMLA'04), 16-18 December 2004 -Louisville, KY, USA, p.156-161

[28] **L.Reznik, M.Negnevitsky, C.Hoffman** *Contents Based Security Enhancement in Sensor Networks Protocols,* CIHSPS2004 - IEEE International Conference on Computational Intelligence for Homeland Security and Personal Safety, Venice, Italy, 21-22 July 2004

[29] **L.Reznik, V.Kreinovich** *Fuzzy and Probabilistic Models of Association Information in Sensor Networks*, Proceedings of the FUZZ '04, The 13th IEEE International Conference on Fuzzy Systems, Budapest, Hungary, July 25-30, 2004

[30] **L.Reznik** *Which models should be applied to measure computer security and information assurance?* Proceedings of the FUZZ '03, The 12th IEEE International Conference on Fuzzy Systems, St.Louis, May 25- 28, 2003, IEEE, vol. 2, pp. 1243-1248

[31] **L.Reznik, V.Kreinovich and S.A.Starks** *Use of fuzzy expert's information in measurement and what we can gain from its application in geophysics* Proceedings of the FUZZ '03, The 12th IEEE International Conference on Fuzzy Systems, St.Louis, May 25- 28, 2003, IEEE, vol. 2, pp. 1026- 1031

[32] **M. Negnevitsky and L.Reznik** *Application of Neuro-Fuzzy Systems for Recognition and Reduction of Power Disturbances*, Proceedings of the Sixth IASTED International Conference on Software Engineering and Applications, M. H. Hamza, ed., Cambridge, USA, November 4-6, 2002, pp. 57-62

[33] **L.Reznik** *Fuzzy System Implementation through its Approximation with Simplified Radial Basis Networks* Proceedings of the 2002 IEEE International Conference on Fuzzy Systems FUZZ-IEEE'02 May 12 – 17, 2002 Hilton Hawaiian Village Hotel Honolulu, Hawaii, IEEE and NNS, vol. 2, pp. 1186-1191

[34] **L. Reznik and M. Negnevitsky** *A Neuro-Fuzzy Method of Power Disturbances Recognition and Reduction* Proceedings of the 2002 IEEE International Conference on Fuzzy Systems FUZZ-IEEE'02 May 12 – 17, 2002 Hilton Hawaiian Village Hotel Honolulu, Hawaii, IEEE and NNS, vol. 2, pp. 1517-1522

[35] **L.Reznik and B.Pham** *Fuzzy Models in Evaluation of Information Uncertainty in Engineering and Technology Applications*, The 10th IEEE International Conference on Fuzzy Systems, December 2-5, 2001, Melbourne, Australia, ISBN 0-7803-7294-X – 70%

[36] **S.Spiteri, L.Reznik, P. Vilas-Boah** *Embedded Fuzzy Control for Reefer Refrigeration Systems*, The 10th IEEE International Conference on Fuzzy Systems, December 2-5, 2001, Melbourne, Australia, ISBN 0-7803-7294-X – 30%

[37] **L.Reznik and A.Little** *Choice of the Radial Basis Function Approximation in Neural Networks Used for Fuzzy System Implementation* Joint 9th IFSA World Congress and 20th NAFIPS International Conference, July 25-28, 2001, Vancouver, Canada, Proceedings IEEE, p.3032-37 - 75%

[38] **A. Little, L. Reznik** *Implementation of Fuzzy Controllers with Radial Basis Neural Networks* The Ninth IEEE International Conference on Fuzzy Systems, FUZZ IEEE 2000 San Antonio, USA, 7-10 May 2000 Proceedings IEEE vol.2 p.581 - 586 - 30%

[39] **L. Reznik** *What Is the Right Place for Fuzzy Control in Industry?* In Proceedings of AISAT'2000 International Conference on Artificial Intelligence in Science and Technology, Hobart, Australia, 17-20 December 2000, The University of Tasmania, 2000, p . 157-162

[40] **H.T. Nguyen, V.Kreinovich, and L.Reznik** *Integrating Domain Knowledge with Data: From Crisp to Probabilistic and Fuzzy Knowledge*, Workshop on Fusion of Domain Knowledge with Data for Decision Support, Stanford University, Stanford CA, USA, June 30, 2000 - 20%

[41] **L. Reznik, K.P. Dabke** *Evaluation of Uncertainty in Measurement: A Proposal for Application of Intelligent Methods* in H. Imai/Ed. Measurement to Improve Quality of Life in the 21st Century, IMEKO – XV World Congress, June 13-18, 1999, Osaka, Japan, vol. II, p.93 – 100 - 60%

[42] **L. Reznik, A. Stojcevski, V.Kreinovich** *Modelling of Human Measurement Functions as a Way of Intelligent Sensor Design* in H. Imai/Ed. Measurement to Improve Quality of Life in the 21st Century, IMEKO –XV World Congress, June 13-18, 1999, Osaka, Japan, vol. XI, p. 75 – 82 - 60%

[43] **G. Solopchenko, V.Kreinovich, L.Reznik** *Development of Mathematical Structure of the Modern Measurement Science* in Proceedings of International Workshop on Advances of Measurement Science, June 20-21, 1999, Kyoto, Japan, p.35 – 47 (invited paper) - 40%

[44] **L. Reznik** *Fuzzy + Neural + PID Combination as a Way to Design New Industrial Information and Control Systems* in ICEX'99 Instrumentation and Control Exhibition, Symposium, Workshops, Melbourne, May 25-28, 1999 (invited paper)

[45] **L.Reznik** *Measurement Result Uncertainty Evaluation: New Soft Approaches?* SCM'99 International Conference on Soft Computing and Measurements, St. Petersburg, Russia, May 25-28, 1999 (invited paper)

[46] **A.Little and L.Reznik** *Implementation of Fuzzy Logic Controllers Using Neural* networks SCIRF'99 Collaborative Research Forum Proceedings, 18 November 1999, Melbourne, Victoria University, p.52-57 - 20%

[47] **A.Stojcevski, L.Reznik, M.Faulkner** Trends in Cellular Position Location Techniques - an Overview SCIRF'99 Collaborative Research Forum Proceedings, 18 November 1999, Melbourne, Victoria University, p.69 - 73 - 40%

[48] **V.Kreinovich, E. Johnson-Holubec, L.Reznik, and M. Koshelev** *Cooperative Learning is Better: Explanation Using Dynamical Systems, Fuzzy Logic, and Geometric Symmetries* , Vietnam-Japan Bilateral Symposium on Fuzzy Systems and Applications, Halong Bay, Vietnam, 30 September – 2 October, 1998, Proceedings/Eds. H.-P. Nguyen and O.Ario, Ha Noi, 1998, p.154 – 160 - 10%

[49] **L.Reznik** *Intelligent Sensor: An attempt to Define* 1998 Second International Conference on Knowledge-Based Intelligent Electronic Systems, Adelaide, South Australia, 21-23 April 1998, Eds.: L.C.Jain and R.K.Jain, IEEE, p.603-608

[50] **L. Reznik** *Fuzzy Controller Design: Recommendations to the User* 1998 Second International Conference on Knowledge-Based Intelligent Electronic Systems, Adelaide, Australia, 21-23 April 1998, Eds.: L.C.Jain and R.K.Jain, IEEE, p.609-616

[51] **L. Reznik** *How to Design a New Intelligent Controller for Industrial Applications?* Control-97 International Conference Proceedings, October 20-22, 1997, Sydney, The Institution of Engineers, p.281-286

[52] **M.Selesnew and L.Reznik** *Development of a Hydraulic Dynamometer Engine Test System for High Speed Inertia Simulation* Control-97 International Conference Proceedings, October 20-22, 1997, Sydney, The Institution of Engineers, p. 61-66 - 30%

[53] **L. Reznik** *Evolution of Fuzzy Controller Design* Proceedings of the 6th IEEE International Conference on Fuzzy Systems, July 1-5, 1997, Barcelona, Spain, IEEE Neural Networks Council, vol. 1, pp.503 - 508

[54] **O. Gnanayem and L.Reznik** *Excitation Control of a Synchronous Generator Using an On-Line Adaptive Fuzzy Logic Controller Structure* Proceedings of the 6th IEEE International Conference on Fuzzy Systems, July 1-5, 1997, Barcelona, Spain, IEEE Neural Networks Council, vol. 3, pp.1493 - 1498 - 30%

[55] **L.Reznik** *Fuzzy Controller Design: Methods Classification and Parameters Choice*, 7th International Fuzzy Systems Association World Congress, June 25-29, 1997, Prague, Czech Republic, Proceedings, vol. 3, pp. 398 - 403, Academia, Prague, 1997

[56] **O. Gnanayem and L.Reznik** *A Fuzzy Logic Structure for On-Line Parameter Tuning with the Application to Power System Excitation Control***,** 7th International Fuzzy Systems Association World Congress, June 25-29, 1997, Prague, Czech Republic, Proceedings, vol. 3, pp. 488 - 493, Academia, Prague, 1997 - 40%

[57] **O. Gnanayem and L.Reznik** *A Universal Adaptation Procedure for Fuzzy Controller Design with the Application to Power System Stability Control*, 35th IEEE Conference on Decision and Control, pp.1141 - 1146, Kobe, Japan, December 11- 13, 1996 - 40%

[58] **A. Little and L. Reznik** *A Speech Detection Method Analysis and Intelligent Structure Development*, 1996 Australian and New Zealand Conference on Intelligent Information Systems, pp. 203 - 206, Adelaide, November 18 - 20, IEEE, 1996 -30%

[59] **O. Gnanayem and L.Reznik** *A Novel Excitation Control Scheme: Design and Implementation*, 1996 Australian and New Zealand Conference on Intelligent Information Systems, pp. 212 - 215 , Adelaide, November 18 - 20, IEEE, 1996- 40%

[60] **L.Reznik** *Intelligent Measurement: How To Achieve?* The 2nd International Conference on Problems of Physical Metrology (FISMET'96) June 17-23, 1996, St.Petersburg, Russia, p.80-81

[61] **L.Reznik** *How To Teach Fuzzy Technology?* Proceedings of the First International Discourse on Fuzzy Logic and the Management of Complexity, January 15-18, 1996, Sydney, Australia, vol.1, p. 87 - 91

[62] **L.Reznik** *Fuzzy Controller Design: Some Experience* Proceedings of the First International Discourse on Fuzzy Logic and the Management of Complexity, January 15-18, 1996, Sydney, Australia, vol.2, p. 109 - 114

[63] **M.Selesnew and L.Reznik** *Fuzzy Modelling and Control for an Engine Test System* Proceedings for the First International Discourse on Fuzzy Logic and the Management of Complexity, January 15-18, 1996, Sydney, Australia, vol.2, p. 140 - 144 - 30%

[64] **A.Bourmistrov and L.Reznik** *Hybrid Guidance Control for a Self-Piloted Aircraft* Proceedings for the First International Discourse on Fuzzy Logic and the Management of Complexity, January 15-18, 1996, Sydney, Australia, vol.2, p. 155-159 - 30%

[65] **V.Kreinovich and L.Reznik** *Fuzzy Information Improves Measurement (If This Information Is Correct)* Proceedings for the First International Discourse on Fuzzy Logic and the Management of Complexity, January 15-18, 1996, Sydney, Australia, vol.2, p. 206 - 210 - 30%

[66] **O. Ghanayem and L. Reznik** *A Hybrid AVR-PSS Controller Based on Fuzzy Logic Technique,* presented to the International Conference "Control-95", Melbourne, 20 -24 October 1995 and published in the Conference Proceedings, The Institution of Engineers, Australia, 1995, vol. 2, pp. 347 - 351 - 40%

[67] **M.Selesnew and L. Reznik** *Intelligent Control for Engines Testing: Which Model To Apply?,* presented to the International Conference "Control-95", Melbourne, 20 -24 October 1995 and published in the Conference Proceedings, The Institution of Engineers, Australia, 1995, vol. 2, pp.539 - 543 - 30%

[68] **O. Ghanayem and L. Reznik** *A New Reasoning Approach and its Application in Power System Stability*, Proceedings of the Third European Congress on Intelligent Techniques and Soft Computing (EUFIT'95), August 29-September 1, 1995, Aachen, Germany, vol.3, pp.1527 - 1532 - 30%

[69] **A.Stoica, L.Herron, M.Wingate, L.Reznik, O. Ghanayem** *Fuzzy Neural Networks as Distributed Fuzzy reasoning Systems* Proceedings of the Third European Congress on Intelligent Techniques and Soft Computing (EUFIT'95), August 29-September 1, 1995, Aachen, Germany, vol.1, pp.86 - 90 - 10%

[70] **L. Reznik** *Fuzzy Technology Teaching: Some Experience*, presented to the Pacific Region Conference on Electrical Engineering Education, February 23 - 24, 1995, Marysville and published in the Conference Proceedings "Advancing Electrical Engineering Curricula To Reflect Current And Future Technologies" pp. 119 - 122

[71] **L. Reznik, G. Solopchenko, W. Carroll-Johnson** *Fuzzy Intervals as a Basis for Measurement Theory,* First international Joint Conference of the North American Fuzzy Information Processing Society Biannual Conference, the Industrial Fuzzy Control and Intelligent Systems Conference, and the NASA Joint Technology Workshop on Neural Networks and Fuzzy Logic, pp. 405 - 406, San Antonio, USA, December 18-21, NASA, 1994 - 30%

[72] **L. Reznik and O. Ghanayem** *Hierarchical Versus Adaptive Fuzzy Logic Controllers: Design and Performance*, 2nd Australian and New Zealand Conference on Intelligent Information Systems, pp. 224 - 228 , Brisbane, November 29 - December 2, IEEE, 1994 - 60%

[73] **A.Stoica and L. Reznik** *Mapping Alpha-Cut Borders: Classification and PID Realization*, 3rd IEEE International Conference on Fuzzy Systems, vol.3, pp.1604 - 1607, IEEE, Orlando, USA, June 26-29, 1994 - 40%

[74] **L. Reznik and J. Shi** *Simulation Study of the Choice of Membership Function Model for Control Applications*, Proceedings of Second International Conference on Modelling and Simulation, Melbourne, July, 1993, vol.1, p.209-217 - 60%

[75] **L. Reznik and A. Stoica** *Some Tricks in Fuzzy Controller Design*, Australia and New Zealand conference on Intelligent Information Systems, (ANZIIS – 93) IEEE, Perth, Western Australia, November,1993, p. 60 - 64, - 60%

[76] **V. Kreinovich, L. Reznik, et.al.** *What Non-Linearity to Choose? Mathematical Foundations of Fuzzy Control,* 1992 INTERNATIONAL FUZZY SYSTEMS AND INTELLIGENT CONTROL CONFERENCE, Louisville, KY, USA, 1992, p.349-412 - 20%

[77] **V. Kreinovich , Quintana C., L. Reznik** *Gaussian Membership Functions Are Most Adequate in Representing Uncertainty in Measurements*, North American Fuzzy Information Processing Society (NAFIPS'92) Conference in Puerto Vallarta, Mexico, Dec. 1992 and published in NASA Conference Publication 10112, vol. 11, p.618-624 - 20%

[78] **V. Kreinovich, L. Reznik, et.al.** *Inverse Problems: Fuzzy Representation of Uncertainty Generates a Regularization*, North American Fuzzy Information Processing Society (NAFIPS'92) Conference in Puerto Vallarta, Mexico, Dec. 1992 and published in NASA Conference Publication 10112, vol. 11, p. 418-426 - 20%

[79] **L. Reznik** *Problems of Expert Systems Using in Intelligent Measuring Instruments*, presented to MEASURE-90 International Conference, Moscow and published in the Conference Proceedings, Moscow, 1990, p.157-165

[80] **V. Kreinovich, L. Reznik** *Prospects for Using Expert Systems as a Part of Intelligent Measuring Instruments*, presented to INTERNATIONAL SCHOOL ON THE PROBLEMS OF INTELLIGENT MEASURING INSTRUMENTS, Dagomys, 1990 and published in the Proceedings Moscow, 1990, part 2, p.97-110 - 40%

Non-Refereed Papers

[81] **H. P. Fernando, L.W. Turner and L.Reznik** *Forecasting Tourism to Japan: A Comparison of Neural Networks and Time Series Models*, The 20th International Symposium on Forecasting, Lisbon, Portugal, June 21-24, 2000 - 10%

[82] **L.Reznik** *Towards Fuzzy Logic Application in Measurement Theory* 1st International Conference "Soft Computing and Measurement" (SCM'98), St.Petersburg, Russia, June 22-26, 1998

[83] **L. Reznik** *How to Design an Intelligent Sensor: A Few Ideas* Third international Conference on problems of Physical Metrology (FIZMET'98) Abstracts, June 15-19, 1998, St.Petersburg, Russia, p. 16-18

[84] **L. Reznik** *Intelligent Measurement: Some Trends and Problems*, presented to Symposium on Measurement and Quality Assessment, RMIT, Melbourne, Australia, 31 March 1994 and published in the Symposium abstracts, p.22

Reviews of my work

[85] **B. Bona** *Fuzzy Controllers by L.Reznik* AUTOMATICA, vol. 37, 2001, no.2 , p.319-320

[86] **Linkens D. A.** *Fuzzy Controllers. How to design them, How they work* Proc. of the Institute of Mechanical Engineers, vol. 212, 1998, part 1, p. 325

16. Evelyn Rozanski, Ph.D. – Information Technology, GCCIS

EVELYN PAULA ROZANSKI, Ph.D.

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Pittsford, NY 14534
(585) 381-7801 (H) (585) 475-5384 (W)
Email: Evelyn.Rozanski@rit.edu

RESUME

EDUCATION

Ph. D., Social Foundations of Education, Higher Education concentration, School of Educational Organization, Administration and Policy, State University of New York at Buffalo, Buffalo, NY, 1994. Dissertation: *A quest for quality: A comparative analysis of accredited and non-accredited Computer Science programs on selected measures of quality*.

MS, Systems and Information Science, Syracuse University, Syracuse, NY, 1970.

BS, Secondary Mathematics, State University of New York College at Brockport, Brockport, NY, 1968.

FIELDS OF INTEREST

Human-Computer Interaction; Usability Engineering; Usability Testing; Eye Tracking; Computer Graphics; Information Technology Education.

ACADEMIC EXPERIENCE

1970 to present. Rochester Institute of Technology, Rochester, NY.

Interim Associate Dean of Research and Graduate Programs, B. Thomas Golisano College of Computing and Information Sciences 2005 to present

Director, Laboratory for Computer-human Interaction and Performance Support 2004 to present

Department of Information Technology 1991 to present

Professor 1987 to present

Faculty responsibilities include developing and teaching undergraduate and graduate courses, curriculum development, committee work, student advising, masters thesis advising.

Graduate Program Chair, Department of Information Technology July, 1991 to March, 1997

Responsible for the recruitment, admissions review, advisement, scheduling, and curriculum development of the following graduate programs: Master of Science degrees in Information Technology, Software Development and Management, and Telecommunications Software Technology; and the Advanced Certificates in Applied Computer Studies, and Interactive Multimedia Development; implementation of the distance delivered component of the graduate degree programs; oversight of the graduate program review; liaison with industry.

Faculty Associate, College of Applied Science and Technology March, 1991 to July, 1992

Responsible for the development of the College's Industrial Associates program.

Associate Director, School of Computer Science and Information Technology 1990 to 1991
Responsible for coordination of recruiting activities, alumni activities, setting up the School advisory boards.

Acting Director, School of Computer Science June, 1988 to July, 1989

Responsible for faculty (28), staff (10), graduate and undergraduate students (600 FTE), administration, three academic departments(Undergraduate Computer Science, Graduate Computer Science, and Applied Computer Studies), computer facilities department, budget(multi-million dollar), School computer facilities. (Reorganized July, 1989).

Chairperson, Department of Undergraduate Computer Science	July, 1986 to March, 1990

Responsible for undergraduate curriculum, BS in Computer Science (CSAB accredited); scheduling; recruitment of faculty and staff; computer laboratories; administration; budget(six-figure); staff (4); faculty (13); and students (460 FTE).

Associate Professor	1980-87
Tenured	1976
Assistant Professor	1974-80
Instructor	1970-74

August 1968 - June 1970. Teaching and Research Assistant, Syracuse University, Syracuse, NY.

Responsibilities included teaching programming languages and numerical analysis courses, and consulting.

PROFESSIONAL EXPERIENCE

Principle, EyesOnUsability LLC, consulting company, 2005-present.

Usability Consultant, CitiGroup, Rochester, NY, 2005-present.

Web Developer, Faxton-St. Luke's Healthcare Dental Residency Program, Utica, NY, 2001-2004.

Consultant Instructor, IBM Corporation, Poughkeepsie, NY, "Fundamentals of Interactive Multimedia", 1997.

Consultant Instructor, Frontier Corporation, Rochester, NY, "Program Design and Validation (C++)", 1996-97.

Consultant Instructor, Frontier Corporation, Rochester, NY, "Introduction to Programming (C++)", 1995-96.

Consultant Instructor, Xerox Corporation (Business and Technical Education Services), Rochester, NY, "Introduction to C Programming," taught course several times, 1994.

Consultant Instructor, Xerox Corporation (Business and Technical Education Services), Rochester, NY, "Advanced C Programming," developed and taught course several times, 1994.

Instructor, Xerox Critical Skills Program, Rochester, NY, 1985-86.

Consultant Instructor, Eastman Kodak Corporation, Rochester, NY, 1985.

Consultant, RIT Research Corporation, Rochester, NY, 1984.

Provided technical support for a database design project.

Consultant Instructor, Scientific Calculations, Inc., Fishers, NY, summer 1984.

Taught a customized course in two-dimensional and interactive computer graphics.

Computer Graphics Research Support, for research by Drs. Kathleen and Mou-Ta Chen, "A Transformational Analysis of Form Recognition Under Plane Isometrics," *Journal of Mathematical Psychology*, Vol. 26, No. 3, December, 1982.

Instructor, RIT Faculty Computer Workshops, summer 1982.

Business Systems Software Developer, Xerox Corporation, Rochester, NY, 1980-81.

Designed and implemented interactive business systems using APL; computer graphics design aid feasibility study using the Xerox IBM computer system and the IBM 3278 and 3279 graphics display terminals.

Consultant, National Technical Institute for the Deaf, RIT, Rochester, NY, 1979-80.

System design and software development for the ADAGE Graphics System and the interface to the Data General ECLIPSE System.

Consultant, Market Research Group, Xerox Corporation, Rochester, NY, 1976.

System design and software development for a Management Information System for a market research application.

Computer Aided Design Software Developer, Xerox Corporation, Rochester, NY, summers 1974, 1975.

Modified and maintained support programs and processors for the graphics system; designed and implemented a library of routines to manipulate graphical entities from the data base, and preprocess these entities for use in the application programs.

Administrative Programmer, Syracuse University, Syracuse, NY, summer 1970.

Primarily responsible for accessing data and producing reports on budget statistics.

Coordinator of Computer Assisted Instruction and Programmer, State University of New York College at Brockport, Brockport, NY, 1968.

Developed and coordinated all CAI activities for the college; authored remedial undergraduate FORTRAN course.

Junior Programmer, Sperry Rand Corporation, UNIVAC Division, Utica, NY, summer 1967.

Attended company programming courses.

GRANTS AND RESEARCH PROJECTS

Rozanski, E., and Haake, A. "Eye Tracking to Enhance Usability Testing," Xerox University Affairs, 2003-2006, $60,000.

Rozanski, E., Yacci, M. and Haake, A. "Eye Tracking the Learnability of Edutainment Interfaces," Laboratory for Applied Computing, Rochester Institute of Technology, 2003, $44,000.

Rozanski, E., and Haake, A. Provost Learning Innovation Grant, "An Innovative Learning Environment for Usability Testing," 2003-2004, $4448.

Rozanski, E., and Haake, A. FEAD Grant, "Development of a Draft for a Book on the Integration of Cognitive Psychology into Computing Curricula," 2003-2004, $7000.

Rozanski, E., Haake, A., Pelz, J., Karn, K., and Vigliotti, A. "The Impact of Eye-tracking on Usability Testing," 2002 to present, unfunded research project.

Rozanski, E. and Haake, A. FEAD Grant, "Research and Development of Notes on Cognitive Psychology with an IT Perspective," 2002-2003, $7000.

Rozanski, E., and Niemi, R. RIT Provost Productivity Grant, "A Distance Delivered Data Structures Course: C to C++," 1994-1995, $7,000.

Rozanski, E. and Niemi, R. RIT Provost Productivity Grant, "A Distance Delivered Course: Computer Programming and Problem Solving – C," 1993-1994, $10,000.

Rozanski, E., Principle Investigator, NSF College Science Instrumentation Program grant, "A Workstation Environment for an Undergraduate Computer Graphics Sequence", May 1, 1987 to October 31, 1989, $50,000.

CERTIFICATES AND AWARDS

Nominated for the Exemplary Teaching Award for Distance Learning, 2005, 2004.

Professional Development Leave of Absence, 2000-2001, 1980-81.

Phi Kappa Phi Honor Society.

Nominated for the RIT Eisenhart Outstanding Teacher Award, 1994.

Permanent certification in Secondary Mathematics for the State of New York (grades 7-12), 1970.

PUBLICATIONS, PAPERS, POSTERS AND JOURNALS

Rozanski, E., Haake, A. R., Karn, K. S., Vigliotti, A. M., Pelz, J. B. "Simplified Eye tracking Enhances Problem Understanding and Solution Discovery in Usability Testing," Human Factors and Ergonomics Society 49th Annual Meeting, Orlando, FL, Sept. 26-30, 2005.

Lapa, C., Rozanski, E., Haake, A., Sekella, C., & Karn, K. (2005). Understanding banner blindness: Using eye-tracking to improve website design. *13th European Conference on Eye Movements (ECEM13) August 14-18*. Bern, Switzerland. [poster presentation]

West, J., Haake, A., Karn, K., & Rozanski, E. (2005). Mathematical analyses and expository visualizations of gaze sequences using eyePatterns. *13th European Conference on Eye Movements (ECEM13) August 14-18*. Bern, Switzerland. [poster presentation]

Thompson, K., Rozanski, E.P., and Haake, A.R. "Here, There, Anywhere: Remote Usability Testing That Works," *Proceedings for the Conference for Information Technology Curriculum (SIGITE 2004)*. Brigham Young University, Salt Lake City, UT, October 28-30, 2004.

Yacci, M.A., Haake, A.R., & Rozanski, E.P. "Operations and Strategy Learning in Edutainment Interfaces," *Proceedings of AACE World Conference on Educational Multimedia, Hypermedia and Telecommunication*. Lugano, Switzerland, June 21-26, 2004.

Rozanski, E. P. and Haake, A. R., "Human-Computer Interaction," *The Electrical Engineering Handbook*, Richard C. Dorf, Ed., Boca Raton, FL, 2005.

Schaller, N. and Rozanski, E. P., "Computer Graphics," *The Electrical Engineering Handbook*, Richard C. Dorf, Ed., Boca Raton, FL, 2005.

Rozanski, E.P. and Haake, A.R. "The Many Facets of HCI," Conference for Information Technology Curriculum (CITC4 2003), Purdue University, West Lafayette, IN, October 16-18, 2003.

Rozanski, E. and Schaller, N. "Integrating Usability Engineering into Computer Science Education," *Proceedings of ACM/ITiCSE'03 Conference (Innovation Technology in Computer Science Education)*. University of Macedonia, Thessaloniki, Greece, June 30 – July 2, 2003.

Rozanski, E. P. "Computer Graphics," *The Electrical Engineering Handbook*, Second Edition, Richard C. Dorf, Ed., Boca Raton, FL: CRC Press, 1997.

Rozanski, E. P. "Accreditation: Does It Enhance Quality?" paper presented at *SIGCSE (ACM Special Interest Group in Computer Science Education National Conference)*, Phoenix, AZ, March 8, 1994.

Rozanski, E. P. "Computer Graphics," *The Electrical Engineering Handbook*, Richard C. Dorf, Ed., Boca Raton, FL: CRC Press, 1993.

Wolf, W. A. and Rozanski, E. P. "Expert Systems: An Applied Course," *SIGCSE BULLETIN*, Vol. 22 No. 4, December 1990.

Rozanski, E. P. "Computer Science - Is There Life After Programming?" *Engineering Horizons*, Spring 1990.

PRESENTATIONS

Lapa, C., Rozanski, E., Haake, A., Sekella, C., & Karn, K. (2005). Understanding banner blindness: Using eye-tracking to improve website design. *13th European Conference on Eye Movements (ECEM13) August 14-18*. Bern, Switzerland. [poster presentation]

West, J., Haake, A., Karn, K., & Rozanski, E. (2005). Mathematical analyses and expository visualizations of gaze sequences using eyePatterns. *13th European Conference on Eye Movements (ECEM13) August 14-18*. Bern, Switzerland. [poster presentation]

Thompson, K., Rozanski, E.P., and Haake, A.R., "Here, There, Anywhere: Remote Usability Testing That Works," *Proceedings for the Conference for Information Technology Curriculum (SIGITE 2004)*. Brigham Young University, Salt Lake City, UT, October 28-30, 2004.

Yacci, M.A., Haake, A.R., & Rozanski, E.P. "Operations and Strategy Learning in Edutainment Interfaces," *Proceedings of AACE World Conference on Educational Multimedia, Hypermedia and Telecommunication*. Lugano, Switzerland, June 21-26, 2004.

Yacci, M., Rozanski, E., & Haake, A. "Eye Tracking to Measure Learning from Edutainment," CHI 2004 Workshop: Social Learning through Gaming Workshop, Vienna, Austria, April 26, 2004.

Vigliotti, A., Rozanski, E., Haake, A., and Karn, K. "Eye Tracking for Enhancing Problem Understanding and Solution Discovery in Usability Testing," IDHI, Xerox Corporation, Rochester, NY, January 9, 2004.

Vigliotti, A., Rozanski, E., Haake, A., and Karn, K. "Eye Tracking for Enhancing Problem Understanding and Solution Discovery in Usability Testing," CHIRoch and HFES-Western NY, Rochester, NY, October 28, 2003.

Rozanski, E., Vigliotti, A. M., Karn, K. S., Haake, A. R., Pelz, J. B., Dalal, N. E., "Eye tracking: A Tool for the Discount Usability Toolbox," 12th European Conference on Eye Movements, Dundee, Scotland, August 2003.

Rozanski, E. and Schaller, N. "Integrating Usability Engineering into Computer Science Education," ACM/ITiCSE'03 Conference (Innovation Technology in Computer Science Education). University of Macedonia, Thessaloniki, Greece, June 30 – July 2, 2003.

Invited Speaker, "HCI and the Computer Scientists: More Than Interface Design," Department of Computer Science Colloquium, RIT, May 2003.

Invited Speaker, "Human-computer Interaction: Putting the Human First," Association For Women in Computing, Rochester, NY, February 2003

Invited Speaker, "Human-computer Interaction: What Designers Need to Know," Graduate Seminar for Graphic Design, Computer Graphic Design and Industrial Design, College of Imaging Arts and Sciences, Rochester Institute of Technology, January 15, 2003.

Panelist, "Using Java in Computer Science Education," *SIGCSE/SIGCUE Joint Conference on Integrating Technology into Computer Science Education*. Uppsala, Sweden, June 1-5, 1997.

Invited Speaker, "RIT's Multimedia Initiative," *NSF Conference on Information Technology Education*. Rochester Institute of Technology, Rochester, NY, October, 1994.

Campbell, J. F., Curry, B. D., and Rozanski, E. P. "The Three Faces of Academic Women: The Forgotten Professionals." Paper presented at *Scholarship on Women & Society*. Marist College, Poughkeepsie, NY, June 5-6, 1992.

Campbell, J. F., Curry, B. D., and Rozanski, E. P. "Advocacy: The Next Plane for Women's Professional Development in Higher Education." Paper presented at the *5th Annual International Conference on Women in Higher Education*. San Diego, CA, January 4-6, 1992.

Panelist, "Ethical Issues," *INSIGHTS 1989 - Meeting the challenge of the 90's, A Two-year College Faculty Workshop*, RIT, April 13-14, 1989.

Invited Speaker, "Computer Graphics in a Computer Science Curriculum," State University of New York College at Brockport, Brockport, NY, April 1988.

Invited Speaker, "What's It All About - Computer Graphics," St. John Fisher College, Rochester, NY, September, 1985.

Invited Speaker, "Computer Graphics - An Overview," RIT Parents Weekend Forum, fall, 1985.

Invited Speaker, "Color in Computer Graphics," *Conference on Communicating with Color in Art, Science, and Industry*, RIT, Rochester, NY, March 29, 1985.

Invited Speaker, "Computer Graphics - More Than Just Games," Niagara Frontier Chapter of the ACM, Buffalo, NY, December, 1983.

Invited Speaker, "Introduction to Computer Graphics," Xerox Corporation, Rochester, NY, March, 1982.

Invited Speaker, "Computer Graphics as an Instructional Tool," Teaching Effectiveness Day, RIT, Rochester, NY, February, 1982.

Invited Speaker, "Business Computer Graphics Systems," *Xerox National Controllers Conference*, Chicago, IL, March 1981.

Invited Speaker, "True GRIT, An Interactive Three-dimensional Computer Animation System," *Second Conference on Computer Science and Education*, RIT, Rochester, NY, April, 1978.

Invited Speaker, "Computer Graphics Seminar," RIT IEEE/Computer Society, September, 1978.

Invited Speaker, "Everything You Always Wanted to Know About Computers* (*but were afraid to ask)," Nursing Home Administrators Workshop, School of Health Related Professions and College of Continuing Education, RIT, Rochester, NY, May, 1979.

TUTORIALS AND WORKSHOPS

Rozanski, E.P., Haake, A.R., and Pelz, J.B. "Eye Tracking: Ready for the Usability Toolbox," Human Factors and Ergonomics Society 49th Annual Meeting Full-Day Workshop, Orlando, FL, September, 2005.

Rozanski, E.P., Haake, A.R., and Pelz, J.B. "Eye Tracking: Ready for the Usability Toolbox," Half-Day Tutorial to be presented at UPA 2005, Montreal, Canada, June 27, 2005.

Pelz, J.B., Rozanski, E.P., and Haake, A.R. "Eye Tracking Demystified: Application to HCI Usability Evaluation," CHI 2005 Full-Day Tutorial, Portland, OR, April 4, 2005.

Pelz, J.B., Rozanski, E.P., and Haake, A.R. "Eye Tracking: Ready for the Usability Toolbox," Human Factors and Ergonomics Society 48th Annual Meeting Full-Day Workshop, New Orleans, LA, September, 2004.

Pelz, J.B., Rozanski, E.P., and Haake, A.R. "Eye Tracking: Ready for the Usability Toolbox," UPA 2004 Half-Day Tutorial, Minneapolis, MN, June 7, 2004.

Rozanski, E., Yacci, M., and Haake, A. "Workshop in Usability Engineering and Performance Support." Submitted to Paychex Corporation (no action).

COMMITTEES AND ORGANIZATIONS – National, local and RIT

National Committees:
ACM Undergraduate Information Technology Curriculum Development Committee, 2002 to present.

Advisor for several Information Technology, Software Development and Management, Computer Science, Communications, and MFA masters theses and projects.

RIT Committees:
Professional Development Leave Committee, Chair
Strategic Planning Task Force – Community
Academic Senate
Code of Computer Conduct, revision of policy
Academic Affairs
Honorary Degree Committee
College of Imaging Arts and Sciences Deans Search Committee, Chair, 1997
Faces of Change Conference Development Committee, 1997-98, 2003.
Institute Subcommittee on Student Experience - Middle States Review Committee, 1996
Calendar Review Committee, Chair, 1994-95
Middle States Periodic Review Committee, 1992-93

College Committees:
Tenure Committee
PhD in Computing and Information Sciences Proposal Development
Ad Hoc College Portfolio Committee
Load Committee, Chair
Graduate Council, CAST

Department Committees:

Assessment
Full Professor Peer Group
Associate Professor Peer Group
MSIT Curriculum Revision, Chair
MSIT Graduate Curriculum
SDM Curriculum
Graduate Futuring
Multimedia Group
Human Factors/Interface Design Group
Strategic Planning
Curriculum

ACM/SIGGRAPH 97, Creative Applications Laboratory Committee.

ACM/SIGGRAPH, Course Reviewer, 1996, 1997, 1998, 2001, 2002, 2003, 2004, 2005.

College of Imaging Arts and Sciences – New Media faculty search committee.

Institute Committee - Intercollegiate Committee (Colleges of Applied Science and Technology, and Imaging Arts and Sciences) - Multimedia Advisory Committee, Co-chair, Fall, 1994.

Phi Kappa Phi Honor Society, RIT Chapter President, 1993-95.

NSF Undergraduate Curriculum and Course Development grant reviewer, April and November 1991.

NSF ILI grant reviewer, 1989.

Computer Science Advisory Board member: Monroe Community College, Erie County Community College.

Computer Science program reviewer: Indiana University of Pennsylvania

Computer Science program reviewer: Morrisville College.

Kodak Software Engineering Curriculum Advisory Committee, 1994-96.

Xerox Computer Science Curriculum Advisory Committee member, 1988-89.

Active book reviewer for several publishers.

OTHER SERVICE

Advisor to RIT Alpine Ski Team, 1995-2000.

Advisor to RIT Alpha Sigma Alpha Sorority, Gamma Iota Chapter, 1983-97.

Board of Directors, RIT Women's Network, 1990-92.

Guest on WXXI radio program "Talk Show", Rochester, NY, September 24, 1991.

Numerous quotes and technical consultant in local and national newspapers as well as magazines such as *Wall Street Journal*, *Rochester Business Journal* and *Working Woman* (topics include computer careers, information technology, gender based computer games).

CONFERENCES AND SEMINARS

ACM/SIGCHI (Association for Computing Machinery/ Special Interest Group in Computer Human Interaction), 2005 (Portland, OR), 2004 (Vienna, Austria), 2003 (Ft. Lauderdale, FL), 2002 (Minneapolis, MN), 2001 (Seattle, WA), 2000 (The Hague, The Netherlands), 1999 (LA), 1998 (LA).

Eye Tracking, Applied Science Laboratory, Bedford, MA, Fall, 2003.

CITC4 (Conference on Information Technology Curriculum), Purdue University, West Lafayette, IN, October, 2003.

12th European Conference on Eye Movements, Dundee, Scotland, August 2003.

ACM/ITiCSE'03 (Innovation Technology in Computer Science Education). University of Macedonia, Thessaloniki, Greece, June 30 – July 2, 2003

CITC3 (Conference on Information Technology Curriculum), Rochester Institute of Technology, Rochester, NY, 2002.

Camden Technology Conference – 1999 (*Pop Culture*), 1998 (*The Transformation of Learning).*

ACM/SIGGRAPH (Special Interest Group in Computer Graphics), 97, 96, 87, 85, 84, 82, 81.

SIGCSE/SIGCUE *Joint Conference on Integrating Technology into Computer Science Education*, Uppsala, Sweden, June 1-5, 1997.

ACM *Multimedia '95: 3rd ACM International Multimedia Conference and Exhibition*, San Francisco, CA, November 5-9, 1995.

SIGCSE (ACM Special Interest Group in Computer Science Education National Conference), Phoenix, AZ, March 8, 1994.

"Virtual Reality," New York City, June 1992.

"1991 Eastern Communications Forum," National Engineering Consortium, Washington, DC, April 29-May 1, 1991.

"Pathways to the Future - An Appreciation Course for Management covering the Results of the Management in the 1990s Research Program, " (a seminar on Information Technology as a strategic tool) International Computer Limited, Taplow, England September, 1991.

Twentieth SIGCSE Technical Symposium on Computer Science Education, Louisville, KY, February 23-25, 1989.

Fourth Artificial Intelligence Satellite Symposium, *AI and the Knowledge Worker Productivity Challenge: the Payoff and the Potential*, Texas Instruments, RIT, November, 1988.

Faculty Development Workshop for Undergraduate Software Engineering Instruction, RIT, June, 1988.

Third Artificial Intelligence Satellite Symposium, RIT, April, 1987.

"Object-Oriented Design and Programming: A New Perspective in the Search for Quality Software," (tutorial), Uniforum - Unix Conference, Washington, DC, January 20-23, 1987.

Executive Leadership in an Academic Setting, Management Development Programs, College of Business, RIT, 1986-87.

Northeast AI Consortium Fall 1986 Conference, *Spatial Knowledge Representation and Reasoning*, State University of New York at Buffalo, Buffalo, NY, September 26, 1986.

1986 Northeast AI Consortium Spring Meeting, University of Massachusetts at Amherst, March 12-13, 1986.

Applications in Artificial Intelligence, IEEE Videoconference, RIT, February 26, 1986.

Expert Systems and Prolog, IEEE Videoconference, RIT, December 4, 1985.

Knowledge-Based Systems and Their Applications, Texas Instruments Videoconference, RIT, November 13, 1985.

National Computer Graphics Conference, Chicago, IL, 1983.

PROFESSIONAL ORGANIZATIONS

ACM - The First Society in Computing

ACM/SIGCHI

ACM/SIGGRAPH

ACM/SIGGROUP

ACM/SIGITE

COURSES TAUGHT

Graduate:

Foundations of HCI
Advanced Topics in HCI

EVELYN PAULA ROZANSKI, Ph.D.

Usability Engineering
CSCW and Groupware
Usability Testing
User Centered Design Methods
Theories of Interactive Computing
Web Programming (Java)
Fundamentals of Interactive Multimedia
Interactive Multimedia Development
C++ Programming Workshop
Computer Programming and Problem Solving (C)
Algorithms and Data Structures
Graphics Programming I, II, III
Data Modeling and Design
Data Object Modeling
Software Engineering Project

Undergraduate:
- Usability Testing
- Interface Design
- Human Factors
- Electronic Imaging
- Software Scripting
- Introduction to Programming (C++, Pascal, Fortran)
- Program Design and Validation (C++)
- Computer Graphics
- Advanced Computer Graphics
- Artificial Intelligence
- Numerical Methods/Analysis
- Discrete Simulation
- Database Concepts
- Discrete Structures

17. Marla Schweppe, M.A. – Computer Graphics Design, CIAS

MARLA SCHWEPPE
Director of Visualization
School of Design
College of Imaging Arts and Sciences
Rochester Institute of Technology
73 Lomb Memorial Drive
Rochester, New York 14623
585-475-2754 (voice)
585-475-7533 (fax)
Marla.Schweppe@rit.edu
http://visualization.rit.edu

Experience

Director of Visualization, College of Imaging Arts and Sciences**, Rochester Institute of Technology**, 2000-present
- Develop curriculum in visualization, gaming and motion graphics
- Develop opportunities to collaborate with industry
- Develop grant opportunities

Associate Professor, School of Design, faculty, **Rochester Institute of Technology**, Spring 2002 – present
- Teach visualization and animation courses
- Supervise graduate thesis projects
- Coordinate software workshops for faculty
- Develop curriculum in Visualization and Entertainment Design

Committee work at RIT

Executive Committee of the Academic Senate, Operations Officer, 2004-5
Honorary Degree Committee 2002-2004
Faculty Affairs Committee, chair, 2001-2005
Eisenhart Excellence in Teaching Committee 2002-4
Eisenhart Outstanding Teaching Nominating Committee 2001-3
Academic Senate, 1998-2007
Institute Council, 1999-2004
First In Class Information Technology Steering Committee, 1999-present
First In Class Task Force, 1998-1999
School of Film and Animation Search Committee, '99, '00, '01
Computer Science Ph.D. Planning Committee, 1999-2000
Institute Long Range Planning Committee, 1997-1999
CIAS College Computer Committee, 1996-1999
SPAS Computer Committee, 1997-1999
Computer Animation Curriculum Committee, 1993-2001
School of Photographic Arts & Sciences Strategic Planning Program Comm. Chair, 1996-7
MFA Applicant Review Committee Chair, 1993-2001

Film/Video/Animation Search Committee '97 and '98, and more.

Associate Professor, faculty, **Rochester Institute of Technology** School of Film and Animation, College of Imaging Arts and Sciences, Fall 1993 to Spring 2002.

MFA Coordinator in Computer Animation 1993-2001
Animation Chair 1997-2001
Teach graduate and undergraduate courses in animation and computer animation.
Supervise senior and graduate thesis projects.
Developed curriculum in the area of animation and computer animation, which includes enhancing offerings at the graduate and undergraduate levels adding over 30 new courses to the curriculum in animation related topics.

- 3D character animation courses (2)
- animation drawing courses (6)
- animation pre-production (3)
- stop motion animation
- single frame motion
- miniature set construction
- special effects animation
- animation in context
- film restoration and reconstruction
- digital video editing
- digital compositing
- storyboarding
- digital audio tools for animation
- art and technology collaborations
- programming for artists and animators (4)
- history and aesthetics of computer animation (2)
- experimental animation
- film restoration and reconstruction
- contemporary issues in computer animation
- film appreciation

Develop the equipment and software facilities
Donation of $250,000 of ElectroGIG 3D animation software
Donation/purchase of SGI computers and Alias|Wavefront software
Donation of $500,000 of Houdini software
Donation of harddrives
Donation of Rayz software from Silicon Grail (with Deborah McKinzie)

President, Rochester Finger Lakes ACM SIGGRAPH Professional Chapter, 2001-present.

Faculty advisor, RIT ACM SIGGRAPH Student Chapter, RITgraph, 2003 to present

Producer and Director; **George Eastman House Council:** ***Continuing the Legacy***; about the history and activities of the George Eastman House Council, 2001

Art Gallery Chair, **SIGGRAPH 99**. Chair of the Art Gallery committee responsible for coordinating all aspects of the Art Gallery for SIGGRAPH'99 from the call for participation to the touring show after the conference.

Selected as a Beta test site for **Alias|Wavefront's** Maya Cloth Module, 1998

New York Media Festival Registrar, responsible for coordinating registration for the Festival attended by 200 media producers from all over New York State, April 13-14, 1996, at Syracuse University.

Consultant, **Kodak CINEON Project**, responsible for coordinating University program, supervising student interns, developing interactive training materials, web pages and CD's.

Conference Chair, **ASIFA Central**, the midwest chapter of the International Animated Film Association, 1993 to 1998. Chaired six of first seven yearly conferences for animators in the midwest region.

Art Show committee member, **SIGGRAPH'94**, Deanna Morse, Grand Valley State University, chair; Orlando, Florida, July-August, 1994; Coordinator of papers for the Visual Proceedings, Coordinator for the interactive installations in the Art Show.

President, **ASIFA Central**, the midwest chapter of the International Animated Film Association, Spring 1993 to 1995.

Senior Analyst, **Northwestern University**, Instructional Technology Group, Winter 1992 to Fall 1993.

- Director, Northwestern University Learning Technologies Program; The Learning Technology Program, sponsored by Apple Computer, provided workshops for faculty on the integration of technology in the teaching and learning environment. Workshops were open to faculty at Northwestern University and other institutions of higher education in collaboration with Cornell and Stanford Universities.
- System administrator, RS6000 Electronic Text Server, providing electronic text support campus-wide and world wide, using Pat and Lector.
- Worked as part of a team to design and develop electronic classrooms on campus. Designed and supervised the production of documentation for the speaker's desks in these electronic classrooms. Provided training to faculty on the use of the speaker's desks in the classrooms.
- Designed and implemented the construction of the Instructional Technology Center, a resource center for faculty involved in integrating technology in the teaching and learning environment.

Art Show committee member, **SIGGRAPH'92**, John Grimes, Illinois Institute of Technology, chair, Chicago, Illinois, July 26-31, 1992, served as a liaison between the Art Show Committee and the Film and Video committee in order to facilitate the inclusion of computer graphics in performance at the conference

SIG'Kids committee member, **SIGGRAPH'92**, Coco Conn, chair, this new committee worked to showcase computer graphics work produced by 6-12 graders, Chicago, Illinois, July 26-31, 1992

Customer support and dealer training, ElectroGIG USA, Chicago, Illinois

Freelance illustrator and animator, producing work for such clients as Baxter, STS, Nucor Steel, Premier, Northwestern University/Evanston Research Park, Wheetly, Abbott Labs, book illustrations for Watson-Guptill

SIGGRAPH Video Review committee, **SIGGRAPH'91**, Las Vegas, Nevada, July 29 through August 2, 1991

Curator of computer animation for the show "Electronic Light" at Museum of Modern Art, Rio de Janeiro, Brazil, August, 1991

Computer Animator, faculty of the **School of the Art Institute of Chicago** in the Art and Technology Area, Fall 1987 to Spring 1991

- Taught beginning and advanced computer imaging, animation and design
- Responsible for developing curriculum in the areas of Computer Animation and Three-Dimensional Computer Graphics
- System Manager for Silicon Graphics IRIS Lab - responsible for networking Iris to video output system, single frame control, digital film recorder, Howtek scanner and other computers, installing software, establishing and maintaining accounts
- Curated exhibit in the School gallery, *Chips Off a New Block* , computer derived student work, May 26 - June 22, 1990

Beta test site for **Wavefront Technologies** Software, Spring 1990

Artistic Director, Channel 27, **Chicago Access Corporation**, responsible for overseeing the production of programming, December 1987 to May 1989

Graduate Teaching Associate, The Computer Graphics Research Group (CGRG) renamed the Advanced Center for Computing in the Arts and Design (ACCAD), 1983 to 1987

- Taught beginning, intermediate and advanced computer animation classes at the Master's level in the Art Education Department of The Ohio State University
- Designed and developed curriculum
- Selected incoming students
- Organized and selected purchases of new equipment
- Supervised systems operations

Animator and producer, opening for University Network Integrated Telecommunications Systems, The Ohio State University, 1985 to 1986

Animator for **Cranston/Csuri Productions**; Projects included ABC affiliate packages, CBS affiliate packages, WJZ-13 Baltimore station package, the **SIGGRAPH'86** Electronic Theater Opening animation, 1985 and 1986

Costume Designer/Director, *Jennifer Muller and the Works*, New York City; Traveled with the Company through four continents designing and supervising construction and care of costumes, 1979 to 1982

Designer, *In Praise of Love*, Lakewood Theater, Skowhegan, Maine, 1975

Designer, *Dirty Ferdie Comes Clean*, Provincetown Playhouse

Designer, *Missouri Legend*, Equity Library Theater

Costume designer and shop supervisor, The American Place Theater 1974 Season

Scenic Artist, Julliard School of Music, American Place Theater, Manhattan School of Music, Adirondack Scenic Incorporated, Atlanta Ballet, Lake George Opera 1977 Season, Billboard Awards Show 1978, The *Eagles* "Hotel California" tour, Ensemble Studio Theater, The *Wings* "Live and Let Die" tour, New York Shakespeare Festival, University of Kansas Theater, Creed Repertory Theater 1973 Season

Assistant Designer, for Eldon Elder, Richard Graziano, Fredda Slavin, James F. Gohl, Eddie Haynes, Fred Kolo, James Steere at the Goodspeed Opera, PAF Playhouse, Roundabout, Broadway, Pittsburgh Civic Light Opera, Stage West, New York Shakespeare Festival, Lakewood Theater

Special Prop and Costume Construction, for Marvel Comics (He-Man, Skeletar, The Hulk, and the Thing), Roger Hess (Daffy Duck), Broadway's *Dracula*, Circle Repertory Theater's *Gemini*, The New York Shakespeare Festival's *Agamemnon*, *Three Penny Opera*, *Henry V*, Saturday Night Live's *Extinct Species Fashion Show*, Broadway's *Nefertiti*, NET commercial, H-O Oats commercial, Mr. Potato Head commercial, Dristan commercial

Costuming, for WNET/WGBH, The New York Shakespeare Festival, Brooks Van Horn Costume Shop, Michael-Jon Costume Shop, Queen's Playhouse, David Bowie's Diamond Dog Tour, Bette Williams Costume Shop, Creed Repertory Theater

Costume designer and scenic artist, American Place Theater, New York City, 1974 to 1976

Designer, scenery and costumes, *Three Sisters* at the William Inge Memorial Theater, Lawrence, Kansas

Shop supervisor and assistant designer, Theater Department of University of Kansas, 1973 to 1974

Programmer, Center for Research in Engineering Science; wrote software to access a database of information on drawings of airplanes and other equipment; Lawrence, Kansas, 1971 to 1972

Summer Programming Trainee, General Electric; converted, programmed, tested and documented 117 applications programs for the GE600 Time Sharing Library; Phoenix, Arizona, 1970

Juries and Review Panels

Juror, Computer Art and Video, Scholastic Arts Program of high school artwork, 2003

US Department of Education, reviewer for FIPSE grants, 2003

New York Foundation for the Arts, Computer Art panelist, 2003

Courses reviewer, **SIGGRAPH'2003,** Review proposed courses for inclusion in the conference; San Diego, CA, July 2003

Juror, Computer Art and Video, Scholastic Arts Program of high school art work, 2003

Courses reviewer, **SIGGRAPH'2002**, Review proposed courses for inclusion at the conference; San Antonio, Texas, summer 2002.

Juror, Computer Art and Video, Scholastic Arts Program of high school artwork, 2002

Courses reviewer, **SIGGRAPH'2001**, Reviewed proposed courses for inclusion in the conference; Los Angeles, California, summer 2001

Juror, **SIGGRAPH 2000** Art Gallery.

Courses reviewer, **SIGGRAPH'98**, Reviewed proposed courses for inclusion at the conference; Orlando, Florida, July, 1998.

Courses reviewer, **SIGGRAPH'97**, Reviewed proposed courses for inclusion at the conference; Los Angeles, California, August, 1997.

Courses reviewer, **SIGGRAPH'96**, Reviewed proposed courses for inclusion at the conference; New Orleans, Louisiana, August, 1996.

Juror, **Big Muddy Film Festival**, 1991

Publications and Presentations

Panelist, XXX; Media Ecology Conference, 2004

CEIS University Technology Showcase, *Entertainment Technology: Digital Visualization Techniques*; February 4, 2004

Coordinator, Faculty Staff Seminar in Visualization, RIT, winter quarter 2003-4, presented in several sessions and coordinated the remainder

Panel with Franziska Frey and Patricia Russotti*; How Will We Tell Our Story? Visual Media as the Art and Literature of the 20th Century;* 2003 Kern Communication Conference, Rochester, NY

Collaborations in Entertainment Technology; Golisano College of Computing and Information Technology Seminar series, April, 2003

Abracadabra, a presentation with Andy Davidhazy at the George Eastman House on fooling around with photography and animation. April 1, 2001

Author, *An Animator's Perspective on Animating Cloth* a chapter in Cloth Modeling and Animation, edited by David Breen and Donald House; AK Peters, Ltd.; May, 2000.

Presenter, **SIGGRAPH'98**, Presented a paper on 'An Animator's Perspective on Animating Cloth' as part of the course 'Cloth and Clothing in Computer Graphics'. Other presenters include Donald House from Texas A&M University; David Baraff from Carnegie Mellon University; Bernhard Eberhardt and Wolfgang Strasser from the University of Tubingen; Jeffrey Eischen from North Carolina State University; Nadia Thalmann of the University of Geneva; and Umakanth Thumrugoti from Walt Disney Feature Animation.

Presenter, Getty Internet Forum at the **College Art Association** on 'Teaching Computer using the Internet' February, 1998.

Presenter, **Project EDGE**, an NSF Project, Rochester Institute of Technology, May 1, 1998.

Presenter, *Bring Your Daughter to Work Day*, School of Photographic Arts and Sciences, April, 1998.

Presenter, **ASIFA Central**, 'Early Works in Computer Animation', April 4, 1998.

Presenter, *Computer Animation Techniques*, ASIFA Central Animators' Conference, Utica, Illinois, April 19-21, 1996.

Panel coordinator, *Computer Animation Techniques*, New York Media Festival, Syracuse University, Syracuse, New, York, April 13-14, 1996. Panelists: Leah Bosworth, Xerox; Elouise Oyzon, NTID; John Peterson, Post Central.

Invited Speaker at yearly Awards Ceremony, RAVA (Rochester Audio Visual Association), Spring 1995.

Faces of Change, presentation to high school girls interested in careers in technology

related fields, Spring 1994.

Visiting professionals series, "Direct on Film Animation", "Video Tricks", and "Computer Animation" French Road Elementary School, Spring 1994.

Instructor, series of presentations on Computer Animation for exceptional high school students, Spencerport BOCES, Spring 1994.

SIGGRAPH 1990 Art Show Catalog Article Reviewer, Supplemental Issue of Leonardo: Journal of the International Society for the Arts, Sciences and Technology, August, 1990

Panel Coordinator, *Expression in Computer Animation*, a panel showcasing the latest developments and work in computer animation production, The National Computer Graphics Association's NCGA'90 conference in Anaheim, California, Speakers: Rebecca Allen, UCLA Film School; Sally Rosenthal, DEC; Lance William's, Apple Computer Corporation; March 19-22, 1990

Tutorial Instructor, *Image-Making Techniques for Low-Cost Computers*, an introduction to the creation and manipulation of images using the computer, The National Computer Graphics Association's NCGA'90 Conference in Anaheim, California, March 19-22, 1990

Participating artist, BASIC (Basic Art Support in the Curriculum), providing support to Chicago area schools interested in developing curriculum in computer graphics, Joanne Donda, coordinator, 1989 to 1991

Panelist, *Preparing for the Future*, a panel on education in computer graphics, The Association for Computing Machinery SIGGRAPH'89, July 31 - August 4, 1989

Computer Animation two presentations for *Focus on the Arts*, Highland Park, Illinois, May 1 - 4, 1989

Panelist, *Pivotal Issues in Computer Animation*, Conference of the National Computer Graphics Association, Philadelphia, Pennsylvania, April 20, 1989

Anamorphic Animation, Proceedings of the National Computer Graphics Association 1989 Conference, Philadelphia, Pennsylvania, April 17-20, 1989

Presentation of work for the Chicago Artist' Coalition at Chicago Access Corporation, October, 1988

Presentation of work at the School of the Art Institute of Chicago, April 24, 1987

Interview, RTBF, French Language Belgian Television Station, A scientific series in six, twenty minute segments featuring digital pictures, 1985

Computer Animation - Process and Product, three presentations for the Department of Fine Art and the Computer Science Colloquium, The University of Kansas, Lawrence, Kansas, September, 1985

Interview, SCIENCE'84, July/August, 1984 story and photographs on Ohio State University's Computer Graphics Research Group animation

Motion in Computer Graphics, GRETSE-CESTA Image Symposium, Biarritz, France (juried), Paper published in proceedings, May 21-25, 1984

Developing a 3-Dimensional Animation System for the Digital PDP 11/23 Microcomputer, "Proceedings: 3rd Symposium on Small Computers in the Arts, Philadelphia, Pennsylvania, IEEE Catalog No. 83CH1930-7 (juried), October 12-14, 1983

Basic Concepts of Computer Graphics, a series of presentaions at Worthington High School, Worthington, Ohio, 1983

Exhibits

Artistic Director; **Interactive Dance Club**, Brick City Weekend, 175th Anniversary Celebration of RIT, a dance club with sensors, screens, computers and graphics
Artistic Director, Story and Lighting Designer; **What's the Buzz?** An interactive, improvisational, virtual theatre performance at RIT, May 2004
George Eastman House Council: *Continuing the Legacy*; at the Dryden Theatre, May, 2000

George Eastman House Council: *Continuing the Legacy*; RIT SOFA Faculty Show, December, 2000

"Kokopelli", music driven animation in live performance, RIT SOFA Faculty Show, December 2001.

"Pixel Puzzle", a video presentation of the interactive/participatory event from the SIGGRAPH 99 Conference at the faculty show of the RIT SPAS and SOFA Faculty Show, January 2000.

"Pixel Puzzle", an interactive/participatory event at the SIGGRAPH 99 Conference.

"SIGGRAPH Annie", mixed media, SIGGRAPH 30th year celebration, August 1999

Director of Animation, "Jackson Pollock: In the Painting", Panara Theatre, January and February, 1997

"SIGGRAPH Annie", mixed media, SIGGRAPH'96 Conference, August 1996

Still Life 1, Still Life 3, Brighton Arts Festival, Brighton Town Hall, June 1995

Still Life 1, Still Life 2, Still Life 3, RIT SPAS Faculty Show, Bevier Gallery, September 1994

get wired, poster and t-shirt design for Northwestern University Academic Computing and Network Services.

fsmoke, msmoke, bsmoke, Computer Art: Pushing the Boundaries, State of Illinois Art Gallery, curated by Jane Stevens, July 27 - September 11, 1992

Balloon Guy as part of an exhibit of digital art and animation called Electronic Light Museum of Modern Art, Rio de Janeiro, Brazil, August, 1991

Balloon Guy, SIGGRAPH 87 Electronic Theatre.

Hats, Caps and Other Things; as part of *Brave New Pixels 3* an exhibit sponsored by the Chicago Chapter of ACM SIGGRAPH at the ARC Gallery, June, 1991

Random Order, *Working*, *Hats, Caps and Other Things*; in *Flux'90: New visions in Computer Art*, Muskegon Museum of Art, Muskegon, Michigan, June 30 - August 22, 1990

Souvenir D'Andromeda and *Multiple*; Museum of Holography in New York, collaboration with Brazilian holographer Eduardo Kac producing computer animation which was transferred to stereographic holograms, May 10 - June 22, 1990

msmoke, *bsmoke*, *smoke*; in *Art from the Computer: An Illinois Survey*, curated by Robert F. Hower, Art Department, Millikin University, juried by Dr. Tom DeFanti, University of Illinois at Chicago, co-founder of the Electronic Visualization Laboratory. Exhibit partially supported by a grant from The Illinois Arts Council, a state agency, and the National Endowment for the Arts

Perkinson Gallery, Art Department, Millikin University
April 8-29, 1988
State of Illinois Art Gallery, Chicago
July 25 - September 9, 1988
College of DuPage Arts Center Gallery, Glen Ellyn
January 4-26, 1989
Monmouth College, Monmouth
February 1989
Western Illinois University, University Art Gallery, Macomb
March 1989
Illinois State Museum, Lockport
September 3 - November 12, 1989

Animator, *Balloon Guy* presented at The Association for Computing Machinery's

SIGGRAPH'87 as part of the evening "Film and Video Show"

Train and *Chimera*, permanent installation, at the Ohio Department of Education, Division of Computer Services and Statistical Reports, Donated by The Hewlett-Packard Company, installed September, 1986

Animator on the opening for the 1986 SIGGRAPH Electronic Theater

Train and *smoke*; in *Computer Generated Graphics and Animation*, an international touring exhibit organized by the Computer Graphics Research Group, The Ohio State University and supported by The Ohio Foundation of the Arts, 1984 to 1988

Swain School of Design, New Bedford, Massachusetts
Lima Art Association, Lima, Ohio
Marshall University, Huntington, West Virginia
Thames Science Center, New London, Connecticut
Johnson Humrickhouse Museum, Coshocton, Ohio
Museum of Science, Boston, Massachusetts
Columbus Technical Institute, Columbus, Ohio
Mather Gallery, Case Western, Cleveland, Ohio
University of Akron, Akron, Ohio
Owensboro Museum, Owensboro, Kentucky
Erie Art Museum, Erie, Pennsylvania
Salisbury College, Maryland
Rotterdam Municipal Library, The Netherlands
RIA International Center, Amsterdam, The Netherlands
Groningen Art Academy, The Netherlands
Barcelona, Spain (In conjunction with Computer Graphics Conference)
SCCA Computer Art Project, Municipal Library, Rotterdam
CAD-CAM Congress & Trade show, TAI Congress Centre, Amsterdam
Artibus, Utrecht Art School
Minerva, Groningen Art School
Melkweg Cultural Centre (The Milk Way), Amsterdam
Avenement Audio-Visuel Tradeshow, Jaarbeurs Congress Center, Utrecht
Annual conference of the Dutch Societies for Art Teacher, Delft
Computer Art Exhibition, Bonnenhanten Museum, Maastricht
Prime Computer Building, Zoetermeer, with the Dutch Society for Engineers
Kijkhuis Video Art Centre, The Hague

Train and *smoke;* Art by Computer, an exhibit of computer generated art work at the Worthington Public Library, Worthington Public Library, Worthington, Ohio, February 9-29, 1984

Chimera and *Train;* Computer Graphics and Animation, Bricker Hall, jointly sponsored by The Office of the President, the Computer Graphics Research Group and the Department of Art Education, The Ohio State University April 8-26, 1985

Animator for *Chimera* presented in the SIGGRAPH'84 Electronic Theatre

Images appeared in The Craft Report in conjunction with an article on computer graphics, 1984.

Computer generated cover image, Creative Ohio, Vol. 5 No. 6, October-November 1983

Grants, Contracts and Research

NSF - ATE, "Consortium for Optics and Imaging Education", Awarded to Monroe Community College, Pis - Robert Novak, Roger Easton, Steven D. Moore, RIT is subcontractor, 2000-3

Received funding from the City of Rochester to create virtual planning animations and images for redevelopment of sectors 8 and 10 within the city as part of the Neighbors Building Neighborhoods program. 2002-3

Received a Faculty Enhancement and Development Grant to provide training for other faculty in Maya modeling and animation software, 1999, 2003

Principle Investigator, New York State CEIS CAT grant to develop an 'Industrial Workflow Simulation' in conjunction with Gleason Works, Clarix and MDA CAD Team.

Principle Investigator, New York State CEIS CAT grant to develop a 'Cut Scene' in conjunction with Zendagon.

Principle Investigator, New York State CEIS CAT grant to develop a 'Sample Game/Story' in conjunction with Zendagon.

Received a Provost's Productivity Grant to develop a distance learning course in 'Introduction to Digital Animation' from the Rochester Institute of Technology.

Received a donation of Houdini animation software from SideEffects Software ($500,000).

Received a Provost's Productivity Grant to develop a distance learning course in 'Introduction to Film Appreciation' from the Rochester Institute of Technology.

Received a donation of ElectroGIG 3D-GO animation software for use by the computer animation graduate students at the Rochester Institute of Technology, 1994 ($250,000).

Awarded the **Siggraph'88** Educators Grant, grant provided attendance to the 1988 conference and extensive educational materials, August, 1988

Received an educational equipment grant from Commodore Business Machines for Computers to be used in the classroom at the School of the Art Institute of Chicago, 1988

Research assistant, Navy project numbers N61-80-C-008 and N61339-81-C0073, Computer Graphics Research Group, The Ohio State University, 1983

Developed Skeleton Animation (SA) system, with David Zeltzer on NSF Grant No. MCS 8304185, Computer Graphics Research Group, The Ohio State University 1983 to 1984

Research assistant with Patti Baker of the Department of Education, Theory and Practice, The Ohio State University, created animation to test visual perception of volume, 1983

Education

Ph.D. Candidate, Art Education with a specialization in Computer Graphics and Animation, The Ohio State University, completed coursework in 1987

Master's of Arts, Art Education with a specialization in Computer Graphics and Animation, Ohio State University, March, 1984

Studied drawing and painting, Art Students League, New York City, 1978 to 1979

Bachelors of Arts, Theater Design, University of Kansas, 1976

Studied Computer Science and Mathematics, University of Kansas, 1968 to 1970

Professional Organizations

President, Rochester Finger Lakes SIGGRAPH Professional Chapter 2000-present
Faculty advisor, RIT SIGGRAPH Student Chapter 2000-present
Association for Computing Machinery Special Interest Group in Graphics, 1982 - present
National Computer Graphics Association
Board, ASIFA, Midwest Chapter - International Association of Film Animators, 1989-96
Small Computer in the Arts Network
Chicago Artists' Coalition
Rochester Women's Network
Golden Key National Honor Society by invitation in 1990
Phi Kappa Phi Honor Society by invitation 1984 (lifetime member)

Other interests and activities

Team Manager, Brighton Little League, 1996
Coach, Brighton Soccer League, 1994
Cultural Arts Committee, Martin Luther King Laboratory School, 1991 - 1992
Board member, Evanston Day Nursery, 1989 - 1991
Steering Committee, Interracial Family Network, produced the newsletter, 1990 - 1992
Adult Program Committee, UCE, camping coordinator
Assistant coach, AYSO Soccer League, 1991 - 93

President, Parents group, Evanston Day Nursery, 1989 -1990

18. William Stratton, Ph.D. – Information Technology, GCCIS

Curriculum Vita

NAME: William J. Stratton

CURRENT ACADEMIC RANK: Associate Professor

TENURE STATUS: Tenured

Date of original appointment to this faculty, followed by dates and ranks of advancement:

Dates	Ranks of Advancement
September 1973*	Instructor
September 1976	Assistant Professor
September 1981	Associate Professor

* left in 1974 to complete a Masters degree in CS; returned to RIT in September 1976

Degrees with fields, institutions, and dates:

Degree	Field	Institution	Date
B.A.	Psychology	The Ohio State University	1967
M.A.	Psychology	Hunter College of the SUNY	1969
M.S.	Computer Science	SUNY/Buffalo	1976
Ph.D.	Higher Education Administration	SUNY/Buffalo	1988

If you do not have a formal degree in IT or a related field, describe any course work you may have taken, or other ways in which you have achieved competence in IT; there is no necessity to repeat information here which is contained in later sections of this document:

N/A

Conferences, workshops, and professional development programs in which you have participated to improve teaching and professional competence in IT:

N/A

Other related computing experience (including teaching, industrial, governmental, etc.):

N/A

Consulting—list agencies and dates, and briefly describe each project:

Xerox Corporation, Fall 1996-Spring 1997, On-line instructional delivery systems development

Treasurer and full partner of Personalized Software Systems, Co., Inc., Buffalo and Rochester New York, from 1978 through 1990. It was established first as a two-person partnership in 1978, and incorporated under the laws of New York in late 1979. It provided programming system analysis, specification, implementation and evaluation service for small and medium sized companies.

Department, college, and/or university committees of which you are a member:

Member, RIT CIO Advisory Committee
Member, IT Curriculum Committee
Chairperson, GCCIS Midtenure B Committee
Area coordinator, IT database curriculum area

Principal publications of the last five years; please state in standard bibliographic format.

N/A

Other scholarly activity: grants, sabbaticals, software development, etc.:

MUPPETS Grant: Co-researcher, with Andrew Phelps and Jeff Sonstein, the Provost's Productivity Award Committee, 2002

CAST FEAD Grant: Development of a blended on campus/distance learning laboratory experience, with Daryl Johnson, May 1999.

Productivity Project: "The Clock: An interdisciplinary experience for students in the Technology Cluster", The Provost's Productivity Award Committee, in corroboration with Profs. David Suits, Ron Jodoin, Kit Mayberry and Richard Orr, November 1996 through December 1997.

Productivity Project: "A Microcomputer Based Computer Literacy Course", Institute Committee on projects Relating to Productivity, in corroboration with Professors Michael Lutz, Wiley McKinzie, and Gordon Goodman, August 1981.

Productivity Project: "Survey of Computer Science", Institute Committee on Projects Relating to Productivity, in corroboration with Gordon Goodman, March, 1981.

Scientific, professional, and honor societies of which you are a member:

Psi Chi (Psychology) Honorary Society

Honors and awards:

N/A

Courses taught this and last academic year term-by-term. (This year is the year in which this report was prepared; last year was the year prior to this.) If you were on sabbatical leave, please enter the information for the previous year. Please list each section of the same course separately.

FALL QUARTER 2003-2004
VKSF 4002-200: Freshman Seminar
VKSF 4002-461: Fundamentals of Data Modeling
VKSF 4002-486: Multi-Client Server Database Configuration

WINTER QUARTER 2003-2004
VKSF 4002-461: Fundamentals of Data Modeling
VKSF 4002-486: Multi-Client Server Database Configuration
VKSF 4002-360: Introduction to Database and Data Modeling (distance)

SPRING QUARTER 2003-2004
VKSF 4002-461: Fundamentals of Data Modeling
VKSF 4002-360: Introduction to Database and Data Modeling (two sections)

Other assigned duties performed during the academic year, with average hours per week. Indicate which, if any, carry extra compensation. If you are course coordinator for courses taught by other than full-time faculty, please indicate here which courses.

N/A

Number of students for which you serve as academic advisor: 90

Estimated percentage of time devoted to scholarly and/or research activities: 11%

Please give a brief description of your major research and scholarly activities:

Data modeling, database design, implementation and management; U.S. higher education and higher education administration

(Currently contracted with GCCIS under the teaching portfolio guidelines)

If you are not a full-time faculty member, state what percentage of full-time you work: N/A

Percentage of this time allocated to the IT program being evaluated: N/A

19. Elissa Weeden, M.S. – Information Technology, GCCIS

Elissa Weeden

Home Address
117 Parkway Drive
North Chili, NY 14514
(585) 594-9333

Office Address
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623
(585) 475-6733
Email: emw@it.rit.edu

Education

Ph.D., Computing Technology in Education
July 2003 - Present

Graduate School of Computer and Information Sciences
Nova Southeastern University
Ft. Lauderdale, FL

Master of Science, Software Development and Management
September 1996 – August 1998

Department of Information Technology
Rochester Institute of Technology
Rochester, NY
GPA: 3.75/4.0

Bachelor of Science, Information Technology
September 1990 – May 1995

Department of Information Technology
Rochester Institute of Technology
Rochester, NY
Concentration in Application Programming
GPA: 3.53/4.0

Honors and Awards:

- Awarded a Graduate Assistantship
- Dean's List
- Graduated with Honors for Bachelor of Science degree

Affiliations:

- Information Technology Student Organization
- RIT Student Music Association

Platforms

PC, Macintosh, VAX/VMS, UNIX, Linux

Languages

Visual Basic, Java, C/C++, PHP, HTML, SQL

Software Packages

Programming Environments
Borland C++
Microsoft Visual J++
Microsoft Visual Basic

Database Management Systems/Apps
Claris FileMaker Pro (PC and Macintosh)
Microsoft Access
Oracle Database (8i, 9i, 10i)
Oracle SQL*Plus/SQL*Plus Worksheet
TOAD
ER-WIN (Data Modeling)

Multimedia Applications
Adobe Photoshop
Macromedia Director
Macromedia Dreamweaver
Macromedia Fireworks

Office Applications
Microsoft Excel
Microsoft Word

Industry Experience	March 2001 – Sept. 2002 Rochester Institute of Technology Rochester, NY **Independent Consultant – Center for Electronic Manufacturing and Assembly** ▪ Interviewed members of the center to determine what they would like included in the database system. ▪ Created a system to mainly manage marketing information and seminar administration.
	March 1998 – April 1998 Eclectech Domain Rochester, NY **Consultant – Microworx Direct, Inc.** ▪ Created and implemented a database system allowing pricing and inventory information to be easily searched and displayed via the Internet.
	Sept, 1997 – Present Eclectech Domain Rochester, NY **Partner** ▪ Actively participates in the entrepreneurial endeavor. ▪ Involved in direction and management of consulting activities. ▪ Manages financial aspects of the business.
	June 1996 – Sept. 2002 Norman Howard School Rochester, NY **Independent Consultant** ▪ Interviewed clients with limited computer experience to determine project specification. ▪ Designed and developed cross-platform database system to manage student records and school administration. ▪ Developed training materials for faculty and staff. ▪ Trained faculty and staff in operation of the system. ▪ Created technical and user documentation of the system. ▪ Provide continual technical and development support.
	March 1995 – May 1996 Meliora Systems, Inc. Rochester, NY **Assistant Developer** ▪ Deeply involved in testing and quality assurance of a commercial software application. ▪ Coordinated client beta testing programs. ▪ Delivered training courses for various clients in human resource skills tracking software. ▪ Created and managed the installation programs of newly implemented software.
	Sept. 1990 – March 1995 Rochester Institute of Technology Rochester, NY **Assistant to the Coordinator of Student Services – Department of Computer Science and Information Technology** ▪ Designed and developed a student management database. ▪ Trained staff in use of the database system. ▪ Provided technical and development support of the database to the staff.
Teaching Experience	July 2002 – Present Rochester Institute of Technology Rochester, NY **Assistant Professor – Department of Information Technology** ▪ Member of Programming and Database specialty areas. ▪ Experienced in teaching in traditional and distance learning formats. ▪ Database curriculum development at the undergraduate and graduate levels. ▪ One of the principal instructors of the Database concentration area. ▪ Tenure received September 2005

Sept. 1999 – June2002 Rochester Institute of Technology Rochester, NY

Instructor – Department of Information Technology

- Member of Programming/Database specialty area.
- Experienced in teaching in traditional and distance learning formats.
- Curriculum development in the areas of programming and database.
- One of the principal instructors of the Database concentration area.

Sept. 1998 – Sept. 1999 Rochester Institute of Technology Rochester, NY

Visiting Assistant Professor – Department of Information Technology

- Played a major role in the development of a new course offering for the Information Technology program (0602-317).
- Lead distance learning classes with students participating from across the US (0602-208; 0602-483).
- Mentored group of entering freshman student and assisted them in making the transition from high school to college (0602-201).
- Continued development of a new core course offering for the Information Technology program (0602-215).

May 1996 – Aug. 1998 Rochester Institute of Technology Rochester, NY

Graduate Assistant – Department of Information Technology

- Updated course content and Study Guide for Survey of Computer Science (0602-200).
- Managed lab operations that serviced several hundred students per year.
- Effectively supervised team of student proctors.
- Controlled the administration of student grades.
- Acted as a liaison between representatives of Information Technology and ISC.
- Provided technical support for a local high school teaching Survey of Computer Science.
- Taught sections of Survey of Computer Science (0602-200).

Sept. 1995 – May 1996 Rochester Institute of Technology Rochester, NY

Adjunct Professor – Department of Information Technology

- Conducted lab sections for introductory and intermediate C++ courses.
- Taught sections Survey of Computer Science course (0602-200).

Course History

- **0602-200: Survey of Computer Science**
  - Spring 1995-1996 (19953)
  - Fall 1996-1997 (19961) - two sections
- **4002-201: Freshman Seminar**
  - Fall 1998-1999 (19981)
  - Fall 2001-2002 (20011)
- **0602-208: Introduction to Programming**
  - Fall 1998-1999 (19981) – distance learning
- **0602-208 Lab: Introduction to Programming**
  - Fall 1995-1996 (19951) - two sections
  - Winter 1995-1996 (19952)
  - Fall 1996-1997 (19961) - two sections
  - Winter 1996-1997 (19962) - two sections
- **0602-210 Lab: Programming with Classes**
  - Winter 1995-1996 (19952)

- **0602-215: Introduction to Visual Programming I**
  - Fall 1998-1999 (19982)
  - Spring 1998-1999 (19983)
  - Winter 1999-2000 (19992) – Course Lead
- **0602-215 Lab: Introduction to Visual Programming I**
  - Fall 1998-1999 (19981)
  - Winter 1998-1999 (19982)
  - Spring 1998-1999 (19983)
  - Winter 1999-2000 (19992) - two sections – Lab Lead
- **0602-216 Lab: Introduction to Visual Programming II**
  - Winter 1999-2000 (19992)
- **0602-317: Visual Basic for Programmers**
  - Fall 1998-1999 (19981) – Course Lead
  - Winter 1998-1999 (19982) – Course Lead
  - Spring 1998-1999 (19983) – Course Lead
  - Fall 1999-2000 (19991) – Course Lead
- **0602-317 Lab: Visual Basic for Programmers**
  - Fall 1998-1999 (19981) – Lab Lead
  - Winter 1998-1999 (19982) – Lab Lead
  - Spring 1998-1999 (19983) – Lab Lead
  - Fall 1999-2000 (19991) – Lab Lead
- **4002-320: Introduction to Multimedia: The Internet and the Web**
  - Winter 2003-2004 (20042)
- **4002-483/360: Applied Database Management / Intro. to Database and Data Modeling**
  - Winter 1998-1999 (19982) - two sections
  - Spring 1998-1999 (19983) - two distance learning sections
  - Summer 1998-1999 (19984) - distance learning
  - Fall 1999-2000 (19991)
  - Winter 1999-2000 (19992) - distance learning
  - Spring1999-2000 (19993) - distance learning
  - Winter 2000-2001 (20002)
  - Spring 2000-2001 (20003) - Course Lead
  - Fall 2002-2003 (20021) - two sections - Course Lead
  - Spring 2002-2003 (20023)
  - Summer 2003-2004 (20034)
  - Winter 2004-2005 (20042) – Course Lead
  - Spring 2004-2005 (20043) – Course Lead
  - Fall 2005-2006 (20051)
- **4002-484: Multi-Client Database Implementation / Fundamentals of Database Client/Server Connectivity**
  - Winter 1999-2000 (19992) – co-taught with Prof. Stratton
  - Winter 2001-2002 (20012)
- **4002-484 Lab: Multi-Client Database Implementation / Fundamentals of Database Client/Server Connectivity**
  - Winter 1999-2000 (19992)
  - Winter 2001-2002 (20012)
- **4002-485: Database Client/Server Implementation / Fundamentals of DBMS Architecture and Implementation**
  - Fall 1999-2000 (19991) – co-taught with Prof. Stratton
  - Spring 1999-2000 (19993) – Course Lead
  - Fall 2000-2001 (20001) – two sections – Course Lead
  - Winter 2000-2001 (20002) – two sections - Course Lead
  - Spring 2000-2001 (20003) – Course Lead

- Fall 2001-2002 (20011) – Course Lead
- Winter 2001-2002 (20012) – two sections - Course Lead
- Spring 2001-2002 (20013) – Course Lead
- Fall 2002-2003 (20021) – Course Lead
- Winter 2002-2003 (20022) – two sections – Course Lead
- Spring 2002-2003 (20023) – Course Lead

➢ **4002-485 Lab: Database Client/Server Implementation / Fundamentals of DBMS Architecture and Implementation**

- Fall 1999-2000 (19991)
- Spring 1999-2000 (19993) – Lab Lead
- Fall 2000-2001 (20001) – two sections - Lab Lead
- Winter 2000-2001 (20002) – two sections - Lab Lead
- Spring 2000-2001 (20003) – Lab Lead
- Fall 2001-2002 (20011) – Lab Lead
- Winter 2001-2002 (20012) – two sections – Lab Lead
- Spring 2001-2002 (20013) – Lab Lead
- Fall 2002-2003 (20021) – Lab Lead
- Winter 2002-2003 (20022) – two sections – Lab Lead
- Spring 2002-2003 (20023) – two sections – Lab Lead
- Fall 2003-2004 (20031)

➢ **4002-486 Multi-Client Server Database Configuration**

- Fall 2001-2002 (20011)
- Spring 2001-2002 (20013) – two sections – Course Lead
- Winter 2002-2003 (20022) – Course Lead
- Winter 2004-2005 (20042)

➢ **4002-486 Lab: Multi-Client Server Database Configuration**

- Spring 2000-2001 (20003) – two sections – Lab Lead
- Spring 2001-2002 (20013) – two sections – Lab Lead
- Winter 2002-2003 (20022) – Lab Lead

➢ **4002-720: Data Object Development**

- Fall 2000-2001 (20001)
- Fall 2001-2002 (20011)
- Fall 2003-2004 (20031)
- Fall 2004-2005 (20041)
- Fall 2005-2006 (20051)

➢ **4002-890: Seminar in Database Performance and Tuning**

- Fall 2003-2004 (20031) – co-taught with Prof. Bills
- Spring 2003-2004 (20033) – co-taught with Prof. Bills

Independent Studies Directed

➢ Spring 2001-2002 (20013)

- An Analysis of Database Performance and Tuning Issues – Lance Farquhar
- Three-Tier Online Journal Web Project – Philip Jones

➢ Winter 2001-2002 (20012)

- Three-Tier Implementation – Alan Evans
- Evaluation of IT Database Concentration and an Analysis of Possible Expansion – Ayush Jain
- Expansion of Eval System Through Oracle Exploration – Neha Jain

➢ Spring 2000-2001 (20003)

- Multi-Tier Technology and Business Logic Representation – Ken Browning
- 485 Reworking of the Lab "Experience" – Ray Reid
- Student Worksheet Generation System con't – Kevin Parsons

- Winter 2000-2001 (20002)
  - Desktop Notes – Adam Brentnall
- Fall 2000-2001 (20001)
  - Database Design and Implementation – George Tennant
  - Student Worksheet Generation System – Kevin Parsons
  - Win32 Web Server: Using Visual Basic writing an Intel Platform Win32 (Win 95, 98, NT) Web Server Using TCP/IP – Adam Brentnall

Masters Projects-Completed

- June 2005, Chakrabarti, Ipshita, "Data Warehouses & Data Marts: Concepts & Techniques – Design and Implementation of the "Employee Expenses" Mini-Data Mart", Co-Chair
- March 2005, Baiye, Onyiyoza, "Investigation of RAID Under Oracle 9i", Co-Chair
- Aug. 2004, Marco Casale, "Database Performance & Tuning: The development f an open source JAVA/SQL application for examination of Oracle STATSPACK – JoraStat"
- Feb. 2004, Jiu Feng, "Practical Database (Oracle) Performance Tuning", Co-Chair
- Aug. 2003, Al-Hinai, Yousef, "Registration System at Sultan Qaboos University Web-Enablement", Chair
- May 2003, Bhalla, Ramanjot, "Housing Connection Website Automation"
- May 2003, Ahuja, Seema, "RIT E-Commerce Website", Chair
- May 2003, Bhat, Archana, "Web Based Graduate Project Clearing House"
- April 2003, Harper, Andre, "Web Based Stereotype Intervention Utilizing Comic Strip Theme"
- Dec. 2002, Arif Tuna Ozgelen, "An Oracle Web Interface Application: DBuild v1.0"
- Nov. 2002, Ping Xu, "A JSP/XML-Based Database-Driven Web Portal of Restaurant E-Business Application"
- Oct., 2002, Wendy Lancet, " MOMS Club Interactive Web Site"
- Feb., 2002, Raymond Reid, "Implementation of a Capstone Experience for an Upper Level Database Concentration Sequence"
- Sept., 2001, Haiyan Wei, "Web-based Dental Management Database Development"
- June, 2001, Wenqun Liu, "Account Number Generator: A Web-Based Financial Application Implemented with an N-tier Architecture"
- May, 2001, Prasad Thottempudi, "Web-based Procurement Prototype"
- Jan., 2001, Dan Dick, "Web Publishing with XML Data"
- Oct., 2000, Hanxu Qin, "Web CD Store – Applying J2EE Technologies in Online Applications"

Masters Projects – In Progress

- Mohapatra, Pranamita, "An E-Commerce Site for Airfare Comparison-Shopping"
- Jenkins, Shawn, "ASL Research Sign System", *Chair*
- Kaur, Rupinder, "A Database Monitoring Application", *Co-Chair*
- Ren, Qinghu, "A Website for Customer Oligonucleotide Synthesis", *Chair*

Service

- **Department**
  - Assisted with Department Open Houses
  - Programming/Database Specialty Area
  - Learning and Knowledge Management Degree Group
  - Assembled Industrial Advisory Board Student Panel 2000,2001
  - Evaluation Committee 2000-2001
  - Scholarship Committee 2001-2005
  - Chair, Scholarship Committee 2004-2005
  - Online Presence Committee 2001-2002
  - Governance Committee 2001-2004
  - Strategic Planning Committee 2001-2004
  - Chair, Strategic Planning Committee 2002-2003
  - Reduced Load Adhoc Committee 2002-2003
  - Subgroup Chair, Oyzon Promotion Committee 2002-2003
  - Explorer Outreach group 2003-2005
  - Acting Undergraduate Program Coordinator 20033-20034
  - Member, JAD group for department database 2004-2005
- **College**
  - GCCIS Academic Conduct Committee 2002-2004
  - Mid-tenure Committee 2005-2006
- **Institute**
  - Academic Senate Faculty Affairs Committee 2001-2003
  - Faculty Advisor, Phi Sigma Pi Sept. 2000-Present
    - Outstanding Faculty Advisor of the Year 2002-2003
  - Member, Faculty Learning Community 2004-2005
  - Academic Senate Student Affairs Committee 2004-2006
  - Participant, RIT ROCS 2005, 2006
  - RIT Eisenhart Committee 2005-2006

Professional Development

- **Conferences and Workshops Attended**
  - RIT Scholarly Workshop on Teaching and Learning March 2005
  - SUNY Buffalo Spring Conference on Teaching and Learning Feb. 2005
  - 2004 Lilly Conference on College Teaching Nov. 2004
  - CITC 5 (Conference on Information Technology Curriculum) Oct. 2004
  - New Learning 2004 May 2004
  - CITC 4 (Conference on Information Technology Curriculum) Sept. 2003
  - Faculty Institute on Teaching and Learning May 2003
  - Faculty Institute on Advising, RIT Nov. 2002
  - CITC 3 (Conference on Information Technology Curriculum) Sept. 2002
  - SIGMOD/PODS 2002 (ACM Special Interest Groups on Management of Data/Principles of Database Systems) June 2002
  - WebDB Workshop June 2002
  - ITEC (Information Technology Exposition And Conference) April 2002
  - ITEC (Information Technology Exposition and Conference) June 2001
  - IOUG-A (International Oracle Users Group - Americas) National Conference April 2001
  - ITEC (Information Technology Exposition and Conference) June 1999
  - VBITS (Visual Basic Insiders Technical Summit) Feb. 1996

- **Conference Participation**
  - Member, International Scientific Advisory Committee, The Internet Society 2006 - Second International Conference on Advances in Education, Commerce & Governance: Technology's Impact on Individuals, Culture and Society — June 2006
  - Speaker, CITC5 — Oct. 2004
  - Speaker and Moderator, New Learning 2004 — May 2004
  - Paper Reviewer, Speaker, and Moderator, CITC4 — Sept. 2003
  - Panel Moderator, CITC3 — Sept. 2002
- **Oracle Certification**
  - Introduction to Oracle: SQL and PL/SQL (95%) — Aug. 2000
- **Oracle Training**
  - Enterprise DBA Part 2: Performance and Tuning — July 2000
  - Enterprise DBA Part 1B: Backup and Recovery — July 2000
  - Introduction to Oracle: SQL and PL/SQL — June 2000
  - Oracle 8 Database Administration — Aug. 1999
- **Publications**
  - Co-wrote and edited: 0602-200 Survey of Computer Science Study Guides — Feb. 1998
  - Weeden, E., Scarborough, G. & Bills, D. (October 2003). Lab management strategies for IT database curriculum. *Proceedings of the 4th conference on information technology curriculum on information technology education* (pp. 62-66). Lafayette, Indiana.
  - Holden, E., & Weeden, E. (October 2003). The impact of prior experience in an information technology programming course sequence. *Proceedings of the 4th conference on information technology curriculum on information technology education* (pp. 41-46). Lafayette, Indiana.
  - Weeden, E. (2004). Expanding online learning exam options with computer-based assessment. In K. Morgan and J. Spector (Ed.), *The internet society: advances in learning, commerce and security.* United Kingdom: WITPress.
  - Holden, E., & Weeden, E. (October 2004). The experience factor in early programming education. *Proceedings of the 5th conference on information technology curriculum on information technology education* (pp. 211-218). Salt Lake City, Utah.
  - Holden, E., & Weeden, E. (May 2005). Prior experience and new IT students. *Proceedings of the Informing Science and IT Education Conference*. Flagstaff, Arizona. Retrieved September 18, 2005, from Informing Science Institute Web site: http://proceedings.informingscience.org/InSITE2005/I16f35Hold.pdf
    - Also published in Journal of Issues in Informing Science and Information Technology, Volume 2, 2005, ISSN 1547-5840

Professional Memberships

- Member, ACM Special Interest Group for Information Technology Education (SIGITE) — 2002-Present
  - Member of Four-Year Accreditation committee — 2002-Present
  - Member of SIGITE Newsletter Editorial Board — 2003-Present
- Member, Association for Women in Computing (AWC) — 2001-Present
- Associate Member, International Oracle Users Group (IOUG) — 2001-Present
- Member, Upstate New York Oracle Users Group (UNYOUG) — 2001-Present

Honors and Awards	➢ RIT PLIG grant recipient	May 2004
	➢ RIT FEAD grant recipient	May 2004
	➢ Nominated for RIT Eisenhart Outstanding Teaching Award	Dec. 2003
	➢ RIT FEAD grant recipient	May 2003
	➢ Nominated for RIT Eisenhart Outstanding Teaching Award	Dec. 2002
	➢ Named "Outstanding Faculty Advisor of the Year (2001-2002)" – Phi Sigma Pi National Honor Fraternity	Nov. 2002
	➢ Nominated for Phi Sigma Pi's National Outstanding Faculty Advisor	Nov. 2002
	➢ Awarded Certificate of Greatness from Delta Alpha Chapter – Phi Sigma Pi	May 2002
	➢ Nominated for RIT Eisenhart Outstanding Teaching Award	Dec. 2001
	➢ Nominated for Phi Sigma Pi's National Outstanding Chapter Advisor	Nov. 2001
	➢ Inducted as an Honorary Member of Phi Sigma Pi	Oct. 2000
	➢ Voted Faculty Advisor of Phi Sigma Pi	Sept. 2000
Interests	European board games, Texas Hold'em Poker, Golf, and Magic the Gathering	

Appendix E: Full Course Proposals for New and Revised Courses

1. 4002-792 Development Processes in the Games Industry

R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-792

1.0 **Title**: Development Processes in the Game Industry
Date: 9/29/05
Credit Hours: 4
Prerequisite(s): Graduate standing in Information Technology and enrollment in the Game Programming Concentration or permission of the instructor
Co-requisite(s): None
Course proposed by: Christopher Egert, Andy Phelps, Jessica Bayliss

2.0 **Course information:**

	Contact hours per week	Maximum students/section
Classroom	4	25
Lab		
Active Learning/Active Learning Extended		
Other		

Quarter(s) offered:
X **Fall** □ **Winter** □ **Spring** □ **Summer**

Students required to take this course:
This course is required for Masters of Science students in Game Design and Development.

Students who might elect to take the course:
None.

3.0 **Goals of the course**:
The primary goal of this course is to familiarize students with the development processes used by the gaming industry when developing a leading entertainment title. Students will examine all phases of the development pipeline, using as a basis the industry standard design document. Students will translate user needs to both software and hardware requirements and will examine the cadre of software packages and hardware systems needed for design, development, testing, and maintenance of game systems. Furthermore, students will examine the process models employed by the game industry for developing game engines, tools, and content. Students will also explore the team process, examining different ways in which diverse groups work together to create game technologies. By the end of the course, students will also be able to analyze and determine potential roles in the game development life-cycle employed throughout the industry.

4.0 Course description

This course examines the individual and group roles of the development process model within game design and development industry. Students will transform design document specifications into software and hardware needs for developers, testers, and end users. Students will examine team dynamics and processes for programming, content development, testing, deployment, and maintenance Students will explore design process through the deconstruction of the game industry's software lifecycle model.

Prerequisite(s): Enrollment in the Game Design and Development graduate program.

5.0 Possible resources (texts, references, computer packages, etc.)

5.1 Introduction to Game Development. Steve Rabin (ed.). Charles River Media.
5.2 Game Architecture and Design. Andrew Rollings and Dave Morris. Coriolis.
5.3 Postmortems from Game Developer. Austin Grossman (ed.). CMP Books.
5.4 Selected websites
5.5 Materials provided by the instructor

6.0 Topics (outline):

- 6.1 Requirements analysis – From design document to development house needs
  - 6.1.1 Translating the user's experience into development requirements
  - 6.1.2 Software requirements
    - 6.1.2.1 Programming Language selection
    - 6.1.2.2 Application Programming Interfaces (API) selection
    - 6.1.2.3 Integrated Development Environment (IDE) selection
    - 6.1.2.4 Profiling and optimization tools
    - 6.1.2.5 Content libraries
    - 6.1.2.6 Version control systems and content management systems
    - 6.1.2.7 Software functional requirement specification and performance constraints analysis
  - 6.1.3 Hardware perspective
    - 6.1.3.1 Minimum hardware configuration
    - 6.1.3.2 Preferred hardware configuration
    - 6.1.3.3 Hardware subsystem requirement analysis (Graphics, I/O, Networking)
  - 6.1.4 Networking perspective
    - 6.1.4.1 Networking as intersection of hardware and software
    - 6.1.4.2 Protocol selection
    - 6.1.4.3 Network Communication Model (Client/Server, Peer to Peer, Partitioned Server Systems)
- 6.2 Team and Process Models
  - 6.2.1 Team and process model relationship to development
    - 6.2.1.1 Game code development as team process
    - 6.2.1.2 Game engine design as team process
    - 6.2.1.3 Tool construction and use as team process
  - 6.2.2 Team organization and interaction methods
    - 6.2.2.1 Code and fix methodology
    - 6.2.2.2 Hierarchical development (horizontal and vertical methods)
    - 6.2.2.3 Waterfall development process
    - 6.2.2.4 Iterative development process
    - 6.2.2.5 Agile development
    - 6.2.2.6 Extreme development
    - 6.2.2.7 Parallel construction techniques
  - 6.2.3 Software and standards to regulate team process

- 6.2.3.1 Coding standards
- 6.2.3.2 Asset management
- 6.2.3.3 Source control
- 6.2.3.4 Build policies
- 6.2.3.5 Documentation strategies (manual and automated)

6.3 Quality Assurance
- 6.3.1 Asserts and crash testing
- 6.3.2 Unit testing engine and game functionality
- 6.3.3 Acceptance testing
- 6.3.4 Regression testing
- 6.3.5 Specification compliance check
- 6.3.6 Bug prioritization and management
- 6.3.7 Continuity check in gameplay and function
- 6.3.8 Documentation review for internal and external content

6.4 Cooperation and Conflict in Process Models
- 6.4.1 Development vs. Deployment
- 6.4.2 Content Development vs. Programming
- 6.4.3 Lifecycle Concerns vs. Overall Sustainability
- 6.4.4 Stability conflicts between Internal Goals and External Review Process

6.5 Analysis of Lifecycle for Game Development
- 6.5.1 Team selection, software selection and hardware selection
- 6.5.2 Technology and tool tests
- 6.5.3 Development of tools
- 6.5.4 Placeholder asset development
- 6.5.5 Partial prototypes
- 6.5.6 Integrated prototype
- 6.5.7 Usability testing
- 6.5.8 Iterative prototype
- 6.5.9 Refactoring
- 6.5.10 Preliminary asset integration
- 6.5.11 Alpha release build
- 6.5.12 Establish final production pipeline
- 6.5.13 Select alpha test pool (Internal / External Teams) and deploy test
- 6.5.14 Incorporate alpha feedback and bug reports
- 6.5.15 Beta release build
- 6.5.16 Beta testing
- 6.5.17 Performance tuning
- 6.5.18 Playability tuning
- 6.5.19 11th hour feature inclusion
- 6.5.20 Demo system deployment before and during official release
- 6.5.21 Release
- 6.5.22 Point upgrades
- 6.5.23 Maintenance
- 6.5.24 Expansion and sequel planning

7.0 Intended learning outcomes and associated assessment methods of those outcomes

7.1 Students will be able to identify and describe software, hardware, and networking requirements for game software as part of the design and development process. Assessed through student presentations and student classroom interaction.

7.2 Students will be able to differentiate tools and processes required for effective group interactions within the development process. Students will be assessed though classroom interaction and participatory exercises, including oral and written presentations.

7.3 Students will be able to analyze the game development lifecycle and will be able to determine the needs, requirements, and constraints of each phase. Assessed through presentation and classroom participation.

8.0 Program or general education goals supported by this course

This course provides support for the IT Department's mission of providing relevant and innovative curriculum that is at the forefront of the IT discipline.

9.0 Other relevant information

9.1 Course will require the use of a "smart" classroom. The minimal requirements will include a projector system, which can be attached to the instructor's laptop computer.

9.2 Students will be required to meet occasionally in the Entertainment Technology Lab or other appropriate venue for "out-of-class" demonstrations. Such meetings will not require formal scheduling, as they will be conducted during open hours.

10.0 Supplemental information for ABET

Not required for graduate course.

APPROVALS:

Steve Kurtz	October 6, 2005
IT Program Coordinator	Date
Charlie Border, Ph.D.	October 6, 2005
IT Curriculum Committee Chair	Date
Jim Leone, Ph.D.	October 6, 2005
IT Department Chair	Date

2. 4002-793 Business and Legal Aspects of Game Development

R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Computer Science

NEW COURSE: 4002-793

1.0 **Title**: Business and Legal Aspects of Game Development
Date: 10-8-05
Credit Hours: 4
Prerequisite(s): Enrollment in the Game Design & Development Masters or permission of instructor.
Co-requisite(s): None
Course proposed by: Deborah Coleman, Andrew Phelps, Chris Egert, Jessica Bayliss

2.0 **Course information:**

	Contact hours	**Maximum students/section**
Classroom	4	25
Lab		
Active Learning/Active Learning Extended		
Other (specify _____)		

Quarter(s) offered *(check)*
☐ **Fall** **X Winter** ☐ **Spring** ☐ **Summer**

Students required to take this course: *(by program and year, as appropriate)*
This course is required for Masters of Science students in Game Design and Development.

Students who might elect to take the course:
None.

3.0 **Goals of the course** *(including rationale for the course, when appropriate)*:
The primary goal of this course is to introduce students to business and legal practices specific to the gaming industry. Students will be introduced to entrepreneurship in the gaming industry, confidentiality rules, game developer rights and responsibilities, the developer/publisher/retailer relationship, contract development, intellectual property rules and regulations, royalties, legal responsibilities of content and consumer impact, and compare and contrast legal issues associated with gaming companies (independent development shops, and small to large companies).

The gaming industry is noted for independent game developers working out of small startup companies, "indies," that deal with large publishing companies through contracts. It is important for developers to be aware of both the intellectual property they create as well as how it is used in publishing contracts.

Development decisions can often affect future business and legal circumstance. For example, violence in games has been the center of recent court cases, and it has been proposed that

massively multiplayer on-line games have negative addictive properties. Each of these legal issues can be traced to development decisions. Situations such as these must be explored at design time to mitigate legal issues in the future. This course is intended not as a complete curricula for students seeking to run a complete studio, but rather as a "survival guide" for students that choose to work in the entertainment technology industry.

4.0 Course description

This course will provide students with a practical background in business and legal practices specific to the gaming industry. Students will be introduced to entrepreneurship in the gaming industry, confidentiality rules, game developer rights and responsibilities, the developer/publisher/retailer relationship, contract development, intellectual property rules and regulations, royalties, licensing, and legal responsibilities for content and consumer impact. Projects may include individual and group research, examination of case studies, and written and oral reports on current industry practice. **Credit 4, Class 4, Lab 0**

Pre-Requisite: Enrollment in the Game Design and Development Masters or permission of instructor.

5.0 Possible resources (texts, references, computer packages, etc.)

5.1 Game Development Business and Legal Guide, by Ashley Salisbury, Premier Press, 2003
5.2 Get in the Game, by Marc Mencher, New Riders Publishing, 2003
5.3 Game Design: The Art and Business of Creating Games, Prima Publishing, 2001
5.4 Game Developers Conference materials, e.g., business and legal
5.5 Selected case studies
5.6 Articles from the Game Developer Magazine, GameDev.net, GamaSutra, etc.

6.0 Topics (outline):

The overall structure will cover the basics of business and entrepreneurship to the specifics of intellectual property (IP) and licensing. Case studies will be used extensively and students will be expected to work in teams throughout the course.

6.1 Economic system of developing, publishing, and distributing games
- 6.1.1 Introduction to the business of game development
- 6.1.2 Developer, publisher, retailer roles, relationships, and responsibilities

6.2 Breaking into the business of gaming
- 6.2.1 Startup (indies) to large gaming organizations
- 6.2.2 Business planning
- 6.2.3 Developer rights and responsibilities

6.3 Intellectual property
- 6.3.1 Trademark, patents, copyrights, and trade secrets
- 6.3.2 Non-disclosure agreements

6.4 Publishers and publishing
- 6.4.1 Publisher, developer, retailer roles, relationship and responsibilities
- 6.4.2 Contract development and maintenance

6.5 Licensing fundamentals
- 6.5.1 Technology licensing
- 6.5.2 Character licensing

6.6 Legal issues
- 6.6.1 Litigation and the legal system
- 6.6.2 Game content risks and issues
- 6.6.3 Consumer behavior risks and issues
- 6.6.4 Globalization and international copyright

7.0 Intended learning outcomes and associated assessment methods of those outcomes

7.1 Student will be able to explain terms used in business and intellectual property. To be assessed through examinations.

7.2 Student will be able to analyze case studies and argue applicable legal principles using basic intellectual property law terminology. To be assessed through case study analyses and presentations.

7.3 Student will be able to describe basic contract law and procedures for employing legal counsel. To be assessed through examinations.

7.4 Student will be able to develop a basic business plan. To be assessed through project assignment and presentations.

7.5 Student will be able to describe the economic system for game development, publication, and distribution of games. To be assessed through examinations and/or written report.

7.6 Student will be able to describe the pros/cons of licensing. To be assessed through examinations and/or presentation.

7.7 Student will be able to critically analyze technical development decisions and their potential for legal incident. To be assessed through project assignment and presentation.

8.0 Program or general education goals supported by this course

This course provides support for the IT Department's mission of providing relevant and innovative curriculum that is at the forefront of the IT discipline.

9.0 Other relevant information

9.1 This course will require the use of a "smart" classroom for class meeting times, for presentations, etc. In addition, students will work on their projects in the Entertainment Technology Lab and departmental labs during open lab hours.

10.0 Supplemental information for ABET

Not required for graduate course.

APPROVALS:

Professor Steve Kurtz	October 13, 2005
IT Program Coordinator	Date
Charlie Border, Ph.D.	October 13, 2005
IT Curriculum Committee Chair	Date
Jim Leone, Ph.D.	October 13, 2005
IT Department Chair	Date

3. 4002-887 Capstone Design

R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-887

1.0 **Title**: Capstone Design – MS Game Design and Development
Date: 9/13/05
Credit Hours: 4
Prerequisite(s): Permission of MS Game Design and Development Faculty Advisor
Co-requisite(s): None
Course proposed by: Christopher Egert, Andy Phelps, Jessica Bayliss

2.0 **Course information:**

	Contact hours per week	Maximum students/section
Classroom		
Lab		
Active Learning/Active Learning Extended		
Other – Capstone Project Experience	Variable	

Quarter(s) offered:
☐ **Fall** X **Winter** ☐**Spring** ☐ **Summer**
Students required to take this course:
This course is required for Masters of Science students in Game Design and Development.
Students who might elect to take the course:
None.

3.0 **Goals of the course**:
The primary goal of this course is for students to develop a Capstone Project proposal and associated design document, which will serve as an implementation framework for a cohort-based capstone project experience. As part of this course, students will be formed into game design and development groups that are balanced based upon student background and skill. Students will explore all parts of the capstone development process, including the selection of a topic, relation of the topic to a particular gaming domain, and analysis of relevant theories and practices from academic literature and industry. The division of group and individual responsibilities for the design and implementation of the capstone project will also be determined. When complete, the capstone design document should reflect common practices for game design documents within the industry. The final proposal must include sections that present the problem statement, specify the relevance of the problem, situate the problem in both literature and industry practice, define the plan of work, specify a timeline, specify the delegation of responsibility, and indicate resources required for the completion of the project.

4.0 Course description

This course allows students within the Game Design and Development program to develop a capstone proposal and design document. The capstone design document specifies the scope and depth of the capstone project as well as defines the group and individual responsibilities for the cohort capstone project experience.

Prerequisite(s): Permission of MS Game Design and Development Faculty

5.0 Possible resources (texts, references, computer packages, etc.)

Resources will vary as necessary to support the research and completion of the capstone design topic under consideration. Nearly every text, reading, or other materials defined in other coursework within the degree would be relevant, as well as related materials from disciplines such as Computer Science, Information Technology, Computer Graphics Design, etc. The exact materials used by each group will depend largely on the specific nature of the project undertaken.

6.0 Topics (outline):

N/A.

7.0 Intended learning outcomes and associated assessment methods of those outcomes

7.1 Students will be able to apply theory and practice from the field of Game Design and Development towards the completion of a capstone design document. The document will be reviewed by at least three members of the faculty active within the Game Design and Development program.

8.0 Program or general education goals supported by this course

This course provides support for the IT Department's mission of providing relevant and innovative curriculum that is at the forefront of the IT discipline.

9.0 Other relevant information

9.1 Students will require the use of Game Design and Development resources within each hosting department based upon the requirements of the project proposal. The student's capstone project advisor and committee will make facilities determinations on an "as-needed" basis, in consultation with administration from the home departments.

10.0 Supplemental information for ABET

Not required for graduate course.

APPROVALS:

Professor Steve Kurtz	September 29, 2005
IT Program Coordinator	Date
Charlie Border, Ph.D.	September 29, 2005
IT Curriculum Committee Chair	Date
Jim Leone, Ph.D.	September 29, 2005
IT Department Chair	Date

4. 4002-888 Capstone Development

R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-888

1.0 **Title**: Capstone Development – MS Game Design and Development
Date: 9/13/05
Credit Hours: 2
Prerequisite(s): Capstone Design – MS Game Design and Development
Permission of MS Game Design and Development Faculty Advisor
Co-requisite(s): None
Course proposed by: Christopher Egert, Andy Phelps, Jessica Bayliss

2.0 **Course information:**

	Contact hours per week	Maximum students/section
Classroom		
Lab		
Active Learning/Active Learning Extended		
Other – Capstone Project Experience	Variable	

Quarter(s) offered:
☐ **Fall** ☐ **Winter** X **Spring** ☐ **Summer**
Students required to take this course:
This course is required for Masters of Science students in Game Design and Development.
Students who might elect to take the course:
None.

3.0 **Goals of the course**:
The primary goal of this course is for students to apply both the theory and practice learned in the Masters of Science in Game Design and Development towards a specific problem within the field. Students will complete capstone projects within one quarter, based upon their previous work in the Capstone Design course (4002-887). Students will work within cohort groups to complete the capstone project experience, however, each student will be independently responsible for the completion of a particular aspect of the overall project. Faculty associated with the Game Design and Development program will evaluate the project. Additionally, the group will present to the faculty as part of an end-of-the-year exhibit. (In the unlikely event that students do not complete their project in time for the show, a second exhibit will take place in the fall for any remaining projects).

4.0 Course description

This course provides Master of Science in Game Design and Development students with capstone project experiences. Students are expected to work in cohorts towards the implementation of a game system that properly illustrates proficiency in the application of theory and practice towards a large-scale project. For each student, individual responsibilities for the group project will be defined in consultation with both the group and the faculty. Students must successfully complete the Capstone Design course and present a satisfactory capstone project proposal to the faculty before enrolling in this course.

Prerequisite(s): 4002 – 887 Capstone Design – MS Game Design and Development and Permission of MS Game Design and Development Faculty Advisor

5.0 Possible resources (texts, references, computer packages, etc.)

Resources will vary as necessary to support the research and completion of the capstone project. Nearly every text, reading, or other materials defined in other coursework within the degree would be relevant, as well as related materials from disciplines such as Computer Science, Information Technology, Computer Graphics Design, etc. The exact materials used by each group will depend largely on the specific nature of the project undertaken.

6.0 Topics (outline):

N/A.

7.0 Intended learning outcomes and associated assessment methods of those outcomes

7.1 Students will be able to apply theory and practice from the field of Game Design and Development towards the completion of a large-scale capstone project. A committee of at least three faculty members will review and evaluate student work.

7.2 Students will be able to apply group interaction skills towards work performed in cohort groups. A committee of at least three faculty members will review and evaluate team interaction dynamics to determine group and individual effort.

7.3 Students will be able to apply theory and practice from the field of Game Design and Development and their prerequisite capstone design document towards the completion of a capstone project document. The document will be reviewed by at least three members of the faculty active within the Game Design and Development program.

7.4 Student will be able to properly disseminate the results of their capstone experience through formal presentation, which will clearly delineate individual and group responsibly and participation. Attending faculty at the end-of-the-year show will evaluate the presentation for both substance and style.

8.0 Program or general education goals supported by this course

This course provides support for the IT Department's mission of providing relevant and innovative curriculum that is at the forefront of the IT discipline.

9.0 Other relevant information

9.1 Students will require the use of Game Design and Development resources within each hosting department based upon the requirements of the capstone project. The student's capstone project advisor and committee will make facilities determinations on an "as-needed" basis, in consultation with administration from the home departments.

10.0 Supplemental information for ABET

Not required for graduate course.

APPROVALS:

Professor Steve Kurtz	September 29, 2005
IT Program Coordinator	Date
Charlie Border, Ph.D.	September 29, 2005
IT Curriculum Committee Chair	Date
Jim Leone, Ph.D.	September 29, 2005
IT Department Chair	Date

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