CREATE YOUR OWN WORLDS
GAME DESIGN & DEVELOPMENT

Degree Proposal

Bachelors of Science in Game Design & Development

B. Thomas Golisano College of Computing & Information Sciences
Rochester Institute of Technology

Academic Year 2006-2007
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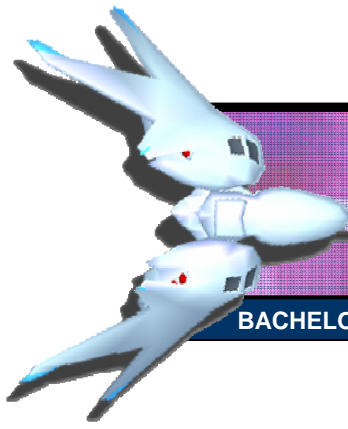Rochester Institute of Technology
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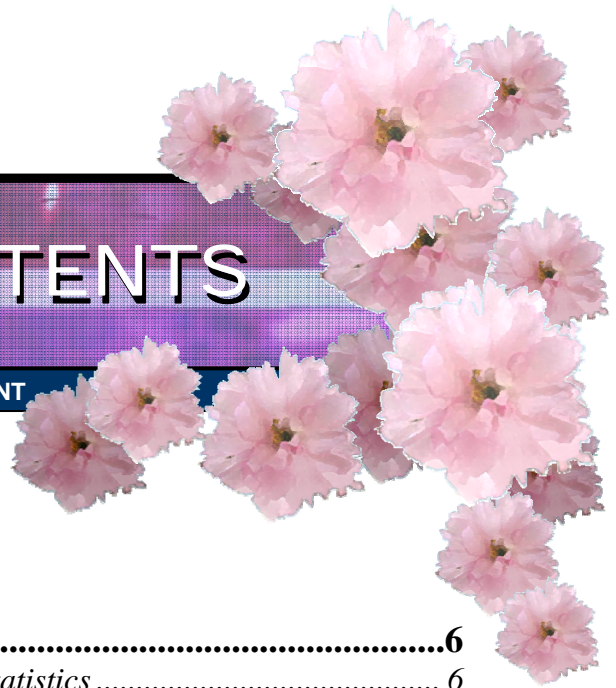Rochester Institute of Technology
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I. Introduction

The Bachelors of Science in Game Design and Development defines a program of study that allows students to explore the entertainment technology landscape as well as other related areas, while still pursuing a broad-based university education. The program focuses its technical roots in the Computing and Information Sciences disciplines. Simultaneously, the program exposes students to the breadth of development processes through involvement in topics such as game design, design process, and animation.

The program is characterized by a clear focus on development, but meets the industry need for developers that will be involved in the design process from the beginning, just as they are in the professional field. The degree is intended specifically for students that aspire to hold careers within the professional games industry or a related field such as simulation, edutainment or visualization, and focuses on producing graduates that understand the technical roots of their medium, the possibilities that creative application of software development affords, and the way in which their industry operates. This degree also provides students with a core computing education that would prepare them for graduate study in a number of computing fields, and employment in more general computing professions.

The program is a 4-year undergraduate program (5-year due to co-op experience) in which students complete a "**core**" of required coursework, and then pursue a block of coursework in "**advanced studies**" that is customizable to their individual interests and career goals. In addition, all students will complete coursework in the liberal arts, the social sciences, and the laboratory sciences in keeping with the long-standing traditions of a traditional university degree. Students can further customize their experience though both general elective coursework and free electives.

This degree represents a core partnership between the departments of Information Technology and Computer Science within the B. Thomas Golisano College of Computing and Information Sciences, and involves additional offerings and support from the College of Imaging Arts and Sciences. This proposed degree resonates with the core focus of the Rochester Institute of Technology with respect to career-oriented education, and it is well integrated and situated with other programs within the College of Computing. This degree seeks to strike the appropriate undergraduate balance between specialization and general study, offering its students a specific course of study while still providing a well-rounded technical education. It is particularly well suited to prepare students for further study in the RIT Masters of Science in Game Design and Development.

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;

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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 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 100,000 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 heads 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 each (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).

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D. Academic Significance of Game Design and Development

Games are steadily becoming the subject of academic interest. 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

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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 it 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 phenomena (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

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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 defines 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 presented the games community with quality conferences and other academically acceptable scholarly venues. The year 2004 saw the creation of the

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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.

The culmination of academic acceptance of games as a legitimate computing discipline was this year's Association for Computing Machinery's Sandbox Symposium (Sandbox Symposium, 2006), a co-located conference with SIGGRAPH 2006. The Sandbox Symposium examined the technological side of video game design and development along with the social and cultural impact of the medium as a whole. The response to Sandbox was overwhelmingly positive, with over 200 academics in attendance. Professor Jacobs, a co-author of this document, was extensively involved with this conference and plans to continue involvement for the foreseeable future.

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.

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 listed below 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	Technical Artist / Art Integration Specialist
Level Designer	Game Producer
Programmer	Game Network Engineer
Lead Programmer	System Administrator
2D/3D/Graphics Programmer	Playability Tester / Game Usability Specialist
Artificial Intelligence Programmer	Quality Assurance Technician
Audio Programmer	Game Design Document Creator/Writer

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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 1. 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

Figure 1: An extremely non-comprehensive list of overlap between Game Design & Development and existing fields of research.

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.

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
  - o Developer of Applications and Plug-ins for Image, Video, and Audio Experiences
  - o Development of Media Kiosks and Game-like Experiences for Physical Entertainment and Commercial Facilities

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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 make this program a timely addition to the RIT curriculum. Programs related to this area are already available at several universities at a graduate level, including Carnegie Mellon, Purdue, Georgia Tech, University of Southern California, and University of California, San Diego. Several institutions have also endeavored to create viable undergraduate degrees, minors, and concentrations, including Rensselaer Polytechnic Institute, Worchester Polytechnic Institute, University of Southern California, and University of Colorado.

The proposed Bachelors of Science in Game Design and Development 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 School of Film and Animation 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. The program will be physically housed within the Information Technology Department and will make use of their administrative support staff and advising offices.

The proposed degree is designed as a **four-year** undergraduate program with a required **three-quarter** cooperative education requirement. Students will be admitted to the program through the normal undergraduate admissions process. Student admittance will be based upon a combination of high school grade and rank, SAT scores, ACT scores, and letters of reference.

Students are required to complete a game design and development core, which provides breadth in the field of computing as well as an introduction to game design and development as an academic discipline. Along with the game design and development core, students are required to take a computer animation core, which exposes them to the artistic requirements that are necessary for understanding the intersection of creative and technical design. Students will also be required to specialize by selecting five courses for advanced studies. Courses related to advanced studies will be selected with the guidance of game design and development faculty and advising staff, and will allow the student to focus in such areas as game engine design, casual and serious games, web games, artificial intelligence, graphics, collaborative game experiences, as well as audio and database programming. Students will also be required to participate in a freshman seminar experience, designed to introduce them to the field they have selected as their future career.

Along with the program requirements, students must complete courses that are the cornerstone of an RIT education. Students will be required to take both core and concentration liberal arts courses, science and math courses, general education electives, free electives, as well as physical education courses.

The Game Design and Development program also requires students to participate in three quarters of cooperative education experience. Cooperative education is the hallmark of an RIT

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education and provides experiences that help a student understand the career field they have selected as well as how to hone their skills for the future. Many industry leaders in the game design and development field already come to RIT to take advantage of cooperative education students produced by the game concentration within the Information Technology department. With the arrival of this proposed program, this relationship will only strengthen.

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II. Curriculum

A. Curriculum Overview

The following section details the courses and credits that comprise the Bachelors of Science in Game Design and Development proposed program. In all, the proposed degree requires 181 credits to complete, and the course requirements can be classified into ten categories, including game design and development core, computer animation core, advanced studies, student seminars, liberal arts, science and mathematics, general education, free electives, physical education, and cooperative education. Each course area is presented in the sections below. A sample worksheet for this program is included in Figure 2.

1. Game Design and Development Core

The game design and development core consists of fifteen program courses totaling sixty credit hours. The game design and development core endeavors to provide students with appropriate background for a career in game design and development while still providing a solid computing education. Introductory courses include an introduction to multimedia, an introductory programming sequence, an introduction to multimedia programming, database modeling, and networking essentials. The core's intermediate classes provide increased specialization for computing topics, including intermediate programming for digital media, Visual C++ programming, human factors, and web design and implementation. The intermediate level also introduces students to the fundamentals of game design and development as a discipline as well as introduces them to critical data structures and algorithms often encountered in the construction of game systems. Advanced core classes continue the exploration of game design and development as well as the further study of data structures and algorithms for games.

It should be noted that the game design and development core takes advantage of introductory programming courses within the Department of Computer Science. These courses are special in that they are based upon work by Professor Jessica Bayliss in the use of game programming as a computing domain for introductory computing education. The use of these courses is documented in Appendix A and will represent collaboration between the Information Technology Department and the Department of Computer Science. In addition, the introductory programming sequence will provide students with coverage for three general elective courses. This is based upon existing practice within the Information Technology department for the introductory sequence.

2. Computer Animation Core

In order to help students understand the intersection of arts and technology as it applies to game design and development, a requirement of two fine arts courses from the School of Film and Animation from the College of Imaging Arts and Sciences has been included in the program core. The courses introduce the student to basic principles in animation and the art of 3D scene construction, using industry standard tools and processes. Even if the student does not wish to

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design art and animation as part of his/her career path, the understanding of these principles is essential to the industry. The failure of technicians and artists to understand each other's concerns and process is often cited as a critical cause of problems within the development process (Grossman, 2003).   The agreement between the Game Design and Development program, the College of Imaging Arts and Sciences, and the School of Film and Animation can be found in Appendix A.

3. Advanced Studies

Students will be required to select five program elective courses from sixteen (16) offerings to satisfy the requirements of advanced studies. Totaling twenty credit hours, the advanced studies provide specialization within the game design and development program. With the guidance of game design and development faculty, as well as the advisement teams, courses can be selected to represent the student's interest within the game design and development industry. Courses can be combined such that students can focus upon areas such as game engine design, casual and serious games, web games, artificial intelligence, graphics, collaborative game experiences, as well as audio and database programming. In addition, advanced studies can be combined with a student's free elective selection to provide a deeper focus within the technical side of the discipline.

4. Seminars

Students are required to take three seminars totaling three credit hours. All students matriculated into the program will be placed into a section of freshman seminar specifically tailored for the game design and development program.   Students will take this course in their first quarter of study. In addition, all students will be required to take two quarters of First Year Experience (FYE), as required of all students by the Institute.

5. Liberal Arts

Students in the Game Design and Development program are required to take thirty-six credit hours of liberal arts courses. Students are required to take six core courses, including a writing course, two humanities core courses, two social sciences core courses, and a course in arts of expression.   Students are also required to take a three-course liberal arts concentration. Acceptable liberal arts concentrations are documented on page 176 of the RIT 2005-2006 Undergraduate Bulletin.

6. Science and Mathematics

As part of a student's education, twenty-four credit hours of math and science courses are required. These courses include mathematics offerings in algebra and trigonometry, discrete mathematics, and analytic geometry. In addition, students are required to take two sections of physics and associated lab courses.

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7. General Education Electives

Students are required to take 18 credit hours of general education electives as part of their degree. General education electives must be selected from courses in Liberal Arts, Science, Math, or selected courses in other colleges. As part of the general education elective selection process, one course must be a communication elective. A communication elective is restricted to courses such as professional communication, technical writing, foreign language, public speaking, sign language, or another course related to interpersonal communication. Acceptable courses should always be confirmed with an academic advisor.

8. Free Electives

Students must take twelve credit hours of free electives. The student may select from available courses within the institute, with the exception of bridge or service courses from GCCIS.

9. Physical Education

All students at the bachelors level are required to take a total of three courses in physical education. A freshman student may use the first year experience courses to satisfy one of these requirements. Transfer students may choose to utilize the Wellness for Life course to satisfy the requirement. In addition, students must select two wellness activity courses to complete this experience. Details of physical education and wellness education requirements can be found on page 11 of the RIT Undergraduate Bulletin for 2005-2006.

10. Cooperative Education

All students are required to complete three-quarters of cooperative education experience as part of this degree. Details regarding cooperative education requirements can be found in section II.E of this proposal.

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GDD CORE

QH	GD&D Common Core (60 QH)	
4	4002-320 Intro to Multimedia	
4	4003-231 Computer Science I (RAPT sect.)	
4	4003-232 Computer Science II (RAPT sect.)	
4	4003-233 Computer Science III (RAPT sect.)	
4	4002-330 Interactive Digital Media	
4	4050-210 SOHO Networking Essentials	
4	4002-360 Intro to Database & Data Modeling	
4	4002-425 HCI1: Human Factors	
4	4002-417 Visual C++ for Programmers	
4	4002-380 Fundamentals of Game Design and Development I	
4	4002-381 Fundamentals of Game Design and Development II	
4	4002-434 Programming for Digital Media	
4	4002-409 Website Design & Implementation	
4	4002-387 DS/Algos for Game Programmers I	
4	4002-487 DS/Algos for Game Programmers II	

COMPUTER ANIMATION CORE

	GD&D Computer Animation Core (8 QH)	
4	2065-331 Introduction to Animation	
4	2065-361 Intro to 3D Computer Animation	

ADVANCED STUDIES

	GD&D Advanced Studies (20 QH) **Student Chooses 5 of the following 16** Pre-requisites apply amongst these courses (will replace pre-req to AI1/CG1 with core)	
4	4002-501 Foundations of 2D Graphics Progr.	
4	4002-502 Foundations of 3D Graphics Progr.	
4	4003-570 Computer Graphics 1	
4	4003-571 Computer Graphics 2	
4	4003-590 Procedural Shading	
4	4003-450 Programming Language Concepts	
4	4003-455 Artificial Intelligence	
4	4002-538 Multi-User Media Spaces	
4	4002-541 Data-Driven Time-Based Media Prg	
4	4003-572 Comp. Animation: Algos/Techniques	
4	4002-529 Introduction to VRML	
4	4003-552 AI for Interactive Environments	
4	4002-527 Digital Audio and Computer Music	
4	4002-528 Writing for Interactive Media	
4	4002-539 Programming for the WWW	
4	4002-484 Database Programming	

STUDENT SEMINARS

	Seminars (3 QH)	
1	4002-201 Freshman Seminar (GD&D sect.)	
1	1105-051 FYE 1	
1	1105-052 FYE 2	

KEY	
New Course	
New Course Shared with Other Initiative	
Existing Course	

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Total Credits: 181	
Years to Completion: 4 + 3 qtr. Co-op	
Co-Operative Ed: 3 quarters	

LIBERAL ARTS

	Liberal Arts (36 QH)	
4	0502-227 Writing	
4	0504/09/07/08/09 (Humanities)	
4	0504/09/07/08/09 (Humanities)	
4	0510/11/13/14/15 (Social Sciences)	
4	0510/11/13/14/15 (Social Sciences)	
4	05xx-3xx Arts of Expression	
4	Lib Arts Concentration	
4	Lib Arts Concentration	
4	Lib Arts Concentration	

SCIENCE & MATHEMATICS

	Math & Science (24 QH)	
4	1016-204 Algebra and Trigonometry	
4	1016-205 Discrete Math for Tech I	
4	1016-206 Discrete Math for Tech II	
4	1016-228 Analytic Geometry	
4	1017-211 College Physics 1 – L271	
4	1017-212 College Physics 2 – L272	

GENERAL EDUCATION

	General Education Electives (18 QH)	
	Communications Elective	

FREE ELECTIVES

	Free Electives (12 QH)	

PHYSICAL EDUCATION

	Physical Education Experiences	
0	Wellness (1105) or FYE	
0	Wellness Activity	
0	Wellness Activity	

COOPERATIVE EDUCATION

	Cooperative Education (3 quarters)	
0	Cooperative Education Quarter	
0	Cooperative Education Quarter	
0	Cooperative Education Quarter	

Figure 2: Bachelors of Science in Game Design and Development Program Worksheet

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B. Required Courses

The following table lists all required courses in the program. The list is divided into two tables, courses required to satisfy institute requirements and courses required for the program. Courses noted with an asterisk (*) are courses from colleges other than Liberal Arts, which are used to satisfy liberal arts requirements. Courses noted with a plus symbol (+) are courses that require students to be registered into a specific section.

COURSES REQUIRED FOR INSTITUTE CORE

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
1105-051 First Year Experience 1	1	N	N
1105-052 First Year Experience 2	1	N	N
1016-204 Algebra and Trigonometry *	4	N	N
1016-205 Discrete Math for Information Technology I *	4	N	N
1016-206 Discrete Math for Information Technology II *	4	N	N
1016-228 Analytic Geometry	4	N	N
1017-211 College Physics I (Includes 1017-271 Lab) *	4	N	N
1017-212 College Physics II (Includes 1017-272 Lab) *	4	N	N
0502-227 Writing (Part of Liberal Arts Core)	4	N	N
0504/095/07/08/09 Liberal Arts Humanities (Part of Liberal Arts Core)	8	N	N
0510/11/13/14/15 Liberal Arts Social Sciences (Part of Liberal Arts Core)	8	N	N
05XX-3XX Arts of Expression (Part of Liberal Arts Core)	4	N	N
Liberal Arts Concentration (400-500 Level Courses)	4	N	N
Wellness Education / Physical Education Courses	0	N	N

Table 1: Institute core courses required of all students.

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REQUIRED PROGRAM COURSES

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
4002-320 Introduction to Multimedia	4	N	N
4003-231 Computer Science I (RAPT) * +	4	N	N
4003-232 Computer Science II (RAPT) * +	4	N	N
4003-233 Computer Science III (RAPT) * +	4	N	N
4002-330 Interactive Digital Media	4	N	N
4050-210 Small and Home Office Networking Essentials	4	N	N
4002-360 Introduction to Database and Data Modeling	4	N	N
4002-425 Human Computer Interaction I : Human Factors	4	N	N
4002-417 Visual C++ for Programmers	4	Y	N
4002-380 Fundamentals of Game Design and Development I	4	Y	N
4002-381 Fundamentals of Game Design and Development II	4	Y	N
4002-434 Programming for Digital Media	4	N	N
4002-409 Website Design and Implementation	4	N	N
4002-387 Data Structures and Algorithms for Game Programmers I	4	Y	N
4002-487 Data Structures and Algorithms for Game Programmers II	4	Y	N
2065-331 Introduction to Animation	4	N	N
2065-361 Introduction to 3D Computer Animation	4	N	N
4002-201 Freshman Seminar (GD&D) +	1	N	N

Table 2: Program courses for the Bachelors of Science in Game Design and Development.

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C. Program Electives

Students must select five courses for program electives. These electives comprise courses selectable for advance studies. Selection of courses is made with consultation with faculty and general advisement personnel.

PROGRAM ELECTIVES (SELECT 5)

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
4002-501 Foundations of 2D Graphics Programming	4	N	N
4002-502 Foundations of 3D Graphics Programming	4	N	N
4003-570 Computer Graphics I	4	N	N
4003-572 Computer Graphics II	4	N	N
4003-590 Procedural Shading	4	N	N
4003-450 Programming Language Concepts	4	N	N
4003-455 Artificial Intelligence	4	N	N
4002-538 Multi-User Media Spaces	4	N	N
4002-541 Data-Driven Time-Based Multimedia Programming	4	Y	N
4003-572 Computer Animation: Algorithms and Techniques	4	N	N
4002-529 Introduction to VRML	4	N	N
4003-552 Artificial Intelligence for Interactive Environments	4	N	N
4002-527 Digital Audio and Computer Music	4	N	N
4002-528 Writing for Interactive Media	4	N	N
4002-484 Fundamentals of Database Client/Server Connectivity	4	N	N
4002-539 Programming for the WWW	4	N	N

Table 3: Program Electives for the Bachelors of Science in Game Design and Development. Students must select five courses with approval of faculty and general program advisement.

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D. Free Electives

Students must select an appropriate number of courses from both general electives and free electives. The number of credits for each category is described below. Representative courses depicting the types of choices students may make are listed below. See the RIT undergraduate course description website and RIT Undergraduate Bulletin 2005-2006 for further details.

ELECTIVE CATEGORIES

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
General Education Electives *	18	N	N
Free Electives	12	N	N

Table 4: General and Free Elective categories.

SAMPLE GENERAL EDUCATION ELECTIVES

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
0692-231 Contemporary Science: Biology *	4	N	N
0692-234 Oceanus *	4	N	N
1017-230 Stellar Astronomy *	4	N	N
0692-331 Sports Physiology / Fitness *	4	N	N
1031-201 Introduction to Environmental Science I *	4	N	N
1051-215 Imaging Science Fundamentals *	4	N	N
0535-200 Foundations of Communications *	4	N	N
0535-315 Quantitative Research Methods *	4	N	N
0501-201 Seminar in Criminal Justice*	4	N	N
0511-211 Principles of Microeconomics	4	N	N

Table 5: Sample Selection of General Education Electives.

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SAMPLE FREE ELECTIVES

Course Number and Course Title	No. of Credits	Is this a new course?	Is this a revised course?
0502-452 Creative Writing – Prose Fiction	4	N	N
0502-453 Advanced Creative Writing	4	N	N
0535-452 Uses and Effects of Mass Media	4	N	N
4050-341 Foundations of Data Communications	4	N	N
4002-426 Human Computer Interaction II: Interaction Design	4	N	N
4002-535 Network-Based Multimedia	4	N	N
4002-536 Web Client Side Programming	4	N	N
4002-485 Fundamentals of DBMS Architecture and Implementation	4	N	N
4050-402 OS Scripting	4	N	N
4002-415 Ethics in Information Technology	4	N	N

Table 6: Sample selection of free electives (can also include entries from Table 5).

E. 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.

Students are required to participate in three quarters of cooperative educational experience. Students will be encouraged to select employers that reflect their particular interests within the game design and development field or related field. As with all cooperative educational experiences at RIT, selection of a cooperative education employer must be deemed appropriate by both the cooperative education office as well as program's home department.

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F. Course Outlines

Included below are the RIT catalog descriptions for each of the courses that comprise the Bachelors of Science in Game Design and Development core as well as the advanced studies selections. In all cases, the minimum pre-requisite for enrollment is matriculation in the Bachelors of Science in Game Design and Development. Full course proposals for new and revised courses are included in Appendix E.

1. Game Design and Development Core

4002-320 Introduction to Multimedia: The Internet and the Web

This class provides an introduction to key Internet, web, and multimedia technologies, as well as familiarity with the Macintosh computer platform. Topics covered include computer-mediated communication, basic Internet applications such as Telnet, FTP, and the WWW, basic digital image, audio, and video techniques, and web page development and publishing. **Prerequisites:** 4002-206 or computer literacy. **Credits:** 4.

4003-231 Computer Science I (RAPT section)

The goal of this course is to introduce the student to the science of computing. The student will learn about the basic elements of computing, including problem decomposition, design and implementation of solutions, testing those solutions and integrating pieces of solutions together. Object-oriented technology is used as a means to an end to design solutions and actually implement them in software. Java is the language used; it is an object-oriented programming language that was designed for developing large systems from reusable components. Programming assignments—labs and post-labs are an integral part of the course. **Credits:** 4. **NOTE:** A special section of this course will be offered for Game Design and Development students.

4003-232 Computer Science II (RAPT section)

This course continues the Java-based introduction to basic computer science concepts begun in Computer Science 1. Essentially, this course covers the use of object-oriented programming to design and implement software solutions. Students will learn how to implement a solution to a problem by reusing existing components and creating new components using inheritance. Other topics include; exception handling, files/streams, collections, threads and thread synchronization, graphical user interfaces (GUI's), networking, and event-driven programming. Programming projects—labs and projects are an integral part of the course. **Prerequisite:** 4003-231. **Credits:** 4. **NOTE:** A special section of this course will be offered for Game Design and Development students.

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4003-233 Computer Science III (RAPT section)

This course is the third course in the computer science introductory sequence and builds upon the computer science foundations and design principles presented in Computer Science 1 and Computer Science 2. Students will learn how to use linear data structures, such as stacks, queues, and lists and non-linear data structures, such as trees and graphs, and will also be introduced to the design and analysis of algorithms. Students will learn how to analyze the efficiency of basic sorting, searching, and hashing algorithms, and acquire an understanding of how recursion works. Object-oriented programming will be used to design solutions and implement them as Java programs. Programming assignments–labs and projects are an integral part of the course. **Prerequisite:** 4003-232. **Credits:** 4. **NOTE:** A special section of this course will be offered for Game Design and Development students.

4002-330 Interactive Digital Media

This course introduces an event-driven scripting environment to enable the development of highly interactive user experiences. Students will learn to manage and edit a wide variety of digital media types—still and motion graphics, 3D, text, audio, and video, for example—and write code to allow users to access, control, and manipulate each of these media types. Students will gain foundation skills in media asset creation and in prototyping for applications and interface development. Programming will be required. **Prerequisites:** 4002-320 and either 4002-218, 4003-232, or equivalent introductory programming experience. **Credits:** 4.

4050-210 Small and Home Office Networking Essentials

This course will teach students how to determine what computer and network equipment is appropriate for use in a home or small office network. Students will learn the basic configurations for a home/small office network and explore in a lab environment the different hardware and software tools and configurations required to establish a personal local area network. **Co-requisites:** 4050-210 Lab Section. **Credits:** 4.

4002-360 Introduction to Database and Data Modeling

A presentation of the data modeling process and database implementation fundamentals. Data modeling, fundamental relational concepts, the process of normalization, relational algebra, SQL, and guidelines for mapping a data model into a relational database will be covered. Students will model a multimedia or text-only information problem and implement it with a commercially available database package. **Prerequisites:** 4002-218 or equivalent as well as 1016-206. **Credits:** 4.

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4002-425 Human Computer Interaction I : Human Factors

Human Computer Interaction (HCI) is a multidisciplinary field of study concerned with how humans interact with software and hardware interfaces. This course will focus on theories of human information processing, human behavior and their implications for user-centered design of interfaces. Topics include: HCI history, cognitive psychology, user analysis, task analysis, and requirements analysis in the usability engineering process. **Prerequisites:** Second-year standing. **Credits:** 4.

4002-417 Visual C++ for Programmers

This course covers the basics of C++ development in the Windows environment. Topics covered include the use of an integrated development environment, basic C++ syntax, pointers, and Windows specific programming techniques. Emphasis is placed on the development of problem-solving skills. Large programming assignments are required. Prior programming experience is required. **Prerequisites:** 4002-219 or 4002-414 or 4003-233 or equivalent programming experience. **Credits:** 4.

4002-380 Fundamentals of Game Design and Development I

Students will learn about the history of video games as well as the analysis of games as a medium. In addition, students will learn how to identify and assess the different types and genres of video games as well as how content shapes and is shaped by play in an interactive medium. Students will acquire the skills to create design documents and build playable prototypes. Some projects may require working in groups. **Prerequisites:** 4002-330 or 4002-231. **Credits:** 4.

4002-381 Fundamentals of Game Design and Development II

Students build upon design documents and game assets created in the prerequisite course to create a complete design document and playable levels in a game prototype. Students will focus upon key concepts in game design and development such as game world design, level design, level balancing, and game character development. Students will also explore issues involving the development of online game community. Some projects may require working in groups. **Prerequisites:** 4002-380. **Credits:** 4.

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4002-434 Programming for Digital Media

Scripting is a major tool for digital media development. In this course, students will write programs starting from simple navigational scripts and evolving toward interactive object-oriented solutions to problems from domains such as simulation, gaming, instruction and artificial life. Students will build data structures, lists and implement classes to navigate through screens, implement interfaces and control media. Some projects may require working in groups. The class or instructor may create low-level routines and classes which will be used by students to complete programs of their own design. **Prerequisites:** 4002-330 or 4002-231. **Credits:** 4.

4002-409 Web Site Design and Implementation

This course builds on the basic aspects of HTML and multimedia programming that are presented in 4002-320 and 4002-330. An overview of web design concepts, including usability, accessibility, information design, and graphic design in the context of the web will be covered. Introduction to web site technologies, including cascading Style sheets and DHTML will also be explored. **Prerequisites:** 4002-320, 4002-330 and two-course programming sequence. **Credits:** 4.

4002-387 Data Structures and Algorithms for Game Programmers I

This course focuses upon the application of data structures, algorithms, and fundamental Newtonian physics to the development of video game applications and entertainment software titles. Topics covered include trigonometric functions in game systems, 2D coordinate systems, 3D coordinate systems, geometric primitives, geometric tests, vectors, matrices, principles of transformation, and inclusion tests. In addition, traditional data structures and manipulation techniques will be applied to the context of game and entertainment software. Furthermore, Newtonian principles such as speed, acceleration, force, work, momentum, and motion will be examined in the context of developing game and entertainment software. Programming assignments are a required part of this course. **Prerequisites:** 4002-330, 1016-206, and 1017-211. Students will also be required to have 4003-233, 4002-219, or previous programming experience. **Credits:** 4.

4002-487 Data Structures and Algorithms for Game Programmers II

This course continues the investigation into the application of data structures, algorithms, and fundamental Newtonian physics required for the development of video game applications and entertainment software titles. Topics covered include techniques for 3D orientation, angular displacement, Euler angles, quaternion representations and operations, barycentric coordinates, classifiers, recursion, clipping, culling, and advanced partitioning techniques. In addition, advanced data structures such as trees and graphs will be investigated from the context of game application and entertainment software development. Furthermore, the course will examine advanced Newtonian principles used in games and simulations. Programming assignments are a requirement for this course. **Prerequisites:** 4002-387 and 4002-417. **Credits:** 4.

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2065-331 Introduction to Animation I

This class is a survey of basic techniques and aesthetics of animation. Provides training and practical experience in a wide variety of approaches to single-frame motion picture production. Students produce a number of short film exercises utilizing cut out, paint and draw, animation as well as kinestasis. Extensive film screenings illustrate each technique and related aesthetics. **Prerequisites:** 2065-263; JPHQ major or consent of instructor. **Credits:** 4.

2065-361 Introduction to 3D Computer Animation

An introduction to three-dimensional computer animation. The basic principles of animation will be addressed within the context of producing three-dimensional computer animation. Students will produce a series of short 3D computer animations as part of the learning process and then a final short 3D computer animation of their own design. Students will become familiar with a variety of three- dimensional computer animation techniques and applications. **Prerequisites:** 2065-457. **Credits:** 4.

4002-201 Freshman Seminar

An orientation seminar taken by first-year students in information technology. Topics covered include a curriculum overview, co-op and career alternatives in information technology, and orientation to RIT and college life. **Credits:** 4. **NOTE:** A special section of this course will be offered for Game Design and Development students.

2. Game Design and Development Advanced Studies

4002-501 Foundations of 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. **Prerequisites:** 4002-434 or 4003-570. **Credits:** 4.

4002-502 Foundations of 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. **Prerequisites:** 4002-501. **Credits:** 4.

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4003-570 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 noninteractive techniques, raster graphics fundamentals, 3-D fundamentals, graphics packages and graphics systems. Students will use and develop a graphics software system based on an accepted graphics standard. Programming projects are required. **Prerequisites:** Third-year standing in computer science. **Credits:** 4.

4003-571 Computer Graphics II

This course will investigate the theory of computer 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 various rendering tools and libraries available for image synthesis. The student will put theory into practice via a 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. **Prerequisites:** 4003-570 or 4002-502. **Credits:** 4.

4003-590 Procedural Shading

A recent trend in Computer Graphics is the use of specialized procedural programming languages to define the textures and material properties of objects in a virtual scene. Programs written in these languages, called "shaders", greatly enhance the flexibility of rendering systems that previously relied on static, predefined lighting and shading models. Animated films, such as those created by Pixar, use shaders to give the film their characteristic look and their visual beauty. Shader support is now starting to become common on commodity graphics hardware, thus making these stunning effects possible in real time applications.

The goal of this course is to introduce students to the architectures and mechanisms of procedural shading and to teach them how to use shaders effectively in creating stunning visual effects. The course will compare and contrast real time vs. non-real time shader architectures and students will gain expertise in both environments. The format of the course delivery will be part lecture, part studio style with weekly programming assignments based upon the techniques presented in class. Cg will be used for real-time shader programming and RenderMan will be used for non-real time shader development. **Prerequisites:** 4003-571 or 4002-502**. Credits:** 4.

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4003-450 Programming Language Concepts

A study of the syntax and semantics of a diverse set of high-level programming languages. The languages chosen are compared and contrasted in order to demonstrate general principles of programming language design. This course emphasizes the concepts underpinning modern languages rather than the mastery of particular language details. Programming projects will be required. **Prerequisites:** 4003-334, 1016-265. **Credits:** 4.

4003-455 Artificial Intelligence

An introduction to the field of artificial intelligence, including both theory and applications. A programming language that allows effective symbolic manipulation 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. **Prerequisites:** 4003-450. **Credits:** 4.

4002-538 Multi User Media Spaces

The course will focus on the development of interactive applications that use network connectivity to allow multiple users to interact with each other in real time and in a persistent virtual community. The course will integrate multiple technologies dealing with connectivity, database access, server-side logic and object-oriented programming environments. Important Human Computer Interaction (HCI) issues will be raised around design and processing of messages and the traffic patterns generated by multi-user messaging. **Prerequisites:** 4002-434 and third year standing. **Credits:** 4.

4002-541 Data-Driven Time-Based Multimedia Programming

This course focuses upon the construction of time-based multimedia software that is data driven. Students will learn how to store and retrieve multimedia content such as text, image, audio, and video. In addition, students will learn how media content can be managed both locally and remotely through flat files and database systems. Students will also learn how to utilize various server technologies and communication protocols that are appropriate to the delivery of data to multimedia applications. Furthermore, students will also learn how to transform media types at various points along a data pathway in a variety of forms. Large-scale programming projects are required for this course. **Prerequisites:** 4002-330, 4002-360, and 4002-539. **Credits:** 4.

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4003-572 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, procedural and behavioral systems, and the use of motion capture data. 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 enrolling in this course are expected to have proficiency in the use of at least one 3D API (e.g. OpenGL, DirectX, Java3D). **Prerequisites:** 4003-570 or 4002-501 or permission of instructor. **Credits:** 4.

4002-529 Introduction to VRML

This course will focus on basic and advanced concepts of 3D environment creation and implementation within the Virtual Reality Markup Language (VRML) implemented on the World Wide Web. Students will work individually and in groups to create VRML environments on their own home pages and in a larger scale group environment. **Prerequisites:** 4002-409 and 4002-434. **Credits:** 4.

4002-552 Artificial Intelligence for Interactive Environments

This course delves into the use of artificial intelligence in interactive environments. These environments range from the entertaining nature of role-playing games to more serious military simulations. In all these environments, agents and groups of agents must interact in an intelligent manner. Topics will include advanced pathfinding algorithms, sensory systems, group tactical strategies, and learning algorithms. Projects are an inherent part of the course. **Prerequisites:** 4003-455 or permission of the instructor. **Credits:** 4.

4002-527 Digital Audio and Computer Music

Technologies and techniques for producing and manipulating digital audio and computer music are explored. Topics include digital representation of sound, synthesis techniques, digital audio recording and processing, MIDI and real-time performance issues, algorithmic composition, and application of digital audio to multimedia and Web production. **Prerequisites:** 4002-330 and 3rd year standing. **Credits:** 4.

4002-528 Writing for Interactive Media

As more of our communications are delivered on interactive, non-linear platforms, the information should be developed in ways that take advantage of these technologies. This course will focus on the creation of a variety of different hypermedia/multimedia documents designed, drafted and delivered in hard copy and/or digital form. **Prerequisites:** 4002-409. **Credits:** 4.

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4002-484 Fundamentals of Database Client/Server Connectivity

Students will configure, test, and establish client-server communication and server-server communication with single or multiple database servers. Students will configure and demonstrate successful communication between a database file server and multiple external clients. Similarities and differences among commercially available connectivity packages will be explored. Low-level data and file structures used in the implementation of databases and database indexing will be explored. Programming exercises are required. **Prerequisites:** 4002-360 and 4002-219 or 4002-318. **Credits:** 4.

4002-539 Programming for the WWW

The World Wide Web is no longer just linked, static HTML documents. Web pages can be generated dynamically and can interact with a user to modify pages on-the-fly, validate user inputs and entertain. This course is an overview of several forms of programming that are used in the creation of interactive and dynamic web content. This course provides a practical overview of programming in the context of the World Wide Web. It enables students to develop web pages and web sites that incorporate both client-side and server-side programming by installing and modifying existing scripts as well as writing new scripts. **Prerequisites:** 4002-409. **Credits:** 4.

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G. Program Scheduling

Tables 7-10 depict the sequencing and scheduling of courses and credits in the program, by quarter, for the first full cycle of the program. Cooperative education block placement represents one possible alignment for the mandatory three quarters. It is the responsibility of the student to meet with an advisor to ensure that cooperative education block choices and course requirements can coexist within an appropriate schedule of completion.

YEAR 1

FALL		WINTER		SPRING		SUMMER	
COURSE TITLE	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**
4003-231 Computer Science I	4.0	4003-232 Computer Science II	4.0	4003-233 Computer Science III	4.0		
4002-320 Intro to Multimedia	4.0	1016-205 Discrete Math for IT I	4.0	1016-206 Discrete Math fot IT II	4.0		
1016-204 Algebra and Trigonometry	4.0	1017-211 College Physics I (w/1017-271)	4.0	1017-212 College Physics II (w/1017-272)	4.0		
Liberal Arts Core	4.0	0502-227 Writing	4.0	Liberal Arts Core	4.0		
1105-051 First Year Experience 1	1.0	1105-052 First Year Experience 2	1.0	Wellness Activity	0.0		
4002-201 Freshman Seminar	1.0						
Total Credits	18.0	**Total Credits**	17.0	**Total Credits**	16.0	**Total Credits**	0.0

Table 7: Example course sequencing for the first year of the program.

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YEAR 2

FALL		WINTER		SPRING		SUMMER	
COURSE TITLE	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**
4002-330 Interactive Digital Media	4.0	4002-380 Fundamentals of Game Design and Development I	4.0	4002-381 Fundamentals of Game Design and Development II	4.0	Co-op	0.0
4002-360 Intro to Database and Data Modeling	4.0	4002-409 Web Site Design and Implementation	4.0	4002-387 Data Struct. and Algos. for Game Design and Development I	4.0		
2065-331 Intro to Animation I	4.0	2065-361 Intro to 3D Computer Animation	4.0	Liberal Arts Core	4.0		
Liberal Arts Core	4.0	1016-228 Analytic Geometry	4.0	4050-220 Small and Home Office Networking Essentials	4.0		
Wellness Activity	0.0				4.0		
Total Credits	16.0	**Total Credits**	16.0	**Total Credits**	16.0	**Total Credits**	0.0

Table 8: Example course sequencing for the second year of the program.

YEAR 3

FALL		WINTER		SPRING		SUMMER	
COURSE TITLE	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**
4002-417 Visual C++ for Programmers	4.0	Advanced Studies	4.0	Co-op	0.0	Co-op	0.0
4002-434 Programming for Digital Media	4.0	4002-487 Data Struct. and Algos. for Game Design and Development II	4.0				
4002-425 HCI1: Human Factors	4.0	Liberal Arts Concentration	4.0				
Arts of Expression Liberal Arts Core	4.0	General Education Elective	4.0				
Total Credits	16.0	**Total Credits**	16.0	**Total Credits**	0.0	**Total Credits**	0.0

Table 9: Example course sequencing for the third year of the program.

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YEAR 4

FALL		WINTER		SPRING		SUMMER	
COURSE TITLE	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**	**COURSE TITLE**	**CR.**
Advanced Studies	4.0	Advanced Studies	8.0	Advanced Studies	4.0		
Liberal Arts Concentration	4.0	General Education Elective	4.0	General Education Elective	4.0		
General Education Electives	6.0	Liberal Arts Concentration	4.0	Free Elective	8.0		
Free Elective	4.0						
Total Credits	18.0	**Total Credits**	16.0	**Total Credits**	16.0	**Total Credits**	0.0

Table 10: Example course sequencing for the fourth year of the program.

H. Off-campus Courses

Besides cooperative education activities, none of the courses scheduled in this program meet at off-campus locations.

I. 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 degree program 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.

Of the courses listed in the program core and advanced studies, only two courses are specific to students enrolled in the Bachelors of Science in Game Design and Development. The two courses exclusive to this program are Fundamentals of Game Design and Development I and Fundamentals of Game Design and Development II. The remaining courses are of interest and use to their host departments. In many cases, program core and advanced core courses are shared over a multitude of degree and programs. The cooperative nature of this arrangement is indicative of shared curriculum supported by numerous departments and programs throughout GCCIS.

Initially, this program will share space with the Information Technology Department. Courses hosted by other departments and colleges will provide adequate space and resources as necessary. Documentation and details of such arrangements are outlined in Appendix A.

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J. Distance Learning

This program will not be offered in a distance-learning format. However, the Institute does allow departments to offer distance-learning courses. In such cases, the Institute does provide students with traditional and distance choices such that degree requirements can be met. Thus, degree completion is not reliant upon any distance components.

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III. Assessment

A. Assessment Plan

1. Program Goals and Educational Outcomes

The primary program goal of the Bachelors 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. The secondary program goal of this program is to produce professionals who understand the multidisciplinary nature of the gaming field. Both of these goals are equally important, as the first speaks to the technology-based educational goals of the Institute, and the second speaks to the social and communication skills needed to understand the games and entertainment technology industry.

The general goals of the program are implemented through a number of program objectives. The program objectives provide insight into what a student should be able to accomplish a few years after graduation when they are established in their career path. The program objectives for the Bachelors of Science in Game Design and Development are enumerated below. Upon completion of the program, students will be able to:

A) Make effective oral presentations.
B) Communicate effectively in written form.
C) Identify needs, analyze tasks, and develop profiles relevant to users and stakeholders.
D) Program effectively within the student's game design and development specialty area.
E) Implement and query a relational database.
F) Develop and evaluate effective user interaction designs for game and entertainment domains.
G) Design and implement a website using appropriate media to meet the needs of the user.
H) Design and develop a software prototype.
I) Adhere to ethical standards related to the game design and development field.
J) Develop specialized game design and development skills in a self-selected advanced study area.
K) Participate effectively as a team member.
L) Practice user-centered design, development, and deployment.
M) Apply game-related algorithms and data structures towards the construction of entertainment and/or simulation software applications.
N) Identify historical patterns in the game design and development field.
O) Analyze methods of construction and use for game design patterns and components.
P) Find gainful employment within the game design and development or related career field.

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The program goals and program objectives will be addressed through a number of anticipated program outcomes. The program outcomes represent requirements for graduating students and are measurable as part of the assessment process. For each program outcome, several program objectives are listed.

- Use and apply current technical concepts and practices within the computing disciplines towards the field of game design and development. Maps to program objectives D, H, K, M, and O.

- Design effective and usable entertainment technologies and integrate them into appropriate software solutions. Maps to program objectives C, D, F, H, K, M, and O.

- Participate in the creation of an effective game design document that leads to the development of an entertainment software application or prototype. Maps to program objectives A, B, and H.

- Analyze, identify, and define the requirements that must be satisfied to address problems or opportunities encountered within the field of modern game design and development. Maps to program objective C, K, and L.

- Identify and evaluate current and emerging technologies that impact the field of game design and development. Maps to program objectives C, D, and N.

- Demonstrate best practices and development standards with respect to their application to game design and development solutions. Maps to program objectives D, I, N, and O.

- Demonstrate independent critical thinking and problem solving skills. Maps to program objectives E, D, G, H, J, M, N, and O.

- Incorporate currently accepted game industry processes towards the construction of a game design and development software application or prototype. Maps to program objectives C, D, H, J, M, and O.

- Participate effectively in multidisciplinary teams to create game and entertainment technology software solutions with respect to authoring, development, and maintenance roles reflected in the game design and development industry. Maps to program objectives A, B,C, D, F, I, J, K, M, and O.

- Participate effectively in multidisciplinary teams to create game and entertainment technology software solutions in which team achievement is a combination of personal achievement and group cooperation. Maps to program objectives B, I, and K.

- Participate in the construction of a large-scale game or entertainment technology application. Maps to program objectives C, D, H, J, and H.

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- Communicate effectively with any number of game design and development stakeholders, including developers and end users. Maps to program objectives A, B, C, K, and P.

- Effectively promote ideas and communicate effectively using online media. Maps to program objectives C and G.

- Recognize the need for continued learning throughout their career. No program objectives directly relate to this outcome, however practices to demonstrate to students the methodology and practice of currency and adaptability are woven into many course offerings.

The program objectives and program outcomes effectively map onto RIT's Educational and Access goals. RIT's Educational and Access goals are divided into five categories: career education, liberal learning, excellence, community and personal growth, as well as access.

The goal of career education stipulated that students receive education that reflects emerging technologies and the global state of industry. Career education balances experiential and academic learning in an effective manner. The goal of career education is reflected through program objectives D, E, H, J, M, and O.

The goal of liberal learning ensures that students will acquire foundation skills required within the professional field. Liberal learning ensures students will have the proper communication, critical thinking, and quantitative reasoning skills to survive in the competitive market. Liberal learning also requires students to employ technology-based design and information discovery, processing, distribution, and presentation skills. The liberal learning foundation spans laboratory sciences, social sciences, fine arts, literature, philosophy, economics, and cultural studies. The goal of liberal learning is reflected in program objectives A, B, C, F, J, K, N, and O.

The goal of excellence requires students to pursue their studies within a framework of personal and professional excellence along with integrity and ethical standards. The goal of excellence is reflected in program objectives I and J.

The goal of community and personal growth requires students to develop a sense of global community and awareness of others, as well as an understanding of human diversity. In addition, the goal also encourages the discovery of personal strength and ability as well as the ability for increased interpersonal skills. This goal promotes a sense of career awareness as well as the desire to increase intellectual, social, and cultural experiences and interactions. The goal of community and personal growth is reflected through learning objectives C, F, K, N, O, P, and Q.

The goal of access ensures that students will be provided meaningful opportunities for learning and living by being afforded appropriate accommodations for their learning and living needs. Along with providing access, the goal also encourages students to recognize access potentials in their everyday interactions with their surroundings. The goal of access is supported through program objectives C, G, L, and O.

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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.
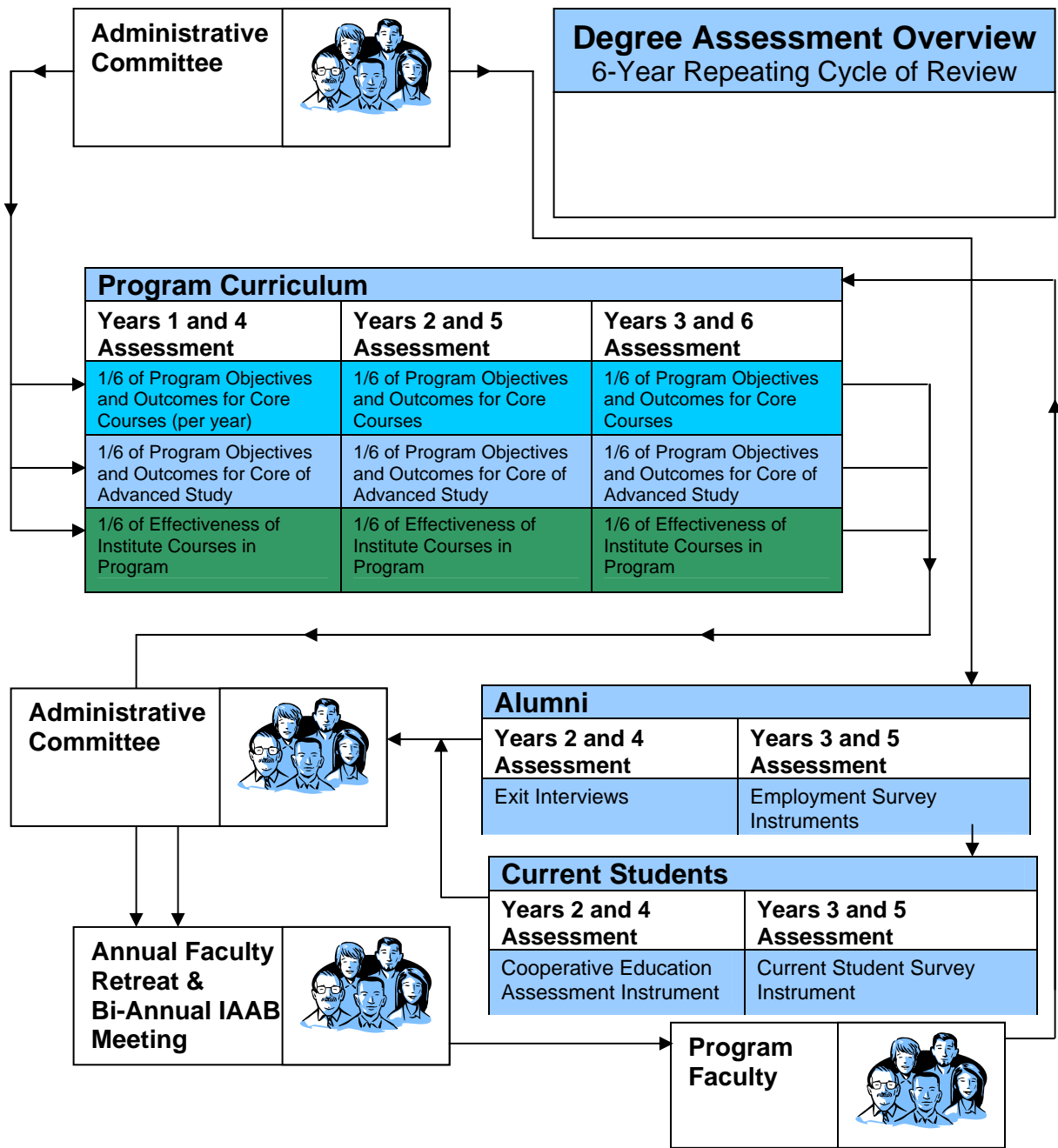
Figure 3: Assessment Cycle for the Game Design and Development Degree Program

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The assessment process is initiated by the program's Administrative Committee. The Administrative Committee is charged with the direct oversight of Game Design and Development programs at RIT. Currently, the administrative committee consists of the authors of this document, including Director of Game Design and Development Andrew Phelps, M.S., Christopher Egert, Ph.D., Stephen Jacobs, M.A., Joseph Geigel, D.Sc., Jessica Bayliss, Ph.D., Nancy Doubleday, M.S., and Steven Kurtz, M.F.A. The Administrative Committee, or an officially appointed assessment subcommittee, will be charged with the selection of assessment targets for program evaluation each year. As the program will be housed within the Information Technology Department, the assessment process will utilize the existing departmental committee, including its practices. A member of the Administrative Committee will be appointed to act as liaison to the department's assessment committee. The Administrative Committee will be required to implement the departmental assessment committee's mandates and will be charged with the application and interpretation of the department's committee findings.

Program evaluation will occur over a six-year cycle, as depicted in Figure 3. 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 core courses, advanced studies, and general requirements.

From the selected courses, faculty will ascertain as to whether the course meets intended educational objectives and outcomes. A wide range of instruments will be used to measure the success of a course, and will include in-class, downstream, alumni, and industry inputs. All instruments will be designed twofold: the program's assessment committee will provide assessment requirements to the departmental assessment committee, which will incorporate those needs into the appropriate assessment instruments. By using this approach, it can be assured that assessment will incorporate the needs of the program while still maintaining consistency at the departmental level.

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. For course-level changes, curricular adjustment will follow the established process within the course's host department. Currently, this entails the Information Technology Undergraduate Curriculum committee and its counterparts within Computer Science and the College of Imaging Arts and Sciences. Program curricular changes will be considered by the program's Administrative Committee and will be ratified through the host department's appropriate curriculum committee, currently the Information Technology Department's Undergraduate Curriculum Committee.

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

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educational expectations. In addition, evaluation of cooperative education experiences will help to ensure student preparedness as well as the quality of curricular materials. After graduation, alumni will be surveyed to determine if the program has successfully prepared them for their intended career path.

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

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members of the Game Design and Development program will endeavor to be associated with the creation, implementation, and deployment of accreditation standards.

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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 as various departments within the College of Imaging Arts and Sciences.

A. Faculty Names and Qualifications

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 and 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, and (D) to denote the program director as per the NYS form.

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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)**
4002-320 Introduction to Multimedia	4	Elizabeth Lawley	Ph.D. in Information Studies, University of Alabama, 1999.
		Ronald Vullo	Ph.D. in Science Education / Instructional Software Design, State University of New York at Buffalo (SUNY), 1991.

Dr. Lawley

Visiting Research at Microsoft Research, 2005-2006.

Owner of Internet Training and Consulting Services, 1992-present.

Support Supervisor and Office Automation Coordinator at the Congressional Information Service, 1989-1992.

Biographer in Government and Law for the Library Services Division of the Library of Congress, 1988-1989.

Dr. Lawley

Received National Science Foundation funding to be the principal investigator for "Understanding Gendered Attrition in Departments of Information Technology" for $335,000.

Lawley, E., "The Use of Digital Backchannels in Shared Physical Spaces", *Panel Presentation at the ACM Computer-Supported Collaborative Work Conference,* Chicago, IL, 2004.

Lawley, E., "Weblogs and Cross-Disciplinary Communication", *Panel Presentation at Media Ecology Association,* Rochester, NY, 2004.

Lawley, E. and Henderson, T., "Understanding Gendered Attrition in IT Programs", *Proceedings of the 4th Conference on Information Technology Curriculum,* 2003.

Dr. Vullo

Education Director, St. Jude Children's Research Hospital, 2000-2001.

Founding VP and CIO of izyx, inc., 1999-2000.

Director of Information Systems at the University of Connecticut School of Dental Nedicine, 1993-1999.

Dr. Vullo

Author of the Molly II Server-Side Authoring System and MAML markup language.

Bogaard, D., Vullo, R., and Cascioli, C., "SVG for Educational Simulations", *ACM SIGITE Conference*, Salt Lake City, UT, 2004.

Vullo, R. and Bogaard, D., "Visualization with Dynamically Generated SVG", *ACM SIGITE Conference*, Salt Lake City, UT, 2004.

Vullo, R. and Bogaard, D., "Better than HTML Web: Synamically Generated SVG Web Sites", *WWW@10*, 2004.

Course Title (a)	No. of Credits (b)	Faculty Members	Highest Earned Degree
4003-231 Computer Science I	4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
		Kevin Bierre	M.S. in Computer Science, Rochester Institute of Technology, 1990.

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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)
		Zack Butler	Ph.D. in Robotics, Carnegie Mellon, 2000.
		Keith Whittington	M.S. in Computer Science, Nova Southeastern University, 1999.

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.

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

Phelps, A., Egert, C., and Bierre, K., "Games First Pedagogy: Using Games and Virtual Worlds to Enhance Programming Education", *Journal of Game Development, 1(4),* Charles River Media, 2006.

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.

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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)
			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. Butler Academic experience in the areas of artificial intelligence, robotics, and distributed systems and algorithms.			**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.
Prof. Whittington Computer Programmer and Systems Analyst for Sikorsky Aircraft, 1977-2000.			**Prof. Whittington** NSF Grant as primary investigator for "Active Learning for Programming in Information Technology", 2005. Whittington, K., "Using Active Learning to Increase Student Learning and Retention in IT Introductory Programming Courses", *Proceedings of Informing Science and Information Technology Joint Conference*, Manchester, UK, 2006. Whittington, K., "Circle of Scholarship", *Proceeding of the Teaching Professor Conference*, Nashville, TN, 2006. Whittington, K. and Bills, D., "Alternative Pacing in an Introductory Java Sequence", *Proceedings of the ACM Special Interest Group for Information Technology Education*, Salt Lake City, UT, ACM Press, 2004.
4003-232 Computer Science II	4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
		Kevin Bierre	M.S. in Computer Science, Rochester Institute of Technology, 1990.
		Zack Butler	Ph.D. in Robotics, Carnegie Mellon, 2000.
		Keith Whittington	M.S. in Computer Science, Nova Southeastern University, 1999.
Dr. Bayliss		**Dr. Bayliss**	

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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)
	See previous description for Dr. Bayliss.			See previous description for Dr. Bayliss.
	Prof. Bierre See previous description for Prof. Bierre.		**Prof. Bierre** See previous description for Prof. Bierre.	
	Dr. Butler See previous description for Dr. Butler.		**Dr. Butler** See previous description for Dr. Butler.	
	Prof. Whittington See previous description of Prof. Whittington.		**Prof. Whittington** See previous description of Prof. Whittington.	
4003-233 Computer Science III		4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
			Kevin Bierre	M.S. in Computer Science, Rochester Institute of Technology, 1990.
			Zack Butler	Ph.D. in Robotics, Carnegie Mellon, 2000.
			Keith Whittington	M.A. in Media Studies, New School for Social Research, 1988.
	Dr. Bayliss See previous description for Dr. Bayliss.		**Dr. Bayliss** See previous description for Dr. Bayliss.	
	Prof. Bierre See previous description for Prof. Bierre.		**Prof. Bierre** See previous description for Prof. Bierre.	
	Dr. Butler See previous description for Dr. Butler.		**Dr. Butler** See previous description for Dr. Butler.	
	Prof. Whittington See previous description of Prof. Whittington.		**Prof. Whittington** See previous description of Prof. Whittington.	
4002-330 Interactive Digital Media		4	Nancy Doubleday *	M.S. in Information Technology, Rochester Institute of Technology, 1998.
			Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
			W. Michelle Harris	M.P.S. in Interactive Telecommunications, Tisch School of the Arts, New York University 2002.

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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. Doubleday Consultant to JRVisuals, 2005. Consultant to NEO/Sci, 1999-2003. Consultant to the "Break It, Fix It, Ride It" project, 1999-2002. Consultant to Anabasis Software, 2002.	**Prof. Doubleday** Doubleday, N. and Kurtz, S., "Shared Extensible Learning Spaces", *ACM Special Interest Group on Information Technology Education (SIGITE),* Salt Lake City, UT, 2004. Kurtz, S. and Doubleday, N., "Virtual Worlds, Cognitive Maps", *Proceedings of the Educators Program for 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 2002 Conference for Information Technology Curriculum (CITC)*, Rochester, NY, 2002.
Dr. Egert Software and Systems Consultant, INTROTECH, North Tonawanda, NY, 1992-2005. Software Engineer, ASYST Software Technologies, Rochester, NY, 1989-1990 Software Engineer, Moore Research Center, Grand Island, NY, 1988	**Dr. Egert** Phelps, A., Egert, C., and Bierre, K., "Games First Pedagogy: Using Games and Virtual Worlds to Enhance Programming Education", *Journal of Game Development, 1(4),* Charles River Media, 2006. 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. Harris QA Analyst for Wet Electrics, 2001. Information Architect for Organic, 2000. IT Research Scientist, Pacific Northwest National Laboratory, 1993-1999.	**Prof. Harris** Oyzon, E., Harris, W., and Suarez, J., "Hairline Cracks", *Presentation at the 1st International Conference on Digital Live Art*, London, UK, 2006. Harris, W., "Transient Reformations: Transforming Place Through Projection", *Presented at the Media Ecology Association 5th Convention,* Rochester, NY, 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)

		Hetzler, B., Harris, W., Havre, S., and Whitney, P., "Visualizing the Full Spectrum of Documents Relationships", *Proceedings of the 5th International ISKO Conference: Structures and Relations in Knowledge Management,* Lille, France, 1998.	
		LoPresti, E. and Harris, W., "Sonic Exploration of Thematic Information", *Proceedings of the Audio Engineering Society 102nd Convention*, Munich, Germany, 1997.	
4050-210 Small and Home Networking Essentials	4	Sharon Mason	M.S. in Information Technology, Rochester Institute of Technology, 1997.
Prof. Mason Network consulting for Everest Solutions, L.L.C., 1999-2004. Network consulting for ecorea.com, 2000. Network consulting for Remington, Gifford, Williams, and Colichio, LLP, 1997-2001.	**Prof. Mason** Mason, S. and Johnson, D., "Network and Systems Security, A Collaborative Approach", *Poster for ACM SIGITE,* Salt Lake City, UT, 2004. Mason, S., "Developing and Integrating Forensics in a BS in Networking and System Administration", *Forensics Educators Working Group*, Bethesda, MD, 2003. Mason, S., Lutz, P., and Yacci, M., "Experimental Learning Approaches in Networking and Systems Administration" *Conference for Information Technology Curriculum III,* Rochester, NY, 2002. Mason, S., "Logistics Issues in Designing a Cyber Security Lab", *Consortium for Computing in Small Colleges: Northeastern Conference*, Bloomington University, PA, 2002.		
4002-360 Introduction to Database and Data Modeling	4	Edward Holden	M.B.A. in Finance, Rochester Institute of Technology, 1995.
		Elissa Weeden	M.S. in Software Development and Management, Rochester Institute of Technology, 1998.
Prof.Holden Systems Coordinator and Analyst with Eastman Kodak Company, 1972-2000	**Prof. Holden** 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", *ACM SIGITE*, 2004. Border, C. and Holden, E., "Security Education within the IT Curriculum", *Conference for Information Technology Curriculum*, 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)**

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.	

Course Title	Credits	Faculty	Degree
4002-425 Human Computer Interaction I: Human Factors	4	W. Michelle Harris	M.P.S. in Interactive Telecommunications, Tisch School of the Arts, New York University 2002.
		Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
		Elouise Oyzon	M.F.A. in Computer Animation, Rochester Institute of Technology, 1999.

Prof. Harris See previous description for Prof. Harris.		**Prof. Harris** See previous description for Prof. Harris.
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, 2006. 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)
Prof. Oyzon Co-Host of "What the Tech!?" Radio Show, 2002-2005. Owner of Oyzon Animation, 1999-present.	**Prof. Oyzon** Prof. Oyzon;'s work spans dozens of art and dance installations, popular media press and broadcast, as well as digital communication mediums. Prof. Oyzon's work challenges the viewers and readers perception of the boundary of art, culture, and technology.		
4002-417 Visual C++ for Programmers	4	Kevin Bierre	M.S. in Computer Science, Rochester Institute of Technology, 1990.
		Keith Whittington	M.S. in Computer Science, Nova Southeastern University, 1999.
Prof. Bierre See previous description for Prof. Bierre.	**Prof. Bierre** See previous description for Prof. Bierre.		
Prof. Whittington See previous description for Prof. Whittington.	**Prof. Whittington** See previous description for Prof. Whittington.		
4002-380 Fundamentals of Game Design and Development I	4	Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Dr. Egert See previous description for Dr. Egert.	**Dr. Egert** See previous description for Dr. Egert.		
Prof. Jacobs See previous description for Prof. Jacobs.	**Prof. Jacobs** See previous description for Prof. Jacobs.		
4002-381 Fundamentals of Game Design and Development II	4	Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Dr. Egert See previous description for Dr. Egert.	**Dr. Egert** See previous description for Dr. Egert.		
Prof. Jacobs See previous description for Prof. Jacobs.	**Prof. Jacobs** See previous description for Prof. Jacobs.		
4002-434	4	Steve Kurtz *	M.F.A. in Imaging Arts,

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Relevant Occupational Experience (e)	**Relevant other experience (such as certification / licensure) (f) *****		**Recent Scholarly Contributions (optional below baccalaureate level) (g)**
Programming for Digital Media			Rochester Institute of Technology, 1979.
		Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.

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.
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., Egert, C., and Bierre, K., "Games First Pedagogy: Using Games and Virtual Worlds to Enhance Programming Education", *Journal of Game Development, 1(4),* Charles River Media, 2006. 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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Relevant Occupational Experience (e)	Relevant other experience (such as certification / licensure) (f) ***		Recent Scholarly Contributions (optional below baccalaureate level) (g)

			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.
4002-409 Website Design and Implementation	4	Tona Henderson	M.S. in Library and Information Science, University of Missouri, 1992.
		Elizabeth Lawley	Ph.D. in Information Studies, University of Alabama, 1999.

Prof. Henderson
Head of the Gateway Library/Laptop Library at the Pennsylvania State University, 1998-2000.

Business Reference Librarian at the Pennsylvania State University, 1992-1998.

Prof. Henderson
Co-PI on $335,000 National Science Foundation grant to study issues pertaining to gendered attrition in Information Technology programs.

Henderson, T., "Retaining Women in Undergraduate Information Technology Programs", *Encyclopedia of Gender and IT,* Eileen Trauth, ed., In press, 2005.

Henderson, T., "Why do Women Leave IT Programs?", *Proceedings of the American Association of Computers in Education E-Learn Conference*, 2005.

Lawley, E. and Henderson, T., "Understanding Gendered Attrition in IT Programs", *Proceedings of the 4th Conference on Information Technology Curriculum,* 2003.

Dr. Lawley
See previous description for Dr. Lawley.

Dr. Lawley
See previous description for Dr. Lawley.

4002-387 Data Structures and Algorithms for Game Programmers I	4	Kevin Bierre *	M.S. in Computer Science, Rochester Institute of Technology, 1990.
		Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Jay Jackson	Ph.D. in Mathematics, Florida State University, 1985.
		Steve Kurtz *	M.F.A. in Imaging Arts, Rochester Institute of Technology, 1979.
		Andrew Phelps (D) *	M.S. in Information Technology, Rochester

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

			Institute of Technology, 1999.
Prof. Bierre See previous description for Prof. Bierre.			**Prof. Bierre** See previous description for Prof. Bierre.
Dr. Egert See previous description for Dr. Egert.			**Dr. Egert** See previous description for Dr. Egert.
Dr. Jackson Dr. Jackson has been a contributing academic for over 20 years. Visualization Scientist at NCSA, 1997. Visiting Scientist at the Los Alamos national Laboratory, 1992			**Dr. Jackson** Jackson, J. and Jaffe, A., "Bridge: The Evolution of a Multimedia Work", *in Proceedings of the 2005 Conference of the Association for Technology in Music Instruction,* 2005. Francioni, J. and Jackson, J., "Breaking the Silence: Auralization of Parallel Program Behavior", *Journal of Parallel and Distributed Computing,* pp. 181-194, 1993. Jackson, J. and Pacheco, P., "Circuit Simulation on Multicomputers", *in Proceedings of the Sixth SIAM Conference on Parallel Processing for Scientific Computing*, 1993
Prof. Kurtz See previous description for Prof. Kurtz.			**Prof. Kurtz** See previous description for Prof. Kurtz.
Prof. Phelps See previous description for Prof. Phelps.			**Prof. Phelps** See previous description for Prof. Phelps.
4002-487 Data Structures and Algorithms for Game Programmers II	4	Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Jay Jackson	Ph.D. in Mathematics, Florida State University, 1985.
		Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
Dr. Egert See previous description for Dr. Egert.			**Dr. Egert** See previous description for Dr. Egert.
Dr. Jackson See previous description for Dr. Jackson.			**Dr. Jackson** See previous description for Dr. Jackson.
Prof. Phelps See previous description for Prof. Phelps.			**Prof. Phelps** See previous description for Prof. Phelps.
2065-331 Introduction to Animation	4	Johnny Robinson	M.F.A., Syracuse University.

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Prof. Robinson Production work for commercial advertising, CDROM, and educational television.		**Prof. Robinson** Various academic endeavors for art and character animation.	
2065-361 Introduction to 3D Computer Animation	4	Aharon Charnov	M.F.A. in Computer Animation, Rochester Institute of Technology, 2005.
Prof. Charnov Web consultant for the United Synagogue of Conservative Judaism, 2001- present. Web designer for Salem Global Internet, 2001. Web designer and publications coordinator for United Synagogue Youth, 1999-2001.		**Prof. Charnov** Documentary film, "The Get".	
4002-201 Freshman Seminar	1	Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
		Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
		Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
Dr. Egert See previous description for Dr. Egert.		**Dr. Egert** See previous description for Dr. Egert.	
Prof. Jacobs See previous description for Prof. Jacobs.		**Prof. Jacobs** See previous description for Prof. Jacobs.	
Prof. Phelps See previous description for Prof. Phelps.		**Prof. Phelps** See previous description for Prof. Phelps.	
4002-501 Foundations of 2D Graphics Programming	4	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.
Prof. Phelps See previous description for Prof. Phelps.		**Prof. Phelps** See previous description for Prof. Phelps.	
4002-502 Foundations of 3D Graphics Programming	4	Andrew Phelps (D) *	M.S. in Information Technology, Rochester Institute of Technology, 1999.

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Prof. Phelps See previous description for Prof. Phelps.		**Prof. Phelps** See previous description for Prof. Phelps.	
4003-570 Computer Graphics I	4	Warren Carithers	M.S. in Computer Science, University of Kansas, 1981.
		Joe Geigel *	D.Sc. in Computer Science, George Washington University, 2000.
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.	
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.	
4003-455 Artificial Intelligence	4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
		Zack Butler	Ph.D. in Robotics, Carnegie Mellon, 2000.
Dr. Bayliss See previous description for Dr. Bayliss.		**Dr. Bayliss** See previous description for Dr. Bayliss.	
Dr. Butler See previous description for Dr. Butler.		**Dr. Butler** See previous description for Dr. Butler.	
4002-538 Multi User Media Spaces	4	Nancy Doubleday *	M.S. in Information Technology, Rochester

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			Institute of Technology, 1998.
		Steve Kurtz *	M.F.A. in Imaging Arts, Rochester Institute of Technology, 1979.

Prof. Doubleday See previous description for Prof. Doubleday.		**Prof. Doubleday** See previous description for Prof. Doubleday.	
Prof. Kurtz See previous description for Prof. Kurtz.		**Prof. Kurtz** See previous description for Prof. Kurtz.	
4002-541 Data-Driven Time-Based Multimedia Programming	4	Christopher Egert *	Ph.D. in Computer Science and Engineering, University at Buffalo (SUNY), 2003.
Dr. Egert See previous description for Dr. Egert.		**Dr. Egert** See previous description for Dr. Egert.	
4003-572 Computer Animation: Algorithms and Techniques	4	Joe Geigel *	D.Sc. in Computer Science, George Washington University, 2000.
Dr. Geigel See previous description for Dr. Geigel.		**Dr. Geigel** See previous description for Dr. Geigel.	
4002-529 Introduction to VRML	4	Jeff Sonstein	M.A. in Social-Clinical Psychology, New College of California, 1991.
Prof. Sonstein Director of Technical Support for blaxxun Interactive, 1999. Computer Scientist with the NASA Ames Research Center, 1998-1999. Networking Consultant for the California Medical Association, 1996.		**Prof. Sonstein** Creator of the xVRML project. Contributor to the VRML specification. Publications and contributions relating to the emergence of VRML technology, both past and present.	
4003-552 Artificial Intelligence for Interactive Environments	4	Jessica Bayliss *	Ph.D. in Computer Science, University of Rochester, 2001.
Dr. Bayliss See previous description for Dr. Bayliss.		**Dr. Bayliss** See previous description for Dr. Bayliss.	
4002-527 Digital Audio and Computer Music	4	Al Biles	M.S. in Computer Science, University of Kansas, 1980.
		Jay Jackson	Ph.D. in Mathematics, Florida State University,

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

			1985.
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.	
Dr. Jackson See previous description for Dr. Jackson.		**Dr. Jackson** See previous description for Dr. Jackson.	
4002-528 Writing for Interactive Media	4	Stephen Jacobs *	M.A. in Media Studies, New School for Social Research, 1988.
Prof. Jacobs See previous description for Prof. Jacobs.		**Prof. Jacobs** See previous description for Prof. Jacobs.	
4002-484 Fundamentals of Database Client/Server Connectivity	4	Kevin Bierre	M.S. in Computer Science, Rochester Institute of Technology, 1990.
		Edward Holden	M.B.A. in Finance, Rochester Institute of Technology, 1995.
Prof. Bierre See previous description for Prof. Bierre.		**Prof. Bierre** See previous description for Prof. Bierre.	
Prof. Holden See previous description for Prof. Holden.		**Prof. Holden** See previous description for Prof. Holden.	
4002-539 Programming for the WWW	4	Dan Bogaard	M.S. in information Technology, Rochester Institute of Technology, 2001.
		Ronald Vullo	Ph.D. in Science Education / Instructional Software Design, State

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Relevant Occupational Experience (e)	Relevant other experience (such as certification / licensure) (f) ***		Recent Scholarly Contributions (optional below baccalaureate level) (g)
			University of New York at Buffalo (SUNY), 1991.
Prof. Bogaard Consultant to CorrectDeck, 2005. Consultant to Surreal Dimensions, 2003-2005. Consultant to Turn Tennis and Swim Club, 2003-2004. Consultant to Fusion Productions, 2000.			**Prof. Bogaard** Bogaard, D. and Beaton, C., "IMA as a Tool for Accommodated Learning", *IASTED International Conference on Education and Technology (ICET 2006),* Calgary, Canada, 2006. Beaton, C. and Bogaard, D., "Evolution of IMA as a Tool for Accommodated Learning", *12th International Conference on Distributed Multimedia Systems (DMS 2006),* Grand Canyon USA, 2006. Zilora, S. and Bogaard, D., "Dynamic-Vector Collaborative Learning Tool", *E-Learn 2005*, Vancouver, British Columbia, Canada, 2005. Bogaard, D., Vullo, R., and Cascioli, C., "SVG for Educational Simulations", *ACM SIGITE Conference*, Salt Lake City, UT, 2004. Vullo, R. and Bogaard, D., "Visualization with Dynamically Generated SVG", *ACM SIGITE Conference*, Salt Lake City, UT, 2004.
Dr. Vullo See previous description for Dr. Vullo.			**Dr. Vullo** See previous description for Dr. Vullo.

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.

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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 is charged with the direct oversight of Game Design and Development programs at RIT. Currently, the administrative committee consists of the authors of this document, including Director of Game Design and Development Andrew Phelps, M.S., Christopher Egert, Ph.D., Stephen Jacobs, M.A., Joseph Geigel, D.Sc., Jessica Bayliss, Ph.D., Nancy Doubleday, M.S., and Steven Kurtz, M.F.A.

The Administrative Committee matches students to program faculty based upon skill, ability, and interest. The program faculty advisor will be formally assigned to the student before the start of the second quarter. Faculty advisors will meet with students on a regular basis as well as at critical points in a student's academic career. The professional advisors in the Information Technology Department will also handle additional advising tasks.

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V. Enrollment

A. Admissions Requirements

Prospective students will be expected to have a high school diploma, or equivalent, and should be passionate in regards to the construction of game and entertainment technology software. Ideal students should have a strong background in areas such as mathematics, natural sciences, and physical sciences. Students should also demonstrate a breadth of high school courses that are synergetic with game design and development, including writing, communications, history, foreign languages, introductory programming and computing, as well as art.

Applicants to the program will apply through the Institute's Undergraduate Admissions Office. Applications will be gathered throughout the year, but will only be considered for Fall enrollment. Admission to the program will be based upon a number of factors, including high school performance, standard test scores, and letters of recommendation.

Incoming freshman will be considered if they meet the established criteria for this program, which is based upon the criteria for other programs within GCCIS. The program seeks students who are in the upper quarter percentile of their class in terms of high school GPA as well as class ranking. In addition, the program seeks students that score above or equal to 1200 on the Verbal and Math portions of the SAT exam and that score above or equal to 26 on each section of the ACT exam. Freshmen will be required to submit three letters of recommendation for entry into the program.

Transfer students should have a GPA greater than or equal to a 3.0 GPA ranked on a 4.0 scale. Transfer students are still required to submit letters of recommendation to be considered for the program. In the case where a transfer student's high school grades and testing scores are below the acceptable threshold, the student must show competency within pre-transfer coursework to be accepted into the program. Transfer students are bound by the Institute's rules governing transfer credit mapping. In most cases, a program faculty member will be required to perform articulation checks for transfer coursework to ensure that the program standards have been met.

For international students, 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 combination of high school math and sciences courses, a breadth of courses relevant to game design and development, and letters of recommendation will ensure that students are well prepared for entry into this program. The math and science courses will ensure that students have the correct level of analytical thought as well as critical thinking and problem solving skills to enter the program. The breadth courses will demonstrate that the student is able to appreciate more than just the technological, math, and science aspects of the discipline. A broader view of computing that embraces art, humanities, and communication is essential for success within the

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field. Letters of recommendation help to ensure that the student is well rounded and has participated in activities within and outside of academic endeavors.

The program's Administrative Committee, or an appointed selection sub-committee, and Undergraduate Program Coordinators from the IT Department will work with the Undergraduate Admissions Office to select viable candidates. The goal is to accept approximately thirty incoming students and transfer students each academic year. By limiting the number of admitted students to thirty, the program can ensure a level of quality demanded by the professional field. All admissions materials will be due by February 1st prior to the subsequent school year fall quarter. Admissions decisions will be made by the early April for the subsequent school year.

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. In addition, we are committed to outreach through groups that specifically target these populations such as the International Game Developer Association's Special Interest Group for Women in Gaming. Furthermore, several of our Industrial and Academic Advisory Board members are specifically interested in the area of gender and minority retention in computing and game development. The Administrative Committee for this program will leverage the Board's expertise in the area to ensure that the program can reach underrepresented groups. 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.

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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 400 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).

It is important to note that despite the growing popularity of game curriculum, there are only a handful of top-rated universities and colleges that offer an undergraduate-level degree in game design and development as well as entertainment technology. The following paragraphs list programs that the authors of this document see as being regionally and nationally competitive, based upon institution mission and ranking.

Rensselaer Polytechnic Institute (RPI, 2005) provides a game study minor, co-sponsored by the department of cognitive science and the department of art. RPI is also planning an undergraduate major in Game and Simulation Arts and Sciences (RPI-GSAS, 2006), which is scheduled to 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.

Worchester Polytechnic Institute (WPI, 2006) offers a four-year Bachelors of Science in Interactive Media and Game Development. The objective of WPI's program is to provide students with an understanding of both the artistic and the technical aspects of game design and development. Along with technologies for art and programming, students explore the philosophical, sociological, and cultural underpinnings of the game development field. The program also targets students for future careers in interactive media, art and design, or traditional computing disciplines such as computer science.

The University of Southern California (USC, 2006), has recently established its Bachelor of Science in Computer Science Games option. Supported, in part, through the the GamePipe Labs at USC, the degree promotes an interdisciplinary approach to game design and development. This degree and lab is, in part, guided by Dr. Michael Zyda, who has been a leader in the research area of virtual reality environments and interactive simulations for military domain

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problems. Zyda's work in Virtual Environment Networking (Singhal & Zyda, 1999) is still considered essential reading for students studying the development of networked games.

University of Colorado, Colorado Springs (UCCS, 2006) currently provides its undergraduate Computer Science students with a minor in Game Design and Development. UCCS is in the process of developing a game design and development degree program, due to launch in Fall 2007. Led by Dr. Chamillard, the program focuses upon the technological basis of game development while providing insight into industry practices. The program has strong support from industry representatives.

Differences from Competing Programs

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 undergraduate level program. Specifically with regard to the programs above, our proposed degree is a full major of study, not a minor "glued on" to an existing traditional program, and as such we feature a full core of coursework that would be appropriate for entry into the professional field. This proposal is tightly and specifically focused on gaming, rather than a broader approach on "entertainment technology" found at other schools. In this aspect, our program is most similar to the proposed program at UC-Colorado Springs and the new program at USC.

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 locally, regionally, and nationally. Since the announcement of the Masters of Science in Game Design and Development in July 2006, the program faculty members have fielded numerous email and phone inquiries regarding the

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establishment of a game design and development program at the undergraduate level. At RIT's College and Careers event this summer, Dr. Christopher Egert addressed close to 175 students interested in game design and development as a career. In addition, the current attraction of students to the Game Design and Development concentration within the Information Technology Department shows sustainable interest for this degree.

3. Status

The Bachelors of Science in Game Design and Development is intended to be a full-time program. Due to the rigor involved in this discipline, a part-time course of study would be impractical for most students.

4. Enrollment Projections

The RIT Office of Enrollment Management and Career Services has provided enrollment projection for the first five years of the program. The enrollment projection assumes the program will start in the Fall of 2007. The enrollment office anticipates a steady draw of 25 students per academic year, along with a reasonable number of internal transfers. The enrollment projection also states that attrition will be similar to other programs within GCCIS. Enrollment projections are shown in Table 12. In addition, the Office of Enrollment Management and Career Services letter of support is included in Appendix A. This table reflects a calculated retention rate of approximately 70%.

Program Year	1st Year Student Enrollment	2nd Year Student Enrollment	3rd Year Student Enrollment	4th Year Student Enrollment	FTE
2007	20	5	6	0	31
2008	25	25	12	4	66
2009	25	29	27	9	90
2010	25	29	31	20	104
2011	25	29	31	22	107

Table 12: Enrollment projections for the Bachelors of Science in Game Design and Development over fiscal years 2007 through 2011.

5. Attractor and Retainer

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 high schools and 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.

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C. Anticipated Graduation Rate

It is anticipated that the graduation rate of this program will be comparable to existing GCCIS Bachelor's programs in Computer Science, Information Technology, and Software Engineering.

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.

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Appendix A: RIT Internal Letters of Support

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

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September 20, 2006

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

RE: BS Game Design and Development

Dear Kit:

I am very pleased to endorse the proposal for the BS program in Game Design and Development. The proposal affords our College an excellent opportunity to be number one in this important and rapidly growing area of study. The program involves faculty from several departments within the College and from CIAS. This is a long-awaited degree with much anticipation for success. The program has both strong programming and depth in advanced study courses. The laboratory support already exists with world-class, homegrown software (M.U.P.P.E.T.S.) currently enjoying national recognition and supported by industry[1].

I am very excited about the prospect of a new BS program in Game Design and Development, and this sentiment is shared within our College and the University. This new undergraduate degree is an excellent complement to our existing programs, and most particularly as a feeder to our recently approved MS degree with the same name.

Sincerely,

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

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[1] This year Microsoft's RFP focusing on enhancing the teaching of computing using gaming assets and technologies, encourages academic participants nation wide to consider M.U.P.P.E.T.S. as one of the three recommended technologies.

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

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R·I·T

October 9, 2006

Dean Jorge Diaz-Herrera
Golisano College of Computing & Information Sciences
Rochester Institute of Technology
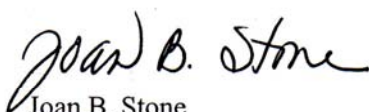
Dear Jorge:

The CIAS School of Film and Animation is willing to provide 2 sections (15 students per section) of 2065-331 Introduction to Animation I in the fall quarter and 2 sections (15 students per section) of 2065-361 Introduction to 3-D Computer Animation in the winter quarter for students in the proposed Game Design & Development BS, beginning in 2008-09.

In order to provide these courses, we will need an additional .5 FTE faculty member and 700 incremental square feet of computer lab space equipped to teach 3-D animation. The CIAS expense for this must be included in the cost model for the proposed Game Design & Development BS program. The detail is provided on the enclosed spreadsheet.

Should the proposed program grow beyond the anticipated 30 new students per year, additional resources will need to be given to CIAS in order for us to provide the required courses.

Sincerely,

Joan B. Stone
Dean

c: J. Leone
        M. Spaull

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Game Design and Development BS
CIAS Expenses

	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
CIAS Faculty .5FTE	40,000	41,200	42,436	43,709	45,020
Benefits @ 32%	12,800	13,184	13,580	13,987	14,407
3D Lab Equipment	120,000	15,000	15,000	15,000	15,000
700 sf Lab Space @ $14.75/sf	10,325	10,325	10,325	10,325	10,325
Total CIAS Expense	172,800	69,384	71,016	72,696	74,427

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3. Dr. Ian Gatley, Dean of COS – Letter of Support

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Rochester Institute of Technology

College of Science
Office of the Dean
84 Lomb Memorial Drive
Rochester, New York 14623-5604
585-475-2483 Fax 585-475-2398

October 10, 2006

Jim Leone, Ph.D.
Professor and Chair, Information Technology
2109 Golisano College of Computing and Information Sciences
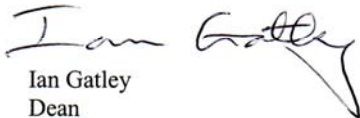
Dear Dr. Leone:

I am writing to support your forthcoming Bachelor of Science program in Game Design & Development. I know from my own discussions with students that this will be both a popular and a productive educational choice.

Because your program is structured very much like existing programs in Information Technology, we already know that it will be straightforward to provide for the needs of the approximately 30 students you anticipate. Specifically, they will be included in our planning for all of the courses outlined in the worksheet that you sent me. Game development requires serious technical skills-- strong mathematical, computer, and analytical skills and aptitude are keys for success in this field.

It is therefore a pleasure for me to offer my support and best wishes for success with your new program.

Sincerely,

Ian Gatley
Dean
College of Science

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4. Dr. Andrew M. T. Moore, Dean of COLA – Letter of Support

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Rochester Institute of Technology

College of Liberal Arts
92 Lomb Memorial Drive
Rochester, New York 14623-5604
585-475-2444 FAX:585-475-7120

30 October 2006

Professor Jim Leone, Chair
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology

Dear Jim:

The College of Liberal Arts is pleased to be invited to contribute to a new BS degree program in Game Design and Development currently being developed by the B. Thomas Golisano College of Computing and Information Sciences. This effort will continue and expand the collaborative activities in which we in the College of Liberal Arts are already engaged at the undergraduate and graduate levels with your college.

I am pleased to confirm that the College of Liberal Arts supports this initiative wholeheartedly. The proposed program will help to meet a strong and growing demand for well trained professionals in game design, a rapidly growing field of employment and also technical innovation. I note with interest that you are as concerned to educate your students in matters of game and communication theory as in programming, a most welcome perspective. We anticipate that the proposed degree will provide opportunities for closer relationships in teaching and research with several departments in the College of Liberal Arts, particularly the Department of Communication.

You indicate in the proposal that you anticipate enrolling as many as 25 freshmen a year over four years, in addition to transfer students, for a total of at least 107 a year, once the program is established. At these levels of enrollment we would expect to be able to meet the additional course needs of your students in Liberal Arts within our existing capacity during the first two years of existence of the new program. Thereafter, however, should enrollments meet or exceed your expectations, we would need additional faculty to provide for the increased teaching needs of these students for courses in the College of Liberal Arts.

Sincerely yours,

Andrew Moore
Dean

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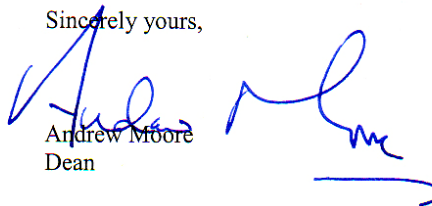**5. Dr. Jim Leone, IT Department Chair, GCCIS – Letter of Support**

R·I·T

September 5, 2006

Eydie Lawson, Associate Dean and Curriculum Chair
RIT
B. Thomas Golisano College of Computing and Information Sciences
102 Lomb Memorial Drive
Rochester, NY 14632

Dear Eydie,
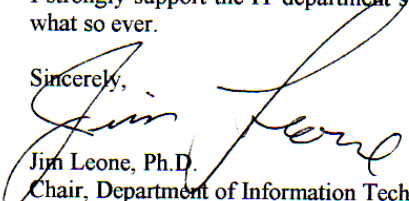
It is my pleasure to write this letter in support of the IT proposal to offer a Bachelor's of Science Degree in Game Design & Development (GD&D). Just as the discipline of IT underwent a dramatic increase in the mid-to-late 90's, and networking and security experienced sizeable growth in the early 2000's, now the interest in computer games has resulted in strong pressure from students to offer degrees in the games arena.

At this year's IT orientation meeting, Professor Al Biles and I spent roughly 50% of the time answering questions about the MS in GD&D and the department's plans to offer a BS in GD&D in the future. A number of incoming freshmen re-aligned their schedules to optimize their ability to do a change of program into the proposed degree when it is approved.

However, just because there is an initial surge of interest is not sufficient to offer a new degree. As it was with IT and networking, a well-designed games degree will meet the initial surge of students and will sustain itself over the long haul. Led by Professors Andy Phelps, Director of Game Design & Development, Chris Egert, and Stephen Jacobs, the proposed BS in Game Design & Development is a careful integration of technologies that draw upon the expertise of talented faculty from both IT and CS. This degree proposal is a demanding one requiring strong programming and mathematical skills. Furthermore, the degree is designed to allow students to continue on with the IT's newly approved MS in GD&D in what amounts to a de facto 4+1 sequence.

I strongly support the IT department's proposal for a BS in Game Design & Development with no reservations what so ever.

Sincerely,

Jim Leone, Ph.D.
Chair, Department of Information Technology
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, NY 14623
585-475-6451 / (F) 585-475-2181
leone@it.rit.edu

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6. Prof. Paul Tymann, CS Department Chair, GCCIS – Letter of Support

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Rochester Institute of Technology

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

Wednesday, October 4, 2006

Jim Leone, Ph.D.
Professor and Chair Information Technology
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
102 Lomb Memorial Drive
Rochester, New York 14623-5608

Dear Jim,

I am writing this letter in support of the IT department's proposed Bachelors of Science in Game Design & Development. This program will have a positive effect on the students in your department and the CS department looks forward to collaborating with IT by providing the support you require.

Specifically students in this program will be required to take the Reality and Programming Together (RAPT) sections of computer science 1, 2, and 3. These courses are offered in the fall, winter and spring quarters and the department will be able to accommodate the number of students specified in the proposal. Furthermore we will be able to accommodate students who wish to take the computer science courses listed in the advanced study section of the worksheet. Based on the projected demand for this degree as anticipated by you and your faculty, the growth of the gaming degree will impose the need for additional CS resources to provide enough sections of these courses.

I wish you the best of luck with this new program. Please do not hesitate to contact me if I can be of any additional assistance as you prepare for this program.

Sincerely,

Paul Tymann
Department Chair, Computer Science

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7. Dr. Luther Troell, Chair of Networking, Security, and Systems Administration – Letter of Support

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Luther Troell, Ph. D., Chair and Professor
Department of Networking, Security, and
Systems Administration
585-475-6479   Fax: 585-475-6584
Email: luthur.troell@rit.edu

Office Memo

To: Jim Leone, Chair, Department of Information Technology
From: Luther Troell, Chair Department of Networking, Security, and Systems Administration
Date: September 28, 2006
Subject: Service Agreement for BS in Game Design & Development

The department of Information Technology's proposal for a BS degree in Game Design and Development is an innovative and strategic program which has the support of the Networking, Security, and Systems Administration department.

Based on the enrollment projection of approximately 30 students a year who will require a networking course we can support this program by providing an additional section of the "Small Office Home Office Networking Essentials" course without the need for any additional resources in the Networking, Security, and Systems Administration department. Should the number of students entering your program exceed the anticipated number of approximately 30 students per year we may need to request additional faculty and lab resources. We look forward to working with your faculty to look for other areas of synergy in our programs.

We will review this agreement on a 2-year cycle in order to be responsive to changing situations that may impact either of our departments. Please send me formal confirmation of this agreement for our records. Thank you.

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8. Sponsored Research Services – Letter of Support

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October 12, 2006

Jim Leone, Ph.D.
Professor and Chair
Information Technology
Golisano College of Computing and Information Sciences

Dear Dr. Leone,

I am pleased to write this letter in support of the Bachelors 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 Bachelor 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 an accomplished record with the college 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

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9. Information Technology Services – Letter of Support

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Interoffice Memo

Date: September 19, 2006

To: Jim Leone, Ph.D. Professor and Chair, Information Technology

From: Emilio DiLorenzo

RE: Support Letter for Bachelors of Science in Game Design & Development

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Jim:
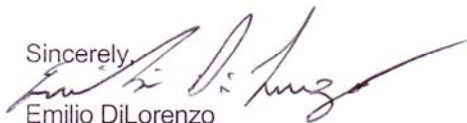
This memo is in response to your letter of support for the forthcoming of a Bachelors of Science in Game Design & Development for the Information Technology Department of the B. Thomas Golisano School of Computing & Information Sciences.

After reviewing the worksheet of student course of study and understanding where the Gaming Industry is heading, I strongly support your efforts in offering a degree program in this field. I feel this will be an excellent addition to the already distinguished curriculum and undergraduate and graduate degree programs that currently exist with in Information Technology.

Furthermore, I see absolutely no impact to any of RIT's internal IT services by the addition of this program.

I wish you and your staff great success in this endeavor.

Sincerely,

Emilio DiLorenzo
Associate Chief Information Officer

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10. Student Affairs – Letter of Support

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Rochester Institute of Technology

Vice President for Student Affairs
44 Lomb Memorial Drive
Rochester, New York 14623-5604
585-475-2267 • Fax 585-475-7065
E-mail: mbcvsa@rit.edu

October 10, 2006

Dr. James Leone
Professor and Chair
Information Technology

Dear Jim:

I am happy to write a letter of support for your forthcoming Bachelors of Science in Game & Design Development. As Vice President for Student Affairs, I am writing this on behalf of a number of services that are part of our division – Campus Life; Counseling Center; English Language Center; Academic Support Center (which includes HEOP, FYE, Special Services, and Disability Services); Intercollegiate Athletics and Recreation; International Student Services; Orientation; Religious Life; Residence Life; Student Conduct and Student Health.

As I have reviewed the proposal, I do not anticipate that the addition of approximately 30 students per year would have a significant impact on our services. The proposal is exciting and will add a new and diverse population to our existing student population.

I wish you every success with this new initiative.

Sincerely,

Mary-Beth A. Cooper, Ph.D.
Vice President for Student Affairs

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October 20, 2006

James Leone, Ph.D.
Professor and Chair
Department of Information Technology
B. Thomas Golisano College of Computing and Information Sciences
102 Lomb Memorial Drive
Rochester, NY 14623-5608
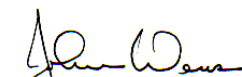
Dear Jim:

I am pleased to have the opportunity to contribute a letter of support for your proposed Bachelors of Science program proposal in Game Design & Development. As a nationally recognized leader in the field of computing and information sciences, the B. Thomas Golisano College of Computing and Information Sciences has established a well earned reputation for offering cutting-edge programs. As structured, a proposed Game Design & Development program would seem to complement the college's existing portfolio of academic programs while potentially attracting a unique set of talented and diverse students to our campus community.

The Division of Student Affairs appreciates the opportunity presented to review this proposal. The anticipation of approximately thirty new students per year would not appear to have any negative impact on existing division programs or services beyond the potential need to add an additional First Year Enrichment course section. In fact, with so many RIT students interested in technology and gaming, this proposal presents an exciting new academic opportunity and the potential to contribute significantly to student life and activities beyond the classroom.

Best wishes to you and your department as you embark on this new initiative.

Sincerely,

John S. Weas
Assistant to the Vice President for Student Affairs and
Interim Director of the Counseling Center

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11. Educational Technology Center – Letter of Support

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October 12, 2006

Jim Leone, Ph.D.
Professor and Chair
Department of Information Technology
Rochester Institute of Technology
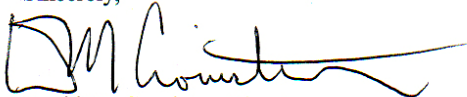
Re: Letter of Support – Campus Classrooms
        B.S. in Game Design & Development

Dear Dr. Leone:

After reviewing the package on the new Bachelors of Science in Game Design & Development degree, it appears there will be no significant impact on The Educational Technology Center (ETC) or its resources. The existing classrooms, labs and teaching spaces appear adequate to meet your program teaching and learning needs. Current ETC staffing, equipment installation/maintenance and budget appear at proper levels to support this effort.

If there are further questions regarding campus classroom technology capability or availability, please do not 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

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12. NTID Support and Interpreting Services – Letter of Support

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Rochester Institute of Technology

National Technical Institute for the Deaf
Office of the Vice President and Dean
Lyndon Baines Johnson Building
52 Lomb Memorial Drive
Rochester, New York 14623-5604
585-475-6317 (V/TTY) Fax: 585-475-5978

October 18, 2006

James Leone, Ph.D.
Professor and Chair
Department of Information Technology
GCCIS-2109

Dear Jim:

We are delighted to have had the opportunity to review your plans for a new bachelor's degree program in Game Design and Development. We have reviewed your proposal with our Information and Computing Studies faculty and have received nothing but very positive feedback.
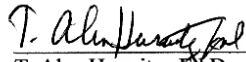
Our experience tells us that today's students are keenly interested in computer games. For many, this interest goes beyond the role of a mere consumer and extends to actually wanting to create the games themselves. Several deaf and hard-of-hearing students who have majored in Information Technology and Computer Science have asked for a major in game development. The same is true for students who have gone through NTID's Associate in Science degree in Applied Computer Technology and transferred to your Information Technology program. In fact, currently, we are talking with Hank Ettlinger about establishing an AS degree at NTID which will articulate with the Computer Science program. Assuming the successful establishment of your new BS degree, we would be very interested in discussing a similar arrangement with you. We definitely believe that your new program will hold interest for prospective deaf and hard-of-hearing RIT students who may want to enter your program directly or who would chose a two-year transfer degree that leads to a game design and development degree.

With this in mind, and given the incredible interest in the mainstream for game development, we share in the excitement that your new degree offers and look forward to working with you to provide the needed support for deaf students in the program. Our faculty who work with deaf and hard-of-hearing GCCIS students have the necessary backgrounds to provide the level of tutoring and secondary advising for this major. In addition, our faculty will work in collaboration with NTID's Department of Access Services to help assure that appropriate communication access support is available.

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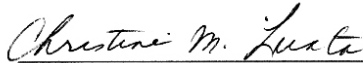
Congratulations on this proposed new offering, Jim. As you well know, we enjoy very good relationships with the faculty within your department. Together with Elissa Olsen, you have our strong support and on-going commitment to work with you when this program comes on-line.

Sincerely,

T. Alan Hurwitz., Ed.D.
Vice President for RIT and Dean of NTID

Christine M. Licata. Ed.D.
Associate Vice President for Academic Affairs

/ssl
c: Ms. Elissa Olsen, Chairperson, Information and Computing Studies Department, NTID

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13. Library Impact Statement

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Date: September 12, 2006

To: Jim Leone, Professor and Chair, Department of Information Technology

From: Sheila Smokey
Head of Acquisitions & Serials
RIT-Wallace Library

Subject: New Program Library Impact Statement
For Bachelors of Science in Game Design and Development

Please find attached a Library Impact Statement regarding the New Program for the Bachelors of Science in Game Design and Development. This information is provided so that it may be included as part of your submission process.

Much thought and research was put into analyzing what resources the Library will require to be able to adequately support the students who will enroll in this new program. These are cost which fall outside our current level of funding.

When this program has been approved, please notify me, or the library liaison for your college, Roman Koshykar. The Library will contact Finance & Administration to request the transfer of funds to the Library.

Please note that we have provided a breakdown of the staffing costs associated with the processing of the new program purchases. These costs have been recently reevaluated to reflect the current market

We appreciate the opportunity to positively contribute to the success of the Bachelors in Game Design and Development.

Sincerely,

Sheila Smokey
Head of Acquisitions & Serials
RIT-Wallace Library
scswml@rit.edu   x57283

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LIBRARY IMPACT STATEMENT
Bachelor of Science in Game Design and Development
September 2006

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. In 2005, a library impact statement for the Master of Science in Game Design and Development was submitted – this program has recently been approved. 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 Bachelors 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). 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 LOC	Pct. held by RIT
Computer games (and all subheadings)	370	1070	35%
Computer games – Programming (and subheadings)	219	295	74%
Computer games – Design (and subheadings)	83	64	130%
Computer graphics	1025	3063	33%
Artificial intelligence	392	1432	27%
Computer animation	339	645	53%
Human-computer interaction	183	419	44%
Neural networks (Computer science)	194	642	30%
Machine learning	63	192	33%
Genetic algorithms	29	90	32%

*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 or inclusion of

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multiple records for the same book in print and electronic format may explain the higher number of subject headings for "Computer games – Design" in RIT's catalog than in the LOC catalog.

Clearly, the RIT Library has been collecting books in these subject areas, and has built up a solid collection. RIT owns approximately 37% 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 12 other colleges in New York through Connect NY – Rensselaer Polytechnic Institute, Colgate University, St. Lawrence University, Vassar College, Union College, Siena College, Bard College, U.S. Military Academy, Canisius College, Cazenovia College, Le Moyne College, and Pace University (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 26 books with the phrase "game programming" in the title, 6 books with the phrase "game design" 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 33 books with the phrase "game programming" in the title, 9 books with the phrase "game design" 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. Additional volumes of both will be purchased with funds requested in the library impact statement for the MS in Game Design and Development program.

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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.

Requests for new material

- **Books**

As noted above, RIT Libraries own approximately 37% 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. Additional funds for purchasing new computer game design and programming books were requested in the 2005 library impact statement for the MS in Game Design and Development program. Funding from that approved program will allow the library to adequately meet the need for new books in support of this new program.

- **Periodicals**

In January 2006, a new periodical, *Games and Culture*, commenced publication (http://gac.sagepub.com). *Games and Culture* is a peer-reviewed quarterly published by Sage

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Publications. It will be of interest to students enrolled in both the proposed BS and approved MS programs in game design and development, as well as to faculty teaching courses in these programs.

The Libraries should subscribe to Games and Culture. For 2006, the price of an electronic only institutional subscription is $365. Using an in-house estimate of 10% inflation for science and technology journals, the Libraries require the following funds to subscribe to this publication, borne out over the first five years of the program and adjusted for inflation for 2007 (the anticipated first year of subscription):

Games and Culture

2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
$402	$442	$486	$535	$589

Cost estimates have been rounded up to the nearest dollar.

As game design and development is a rapidly growing field, there is a very strong possibility that new periodicals of interest will commence publication during the first five years of the new program. A new periodical in game design/animation design would be expected to cost $50 (estimate provided by Kari Horowicz, Library Liaison to CIAS). We can anticipate subscribing to one new periodical in 2008 and one new periodical in 2009. In order to fill this anticipated need, the library would require the following funds:

Anticipated new periodicals

2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
-	$50	$105	$116	$128

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 30 new students per year. 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:

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
ILL requests	30	30	30	30	30
Cost	$900	$900	$900	$900	$900

Library staffing impact

Based on in-house estimates, 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:

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Staff time	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
New serials	$35	$35	$35	-	-
ILL requests	$360	$360	$360	$360	$360
Total staff costs	$395	$395	$395	$360	$360

Total additional library funding requested per year

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
New serial	$402	$492	$591	$651	$717
ILL borrowing	$900	$900	$900	$900	$900
Staff time	$395	$395	$395	$360	$360
Yearly total	$1697	$1787	$1886	$1911	$1977

Conclusion

The library impact statement for the recently approved MS in Game Design and Development program, prepared in 2005, already accounts for much of the new material needed to support the proposed BS in Game Design and Development program. This statement adds to that request, and includes a request for a journal that was not yet available in 2005, which will benefit both programs.

Prepared by Roman Koshykar
Librarian for Computer Science, Information Technology, Software Engineering
Library Liaison to GCCIS
rev. 9/13/2006

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14. Office of Enrollment Management and Career Services – Enrollment Projections

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Office of the Senior Vice President
Enrollment Management and
Career Services
Bausch & Lomb Center
60 Lomb Memorial Drive
Rochester, NY 14623-5604
585-475-6636 Fax 585-475-5020

Dr. James Leone
Professor and Chair, Information Technology
B. Thomas Golisano College of Computing and Information Sciences

September 18, 2006

Dear James,

I have reviewed your proposal for a new Bachelor of Science degree program in Game Design and Development, and am pleased to respond to your request for an enrollment projection for the proposed program.

The following assumptions guided our thinking in the development of the projections:

1. The program will attract new students from both freshman and transfer markets with the majority of new students entering in the fall.
2. Most of the students will come from the Middle Atlantic States – the traditional market base for the Golisano College.
3. These projections are based upon the following quality thresholds: Entering freshmen would have combined SAT scores at 1100 or higher, high school grades of B or higher, and high school class rank in the top one-half of the graduating class. Entering transfer students would generally present a cumulative GPA of 3.0 or higher.
4. Quantifiable market data on student interest in game design and development is not directly available. Neither the College Board nor the ACT, Inc. identifies this or similar, specific disciplines in their databases. However, anecdotal information coupled with information in the literature suggest a reasonable degree of market interest at the freshman and transfer level. Therefore, we recommend taking a conservative approach to projecting undergraduate enrollments for this program.
5. Competitive research done via phone calls and the Web indicate that WPI will enroll approximately 40 freshmen this fall (2006) and 25 at RPI, making our projection of 25 for fall 2008 a reasonable, yet conservative estimate.
6. The program will attract internal transfers from other RIT colleges, the RIT Exploration program, as well as other programs in the B. Thomas Golisano College of Computing and Information Sciences. It is also likely that the proposed program will also draw prospective students away from the other programs in Golisano. Therefore, for purposes of these projections, we are including projections only for students who are **new** to RIT.
7. The development of articulation agreements with appropriate two-year institutions will be critical to attracting and enrolling external transfer students.

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8. External transfer students may come from programs other than traditional computing curricula (e.g., liberal arts and sciences, technology). Flexibility in the application of transfer credits will be key to enrolling those students.

9. The timing of the approval process will impact our ability to market the program – especially to freshmen for Fall 2007. Some of the direct mail marketing to that population has already occurred. It is for this reason that 20 new freshmen are projected for fall 2007. If the new program is not approved by the NYS Department of Education prior to January 1, 2007, our options to enroll new freshmen will diminish quickly. Once the program has been approved and incorporated into a full marketing cycle, we project that 25 new freshmen would enroll each fall and that 15 new transfer students (7 second year and 8 third year) would enroll each September.
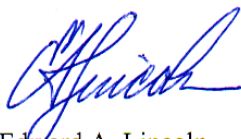
Assuming that the first class of new students enters in the Fall of 2007, and applying recent retention rates for the college's programs, it is projected that the proposed program would attract and retain the following numbers of **new students** over a five-year period:

Projected New Student FTE
BS Game Design and Development

Fall Quarter	Year 1	Year 2	Year 3	Year 4	FTE
2007	20	5	6	0	31
2008	25	25	12	4	66
2009	25	29	27	9	90
2010	25	29	31	20	104
2011	25	29	31	22	107

Based on this analysis, we support the proposed new program, and wish you luck in the program approval process. Please will keep us informed regarding the approval status as you proceed.

Sincerely,

Edward A. Lincoln
Assistant to the Vice President
Enrollment Management and Career Services

cc: Dr. James G. Miller, Senior Vice President
        Dr. Daniel Shelley, Assistant Vice President

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Appendix B: External Letters of Support

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1. Dr. Mary Flanagan – Hunter College / Tiltfactor Research Lab

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HUNTER

The City University of New York

Department of Film & Media Studies
School of Arts and Sciences
Phone: 646.642.6408
Fax: 212.772.5138

October 30, 2006

Institute Curriculum Committee
Rochester Institute of Technology
B. Thomas Golisano College of Computing & Information Science
102 Lomb Memorial Drive
Rochester New York 14623

Dear Members of the Curriculum Committee:

I am excited to have the opportunity to review the plans for the new RIT undergraduate degree program in Game Design and Development. I am a scholar in both the humanistic and scientific sides of computer game development, and teach courses in game design in New York City. I believe from my own experience teaching game design, and witness the rise of the field overall, new programs are considered necessary to handle the emergence of game-related educational opportunities.

Certainly the program proposed is not only a great compliment to existing faculty research areas, but will satisfy student demand in a burgeoning area of study. The plan presented is well thought through, and the research undertaken for the planning of the program is well documented, timely, and apt. The program planners have assessed need for the program and have thoughtfully formed an innovative yet realistic approach to a games curriculum at the undergraduate level.

The Game Design and Development degree program proposed for RIT offers an ideal balance of resonant educational experiences and team-based development environments, which students in this field require to succeed (in both industry positions, and in order to pursue future research opportunities). This program could likely become the leading program in the region with its solid curriculum plan.

Sincerely,

Yours,

Dr. Mary Flanagan
Associate Professor
Film and Media Studies Hunter College
Director, Tiltfactor Research Laboratory http://www.tiltfactor.org
mary@maryflanagan.com http://www.maryflanagan.com

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2. Jason Della Rocca – International Game Developers Association

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November 1, 2006

Professors Jacobs, Phelps and Egert
B. Thomas Golisano College of Computing and Information Sciences
102 Lomb Memorial Drive
Rochester, NY 14623

Gentlemen,

It's my pleasure to write a letter of support for your Undergraduate Program in Game Design and Development. The industry is growing at a phenomenal rate around the world and there's a need for talent that's had the benefit of a full undergraduate degree. Game Design and Development is an interdisciplinary field. Successful members of the industry draw on a wide range of skills and need to work with team members with a wide range of educational backgrounds and skill sets. The program you've designed provides your students a strong range of courses and an opportunity for interdisciplinary experience.

As the Executive Director of the International Game Developers Association, I work with game developers, large and small from all over the world; experienced professionals, free-lancers getting their first contract and high school and college students looking to break into the industry. This program will provide the industry with new graduates that have the strong base they need to be assets to the professional community and I look forward to hearing from the students and graduates of this program in the years to come.

Sincerely,

Jason Della Rocca

Executive Director
International Game Developers Association
jason@igda.org

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3. Richard Dansky – Red Storm Entertainment

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10/31/06

Institute Curriculum Committee
Rochester Institute of Technology
B. Thomas Golisano College of Computing and Information Science
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Members of the Committee:

One of the biggest challenges facing the video game industry is finding qualified personnel to help imagine, design and develop new games. As the field expands, so does the demand for individuals with a deep and wide knowledge base as what goes into making a game. I was pleased to write a letter of support previously for the Graduate Degree and extend that support now to the proposed undergraduate degree program as well.

Video game development is still a very young field. As developers and publishers, we're still learning what it takes to make games - what experience is appropriate, what skills are needed and how someone can prepare themselves to work in the field. In interviews with game developers, the same question always comes up - What did you study? The answers come back all over the map: literature, hard sciences, psychology, you name it. What you don't find, even with emerging undergraduate programs in game development, is someone saying "I learned how to make good games." And you definitely don't hear, " I learned how to make good games better."

That said, we're also learning from those first undergraduate game degree programs that a pure focus on technology (for the programmers) or art and animation (for the content creator) is appropriate either. The strongest candidates have a blend of education in their preferred specialty mixed with a good liberal arts background, some coursework in a games related skill set (art for programmers, programming for artists) and, most important, the opportunity for hands-on experience in teams for development.

In the videogame field, we learn by doing. Experience trumps all. If you want to learn, you do it on the job by tackling the real assignment, the next go-round, the next production cycle. An undergraduate program that emphasizes assignments that mimic this in the classroom, combined with a COOP education program that requires on-the-job experience as a graduation requirement, can really prepare students to enter this demanding, multi-disciplinary industry.

I look forward to seeing the work of graduates from this program.

Sincerely,

Richard Dansky
Manager of Design
Red Storm Entertainment

(A PHELPS NOTE: This letter provided in email, hard copy on letterhead is en route)

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4. **Beth A. Dillon - Game Career Guide / IGDA Games Education SIG Communications Director**

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Beth Aileen Dillon
GameCareerGuide.com Editor
editors@gamecareerguide.com

10/20/06

Institute Curriculum Committee
Rochester Institute of Technology
B. Thomas Golisano College of Computing and Information Science
102 Lomb Memorial Drive
Rochester, NY 14623

Dear Members of the Committee:

As Editor for Gamasutra's *Game Career Guide* (extended from the education section of game industry's leading online resource) and Communications Director of the IGDA Game Education SIG, I have a depth of insight into varied offerings in game education globally. Recently there has been not only extensive growth in the game industry, but in post-secondary education programs in game development as well.

However, many of the education programs that have emerged in the past few years have cannot deliver what they promise in terms of game education. Recently I was part of a panel on the "How to Break In" at the recent FuturePlay 2006 conference in London, Ontario where I commented on this academic shortfall. After the presentation, a group of 8 students approached me to discuss their own program and said that they were afraid that it did not have the sufficient depth, rigor, or faculty to deliver on the educational program advertised. All I could do was advise them to work within the program they were in or look elsewhere.
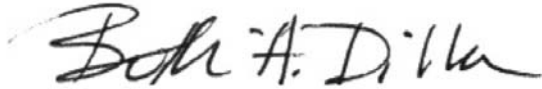
So although there are numerous programs out there, strong programs whose faculty are respected and whose students are successful in the industry are still limited in number. RIT's graduate courses have delivered a strong educational program that has put the college on the short list of industry resource professionals from companies such as Electronic Arts, Sony, and Microsoft. The program delivers a blend of educational experience and hands-on experience in teams for development. I feel confident that their proposed undergraduate degree will continue in the footsteps of their graduate program and offer students a rich educational experience that will allow their undergraduate

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degree students the same record of success in the workplace and respect in the field that their graduate students have already established.

Sincerely,

Beth A. Dillon
Editor, CMP's Game Career Guide
Communications Director, IGDA Game Education SIG

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

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

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Jessica D. Bayliss

Rochester Institute of Technology
Computer Science Dept.
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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

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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.

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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)

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

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Curriculum Vitae

NAME: **Kevin Bierre**

CURRENT ACADEMIC RANK: **Assistant Professor**

TENURE STATUS: **Tenured**

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

Dates	Ranks of Advancement
2/12/2001	Original Appointment
9/1/2006	Tenured

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

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

Faculty Institute on Teaching and Learning- RIT May 2006
Member of the Faculty Learning Community 2005-2006
SIGCSE 06 – Houston, Texas – Mar 2006
Lilly Conference – Miami, Ohio – Nov 2005
Frontiers in Education – Oct 2005
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

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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

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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:
Scholarship Committee, Academic Affairs Committee (GCCIS), Long Range Planning Committee (University), Eisenhart Award Committee (University)

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

Phelps, A., Egert, C., and Bierre, K., *"Games First Pedagogy: Using Games and Virtual Worlds to Enhance Programming Education"*, Journal of Game Development, Vol 1, Issue 4, Charles River Media, 2006

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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*, OOPSLA 2006, Portland, Oregon, October 2006 (Accepted)

Other scholarly activity: grants, sabbaticals, software development, etc.:
Vice chair of the Game Accessibility SIG of the IGDA.

Presented on Game Accessibility (covered academic research and learning disabilities) at the 2006 Game Developers Conference.

Presented a panel on "Games and Accessibility" at the ACM Sandbox Symposium on Video Games in Boston, Massachusetts, July 2006

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.

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	Fundamentals of Database Client/Server Connectivity
	4002-784-01	(colisted)

Kevin Bierre   Page 4 of 5

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20042	4002-571-01	Application Programming (team taught with K Whittington)
20043	4002-219-01 4002-219-02	Programming for Information Technology III
20043	4002-572-1	Distributed Application Programming
20044	4002-219-01	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)
20052	4002-416-01	Access and Accessibility (team taught with Catherine Beaton)
20052	4002-484-01 4002-784-01	Fundamentals of Database Client/Server Connectivity (colisted)
20053	4002-219-01 4002-219-02	Programming for Information Technology III
20053	4002-360-01	Introduction to Database and Data Modeling
20054	4002-219-01	Programming for Information Technology III

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 have developed a course on software and computer accessibility that was initially taught in the Winter quarter of 2005. I am also leading the development of a bridge course in C++ for programmers.

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: _____ %

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

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John Alexander (Al) Biles

Professor and Undergraduate Program Coordinator
Department of Information Technology
Rochester Institute of Technology
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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.

August 25, 2006

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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.

August 25, 2006

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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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John Alexander (Al) Biles

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.

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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.

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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.

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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.

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4. Daniel Bogaard, M.S. – Information Technology, GCCIS

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Rochester, New York 14620
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dsb@it.rit.edu

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Professional Experience

Assistant Professor
Rochester Institute of Technology, Rochester, New York
Fall 2002 – Present

> Develop curriculum.
>
> Teach graduate and undergraduate courses involving imaging, mixed media, sound, animation, production and design. Discuss qualitative and technical considerations in digital and analog media. Emphasize user-centered design with an awareness of human factors and methods for assessment. Was primary in course development of Client Side Scripting course, proposed to run winter, 2002.
>
> Courses: GCCIS- 230, 320, 330, 409, 536, 539, 546, 590, 737, 739, 741.
>
> Committees: Undergraduate Curriculum, On-line Presence (Chair – 2003-2004), GCCIS Student Scholars, Institute Academic Support, Web Accessibility Committee, Interactive Media

Visiting Professor
Rochester Institute of Technology, Rochester, New York
Fall 2001 – Present

> Develop curriculum.
>
> Teach graduate and undergraduate courses involving imaging, mixed media, sound, animation, production and design. Discuss qualitative and technical considerations in digital and analog media. Emphasize user-centered design with an awareness of human factors and methods for assessment.
>
> Courses: GCCIS-320, 330, 409, 737, 741
>
> Committees: Multimedia Interest Group

Instructor, Interactive Digital Media
Rochester Institute of Technology, Rochester, New York
Spring 2001

> Developed curriculum.
>
> Taught an undergraduate course involving imaging, mixed media, sound, animation, production and design. Discussed qualitative and technical considerations in digital and analog media. Emphasized user centered design with an awareness of human factors and methods for assessment.

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Graduate Teaching Assistant
Rochester Institute of Technology, Rochester, New York
Fall 2000 to Spring 2001

>Taught undergraduate lab sections in Interactive Digital Media and Introduction to Multimedia. Tutored in Multimedia Laboratory for all facets of media types.

General Consulting
1997 – present

>Produce multimedia, computer hardware and software system support, digital imaging support, and web development.

>>IT Department, RIT -
>>>Updated and re-wrote the SD&M website. http://it.rit.edu/sdmMS.php. 2005

>>CorrectDeck
>>>Created an online deck/color choosing system in Flash: http://www.correctdeck.com/. 2005

>>IT Department, RIT -
>>>Created the new IT Orientation website for incoming freshman along with Dr. Ronald Vullo. http://it.rit.edu/~itorientation/ 2005

>>Surreal Dimensions
>>>Online Real-Estate web commerce. Responsible for client side implementations, digital image and QTVR work. 2003-2005

>>Turn Tennis & Swim Club
>>>Created a web presence. 2003-2004

>>Fusion Productions
>>>General Consulting – Primarily teaching their staff Flash & ActionScript. 2003

>>Thomas R. Paddock Oriental Rug Exchange
>>>Company interested in cataloging entire inventory of oriental rugs (~5000). Responsible for choosing and implementing a digital imaging system along with streamlining production within PhotoShop. 2000-2002

>>NeoSci
>>>Multimedia development for an interactive chemistry CD-ROM, 2001

>>Don Cochran Photography
>>>Update and renovate web presence. 2000

Instructor, 'Web Animations', Kids on Campus Program
Rochester Institute of Technology
Summer 2002

> Taught children age's 9-15 to create vector animation, multimedia, interactive web page creation and internet use.

> Software used: Flash, Netscape, Internet Explorer, and Director.

Instructor, 'Web Masters', Kids on Campus Program
Rochester Institute of Technology
Summer 2000, 2001

> Taught children age's 9-15 digital image making, multimedia, web page creation and internet use.

> Software used: Netscape, Internet Explorer, Dreamweaver, Flash, PhotoShop, and Director.

PC System Administrator, Digital Imaging
School of Photographic Arts and Sciences
Rochester Institute of Technology, Rochester, New York
6/97 – 8/00

> Responsible for six computer labs, all of which were set up primarily for digital imaging. Responsibilities included keeping abreast of current trends in technology (hardware and software), student and faculty instruction, and daily maintenance of the labs. Labs were populated with over 100 Apple Macintosh computers, 10 PC Clones (some as workstations and one as a Raster Image Processor), 5 Digital Studios, an assortment of digital output devices, and variety of digital scanners (from 35mm to a drum scanner).

Digital Equipment Coordinator
Eastman Kodak Company, Kodak Professional Division, Rochester, New York
9/96 – 6/97

> Responsible for a pool of Kodak's Professional Digital Imaging equipment. I provided equipment, instruction, and support with prospective clients for trial periods while they considered purchases. Also responsible for supplying and attending trade shows and preventative maintenance. Equipment under my care included: Kodak DCS 410, 420, 460, & 465, Kodak Digital Color Wheel, Kodak EOS 1, 3, & 5, and the Kodak DCS 8650 Thermal Dye-Sub Printer.

Facilities Manager
School of Photographic Arts and Sciences
Rochester Institute of Technology, Rochester, New York 6/94 - 9/96

> Responsibilities included care and maintenance of analog and digital photographic equipment. Entirely responsible for daily operation of student equipment checkout facility.

Assistant, Photographic Services
The International Museum of Photography and Film at George Eastman House, Rochester, New York 6/93-6/94

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Responsibilities included studio photography, darkroom work, copy-work, densitometry, and on-site imaging.

Instructor, Platinum / Palladium Workshop
Certificate Program
The International Museum of Photography and Film at George Eastman House, Rochester, New York Summer 1994

Developed curriculum.

Taught how to make photographic prints with this antiquated printing process. Topics included historical aspects, the chemistry of this process and specifically of this catalyst, densitometry, coating the sub-straight, and exposure control.

Instructor, Large Format Photography
The Community Darkroom, Rochester, New York
Fall 1993, & Summer 1994

Developed curriculum.

Subjects covered included use of a large format camera, exposure and density control and measurement, and The Zone System.

Assistant Associate Photography Instructor
Large Format Photography
Indiana University, Bloomington, Indiana
Spring 1992

Responsibilities included curriculum development and preparation of lecture material in conjunction with lead instructor.

Educational Background

Master of Science Degree, Information Technology
Department of Information Technology
Rochester Institute of Technology, Rochester, New York, August 2001

Advanced Graduate Certificate in Interactive Multimedia Development
Department of Information Technology
Rochester Institute of Technology, Rochester, New York, May 2001

Bachelor of Fine Arts in Photography (with Honors)
Minor in Art History
Minor in Mathematics
School of Fine Arts
Indiana University, Bloomington, Indiana, May 1992

Purdue University
School of Engineering
West Lafayette, Indiana, 1987-1988
Completed 32 credit hours

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Publications & Presentations

Bogaard, Daniel S., Beaton, Catherine I., "IMA as a Tool for Accommodated Learning," IASTED International Conference on Education and Technology, ICET 2006, Calgary, Canada. In Press, (July 18th, 2006)

Beaton, Catherine., Bogaard, Daniel S., Evolution of IMA as a Tool for Accommodated Learning," 12th International Conference on Distributed Multimedia Systems, DMS 2006, Grand Canyon USA, In Press (August 31, 2006)

Bogaard, Daniel S., Beaton, Catherine, Invited Presentation, IMA as a Tool for Accommodated Learning, Atlantic Centre for Students with Disabilities, St. Mary's University, Halifax, Canada. (May 25th, 2006)

Zilora, Steve, Bogaard, Daniel S., "Dynamic-Vector Collaborative Learning Tool", E-Learn 2005 Conference, Vancouver, BC Canada, October 24-28, 2005.

Vullo, Ronald P., Ph.D., Bogaard, Daniel S., Hartpence, Bruce H.; "Visualization Tool Development for Research, Learning, and Implementation", Upstate NY IEEE Workshop on Communications and Networking, 2004.

Bogaard, Daniel S., Ronald P. Vullo, Ph.D., Christopher D. Cascioli; "SVG for Educational Simulations", SIGITE Conference, Salt Lake City, Utah, October 28-30, 2004; Published by ACM Press.

Vullo, Ronald P., Ph.D., Bogaard, Daniel S.; "Visualization with Dynamically Generated SVG", SIGITE Conference, Salt Lake City, Utah, October 28-30, 2004.

Bogaard, Daniel S., Ronald P. Vullo, Ph.D., Christopher D. Cascioli; "Better than HTML Web: Dynamically Generated SVG Web sites", WWW@10 Conference, Rose-Hulman Institute of Technology, Terre Haute, Indiana, 2004.

Vullo, Ronald P., Ph.D., Bogaard, Daniel S.; "Better than HTML Web: XML for Programming-Free Dynamically Generated Web sites", WWW@10 Conference, Rose-Hulman Institute of Technology, Terre Haute, Indiana, 2004.

Vullo, Ronald P. Ph.D., Catherine I. (Irving) Beaton, M.I.T.E., Michael W. Axelrod, M.F.A., Daniel S. Bogaard, M.S.I.T., Sean Boyle, M.S.I.T. "Perceptions and Reality: How Students Hear the Web" Paper presented at the Pacific Rim Conference on Disabilities, Honolulu, HI, March 29-30, 2004.

Bogaard, Daniel, "Add Dynamism to your Graphics with SVG", Inside Illustrator, Volume 8, Number 2, February 2004, Element K Journals

"Daguerreotypes: Contemporary Practices," The Dageurrean Society. Presented contemporary ways of producing a Daguerrotype, emphasizing the use of Bequerrel Development. International Museum of Photography at George Eastman House, 1993

"The Art of Photography, 1991 National Society of Arts and Letters Juried Competition," Catalog, Virginia Museum of Fine Arts, Richmond Virginia

"Magic Silver Show XIV," Catalog, Murray State University, Murray, Kentucky

"Quarry," Indiana University's Annual Literary Magazine, Indiana University, Bloomington, Indiana

Juried Photographic Exhibitions

"Daguerreotypes: Now and Then," Corridor Gallery, International Museum of Photography at George Eastman House, Jurors: Grant Romer, Jeanne Verhulst and Barbara Purro Galasso, 1993

"Magic Silver XIV," Eagle Gallery, Murray State University, Murray, Kentucky, and Morris Belknap and Dario Covi Galleries, University of Louisville, Louisville, Kentucky. Juror: Evon Streetman, 1992

"The National Society of Arts and Letters Regional Art Exhibition," Fine Arts Gallery, Indiana University, Bloomington, Indiana, 1992

"Indiana Statewide Student Juried Art Exhibition," Fine Arts Gallery, Indiana University, Bloomington, Indiana. Jurors: Holiday Day and Jack Sawyer, 1992

"The National Society of Arts and Letters National Photographic Juried Competition," Virginia Museum of Fine Arts, Richmond, Virginia. Jurors: Joseph Karsh, Marie Consindas, and William Stepp, 1991-1992
This exhibition was also shown in the following places:
     Raushi Gallery, Far Hills, New Jersey
     The Cantrell Gallery, Little Rock, Arkansas
     The Kessler Library, The Michigan League Building, Ann Arbor, Michigan
     The Main Library, San Antonio, Texas
     Reception Room, Meadowood Retirement Community Bloomington, Indiana
     Chamizal National Memorial Gallery, El Paso, Texas
     Photo Forum, Pittsburgh, Pennsylvania
     Birmingham-Southern College Library, Birmingham, Alabama
     Kerr Cultural Center, Scottsdale, Arizona
     Cele Peterson's Gallery, Tucson, Arizona
"The National Society of Arts and Letters Regional Art Exhibition," Fine Arts Gallery, Indiana University, Bloomington, Indiana, 1991

Selected Honors and Awards

Nominated for Eisenhart Outstanding Teaching Award, Rochester Institute of Technology, December, 2005

Nominated for Eisenhart Outstanding Teaching Award, Rochester Institute of Technology, December, 2003

Nominated for Eisenhart Outstanding Teaching Award, Rochester Institute of Technology, December, 2002

Multimedia Graduate Assistant Full Scholarship, Rochester Institute of Technology, Rochester, New York, 2000

Teaching Internship Grant, Indiana University, Bloomington, Indiana, 1992

First Place, "The National Society of Arts and Letters Regional Art Exhibit," Fine Arts Gallery, Indiana University, Bloomington, Indiana, 1992

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Sixth Place, "The National Society of Arts and Letters National Photographic Juried Competition," Virginia Museum of Fine Art, Richmond Virginia, 1991

Non-Teaching Internship Grant, Indiana University, Bloomington, Indiana, 1991

First Place, "The National Society of Arts and Letters Regional Art Exhibit," Fine Arts Gallery, Indiana University, Bloomington, Indiana, 1991

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

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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).

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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

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Warren R. Carithers

Curriculum Vitae

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

Home:
22 Lattimore Rd
Rochester, NY 14620-4106
(585) 442-5139

Interests:

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

Education:

Master of Science in Computer Science, University of Kansas, October 1981

Bachelor of Science in Computer Science, University of Kansas, May 1978

Teaching Experience and Professional Positions:

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

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

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

Activities and Honors:

Member, Upsilon Pi Epsilon Computer Science Honor Society

Member, Phi Kappa Phi National Honor Society

Member, ACM, ACM/SIGGRAPH, and ACM/SIGCSE

Recipient of Paul F. Heubner Teaching Award, University of Kansas

Recipient of the Eisenhart Award for Outstanding Teaching, RIT

Grants:

Co-PI, NSF-ILI grant: *A Workstation-Based Lab for Computer Graphics*, 1987

PI, NSF DUE grant #9451123: *Labs for an Object-Oriented Introductory CS Curriculum*, 1994

Sun Microsystems: color laser printers to support faculty and student work; 1994

RIT Provost's Productivity Grant: curriculum revision; 1995

FIPSE "Ethics Across the Curriculum" grant participant; 1999

SIGGRAPH Educator's Grant; 2001

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Publications, Presentations, Press and Public Appearances:

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

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

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

Review, *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

Invited panel member, *Need to Know*, WXXI Television; topic: Internet privacy issues; 2001

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

Curriculum Development:

First Two Year curriculum redesign (with Ken Reek, Margaret Reek, and James Heliotis); 1993-1996; completely redesigned the first two years of the RIT CS curriculum (seven courses)

Developed the first security-oriented course in the RIT CS curriculum, *Privacy and Security*; first offered as a seminar in 1994, now a regular offering of the CS department

Hardware sequence redesign (with Margaret Reek and Phil White); 2002-2003; merged two existing hardware courses into a single, comprehensive course

Developing (with Rajendra Raj) a new introductory security course, *Secure Software Systems*; to be offered for the first time in the Fall of 2006

Course Support:

Developed a PDP-11 instruction-level simulator in for use in the department's Assembly Language Programming course; 1982

Developed a VAX-11 instruction-level simulator and a VAX Assembly Language assembler in for use in the department's Assembly Language Programming course; 1987

Created a Security Lab for use in the department's security-related courses and by MS students doing work in the area of computer security; originally consisting of four donated Sun 2 workstations temporarily installed in two converted faculty offices in 1994, the lab is now in a dedicated room, and contains four SunBlade 150 systems and four AMD-based x86 computers

Maintained and extended a C++ class library of architecture components (originally developed by James Heliotis) for use in writing CPU simulators in the department's Computer Architecture course; 1998-2003

Configured and installed 10 dual-processor Pentium III systems for use in the department's Distributed Systems Lab; 2000

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

Configured and installed 10 Pentium 4 systems for use in the department's Distributed Systems Lab; 2005

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Courses Taught at RIT:

Lower-division: 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.

Upper-division and graduate: Data Organization and Management; Systems Programming I and II; Programming Language Concepts; Logical Design; Computer Architecture; Operating Systems I and II; Computer Graphics I and II; Language Processors; Seminar: Computers and Music; Seminar: Computers and Cryptography.

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7. Aharon Charnov, M.F.A.. – School of Film and Animation, CIAS

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AHARON CHARNOV

ANIMATION   STILLS   STORY BOARDS   ART
WEB DESIGN   RESUME   INFORMATION   CONTACT

Resume

Aharon Charnov
1392 Monroe Ave. Apt. 2
Rochester, NY 14618
(716) 256-2448
acc9340@rit.edu

Skills

Computer, Animation
Digital Editing

- Alias Maya
- Adobe After Effects
- Adobe Premiere
- Final Cut Pro

Computer, Internet
& Web Design

- HTML
- CSS
- Java
- Dreamweaver
- Adobe Image Ready
- Fireworks

Computer, Design
and Layout

- Adobe Photoshop 5.5
- Adobe Illustrator 7.0
- Adobe Indesign
- Adobe PageMaker 6.5
- Quark Express

Video, Editing

- Deck to Deck editing
- Digital to analogue conversion

Experience

Graduate Assistant   Rochester Institute of   Fall 2001-
                           Technology   Present

- Video editing
- Grant writing
- Create, design and produce technical manuals for students

Web Consultant   United Synagogue of   Fall 2001-
                       Conservative Judaism   Present

- Design and maintain web pages
- Create graphics and logos for existing web pages
- Produce multimedia content

Web Designer   Salem Global Internet   Summer
                                               2001

- Designed and maintained web pages for client web sites
- Wrote copy for company web sites
- Research for web-based content

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Web Designer/
Publications Coordinator   United Synagogue Youth   1999-2001

- Designed and edited quarterly magazines
- Managed direct mail and marketing program
- Maintained organizational web site
- Designed web pages
- Wrote on-line forms/ basic CGI scripting
- Designed covers for department educational textbooks and promotional materials
- Coordinated with nationwide branches in promotional endeavors
- Provided computer trouble shooting, basic tech support

Education   Rochester Institute of Technology, Rochester, NY
Candidate for MFA in Computer Animation

University of Pennsylvania, Philadelphia, PA
BA in Psychology

Honors &
Awards
- Winner, "In the Kitchen" juried competition at GalleryR, Rochester, NY
- Magna Cum Laude
- Dean's List
- Departmental Honors
- Eagle Scout

Languages   Hebrew (read, write and speak)

Hobbies   Theatre: Set Design, Lighting Design, Technical Direction

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8. Nancy Doubleday, M.S. – Information Technology, GCCIS

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Nancy Doubleday
537 Benton Street • Rochester, NY • 14620
Office Phone: (585) 475-7324
Home Phone: (585) 244-1656
Email: nrd@it.rit.edu
Web: http://www.it.rit.edu/~nrd

Education

M.S., Information Technology
   Rochester Institute of Technology, Rochester, NY   August 1998
B.S., Information Technology
   Rochester Institute of Technology, Rochester, NY   with highest honors, 1996

Teaching

Rochester Institute of Technology, Rochester, NY

Associate Professor	2006 to present
Assistant Professor	2002 to 2006
Instructor	1999 to 2002
Visiting Professor	1998 to 1999
Adjunct Professor	1996 to 1998
Graduate Assistant/Tutor	1996 to 1997

Curriculum Development

Developed/co-developed new courses:
* Multiuser Media Spaces (4002-438/4004-738)
* Interactive Media Implementation (4004-730)
* Interactive Digital Media (4002-330)
* Intro to Programming for New Media (4002-230)
* Programming II for New Media (4002-231)

Redesigned and updated:
* Programming for Digital Media (4002-434)
* Intro to Multimedia: the Internet and the Web (4002-320)
* Interactive Courseware (4002-512/723)
* Fundamentals of Interactive Multimedia (4004-741)

Work closely with other faculty in the area of Interactive Media to reassess and redesign curriculum, develop new courses, options, and degrees, and assess facility requirements.

Advisor

Serve as advisor to 40 undergraduates. Supervise graduate and undergraduate independent studies. Was/am chair of the following master's students' committees:
* Kotaro Ai. Smart Home. Investigations on the development of a "smart home" environment that includes a front-end interface for a smart refrigerator, a networked refrigerator, and a back-end database to store grocery data. Project completed August 2003.
* Jonathan Atleson. A Framework for Interactive Computer-based Instruction.
* Jennifer Bertrand. An Interactive Lesson in Music Featuring 'Mozart' the Mouse. Instructional technology applied to the domain of music.
* Patcharin Buranabanyat. An interactive CD on the Thai language and culture. Project completed August 2001
* Waraporn Buranabanyath. Technology Integration for Reuse in Multimedia: XML and Director as the basis for a Children's Storytelling Application. Completed 2003.
* Paul Chansingthong. In Informative Web Site for the Suburban Silk Company.

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- Anthony Giardina. Angie: The Interactive Story of a Holocaust Survivor. An updateable and extensible media player. Completed April 2003.
- Laura Giacchino. Teacher's Assistant. An online database-backed student information system and interactive learning tool. Project completed Dec. 2003.
- Rebecca Haak. Using Multimedia to Assist Children in the Memorization of a Series of Facts. An interactive adventure game to help children learn the names and contents of books of the Bible. Completed June 2000.
- Yuan-Fen Ko. Chinese Art in the National Palace Museum. Completed October 2001.
- Jorge Perez. The Music Experience: The Interactive Way to Create Music. Instructional CD-ROM on music concepts. Completed June 2001.
- Voraphot Vacheravothan. Project Proposal: Jungle on the Way: CD-ROM Game for Children to Practice Learning Skills. Completed September 2001.
- Shaun DeMartinis. Multi-user Configuration Build Tool.

Institute Service

College and Department Committee Work
Department Committees
- Chair of Undergraduate Curriculum Committee
- Online Presence Committee
- Search Committee
GCCIS Committees
- Faculty Governance
- Student Scholar Committee

Other
- Chair of New Media subcommittee. Serve as liaison to other New Media departments/colleges. Meet regularly with New Media faculty in all three disciplines to refine the New Media curriculum.
- Faculty Advisor to the Signatures student literature and arts project.

Research Projects

SHared Extensible Learning Spaces (SHELS)

One of the projects in CASCI, 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.

Current projects use smart actors in 3-D spaces to explore emergent behavior in social organisms in order to discover and document general principles. The obvious end products are interactive simulations that are accessible to new learners, but the strategies and tools learned or developed in the process are added to our toolkit and knowledgebase, and so also are of great value to the group's ongoing development efforts.

NatCat: Natural Category Acquisition

NatCat—a virtual world in which to study natural category acquisition—is a collaboration with cognitive scientist Dr. Kenneth Kurtz of SUNY Binghamton, who is engaged in research on human

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category acquisition. He considers traditional pencil and paper experimentation techniques to be flawed because the activity is too far removed from the activities involved in natural category formation. He believes that better results can be obtained by utilizing a computer-based immersive environment in which subjects can examine and interact with objects. The NatCat project team is developing a system to enable this research. Our system is in the final stages of development, and does the following:

Provides an engaging environment for human subjects to perform category acquisition tasks. They can interact with objects in the environment and categorize them based on their appearance, behavior, and other criteria. Objects in the environment may be similar to objects in the natural world but are sufficiently different that the human subject does not have a ready category for the object.
Facilitates the collection of data as subjects interact with the environment.
Allows researchers to set parameters and otherwise program the virtual worlds required for their study.

Publications
- "Shared Extensible Learning Spaces." Doubleday, N. and Kurtz, S. Proceedings of SIGITE (ACM Special Interest Group on Information Technology Education), Salt Lake City, Utah, October 2004. Awarded Best Paper at conference.

- "Virtual Worlds, Cognitive Maps." Kurtz, S. and Doubleday, N. (2004) Proceedings of Educators Program from the 31st annual SIGGRAPH conference on Computer graphics and interactive techniques. Los Angeles, CA, August 2004.

- "Using a Multimedia Environment to Introduce Programming to Students of New Media." Nancy R. Doubleday, Steve H. Kurtz, Gordon I. Goodman. Proceedings of the 2002 Conference for Information Technology Curriculum, SITE (Society for Information Technology Education), Rochester New York, 2002.

Presentations and Exhibits
- "Shared Extensible Learning Spaces." SIGITE (ACM Special Interest Group on Information Technology Education), Salt Lake City, Utah, October 2004.

- "Virtual Worlds, Cognitive Maps." Educators program from the 31st annual SIGGRAPH conference on Computer graphics and interactive techniques. Los Angeles, CA, August 2004.

- "Simulation of Self-Organizing Systems," invited lecture for the College of Science showcasing work on interactive agent-based simulations to understand emergent phenomena. February 1, 2005.

- "Simulation of Emergent Phenomena and Complex Adaptive Systems." Invited Lecture to Bioinformatics class, 2004.

- "Distributed Design," invited lecture on the development of interactive simulations to understand agent-based modeling and emergent phenomena. RIT Visualization Seminar, November 2003, January 2004.

- "Word/Sound Collage", invited interactive work for museum exhibit RE/ORDER. Shown at Houghton House Gallery, Hobart and William Smith Colleges, Geneva, NY; February-March 2003, and Mercer Gallery, Monroe Community College, Rochester, NY; April-May 2003

- Three-day seminar in Interactive Media Implementation, Kyoto, Japan, February 2003.

- "Using a Multimedia Environment to Introduce Programming to Students of New Media." Third Annual Conference for Information Technology Curriculum, SITE, Rochester, NY, September 2002.

- "Active learning in studio vs. distance setting." Faculty presentation as part of a panel on e-learning for the Electronic Learning Center, RIT. 5/4/2000

- Full day RIT Faculty Institute on Technology (FIT) workshop on using Authorware for the development of interactive courseware. May 1998.

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- Brick City Festival. "Animated You." Children's workshop. October 1999 and 2000.

- Kids on Campus summer computer camp. Two-week workshops on making computer-based games, digital video capture and editing, developing a web site, computer animation. Summer 1997, 1998, 1999.

- ACM '97 50th Anniversary Conference and Exhibition. Booth with presentation of the Interactive Capability Maturity Model, Level 2 CD-ROM.

Conferences and Training

- Game Developers Conference, 2006, San Jose, CA
- Flash in the Can, April 2005, Toronto, Canada
- ACM SIGITE (Special Interest Group on Information Technology Education) Conference, Salt Lake City, Utah. October 2004.
- ACM SIGGRAPH Conference on computer graphics and interactive techniques. Los Angeles, CA. August, 2004.
- Pop!Tech Conference on Technology, Camden, ME, October, 2003.
- Pop!Tech Conference on Technology, Camden, ME, October, 2001.
- Seminar on Macromedia Multiuser Server Technology, June, 2000.
- QuickTime Live conference, Los Angeles, CA, July 1999.
- Macromedia Training session on Authorware and Director. Toronto, 1999.
- Pop!Tech Conference on Technology, Camden, ME, October, 1998.
- 50th ACM Conference, San Jose, CA, 1997.

Awards and Grants
- Best Paper award at the SIGITE Conference, Salt Lake City, Utah, October 2004, for "Shared Extensible Learning Spaces."
- Provost's Learning Innovation Grant, May 2003.
- Nominated for the Eisenhart Outstanding Teacher Award, December 2001.
- E-Learning Grant to develop 0604-730 for distance delivery, May 2000.
- Institute Inventor Award, RIT, 1999. For The Interactive Capability Maturity Model, Level 2 CD-ROM, a collaborative project with RIT and Xerox Corporation.
- Graduate Assistantship, RIT, 1997-1998
- Outstanding RIT Undergraduate Scholar Award, 1996
- Member, Phi Theta Kappa National Honor Society

Consulting
JRVisuals
Multimedia Programmer, 2005
Developed rigid body physics engine to be used in Flash applications for simulations and games. Designed and implemented a class structure and logic to simulate the physics of an object bouncing against variously angled hard surfaces as well as springs, conveyor belts, etc. Developed an interface to the classes for the design team to utilize.

NEO/Sci
Multimedia Programmer, 1999 to 2003
Developed a series of CD-ROM titles to instruct high school students in chemistry. Created software tools to support rapid development of future titles. Designed overall program, human-computer interaction, managed programming team. CD-ROMs include tutorial, glossary, testing modules, and interactive laboratory. Completed: "Chemical Reactions," "Elements, Compounds, and Mixtures," and "Periodic Table of the Elements."

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Break It, Fix It, Ride It
Multimedia Programmer, 1999 to 2002
Worked as part of programming and design teams to develop interactive mountain bike repair CD-ROM. Developed interactive menuing system and adaptable player for display of large amount of written and graphic media. Applied HCI and instructional technology principles to create effective performance support system. Ongoing development of software updates.

Anabasis Software
Multimedia Programmer, 2002
Development of an authoring system and multimedia player integrating Java, XML, database, and Macromedia Director to deliver just-in-time performance support and training.

New Media Interactive, Inc
Multimedia Programmer, 1998 to 2001
Software maintenance and marketing of the instructional CD-ROM The Interactive Capability Maturity Model, Level 2.

Center for Digital Media, RIT
Multimedia Programmer, 1996 to 1998
Developed award-winning interactive CD-ROM, The Interactive Capability Maturity Model, Level 2, for Xerox Corporation to train their software engineers in the Capability Maturity Model (CMM). Acted as principal programmer for the CMM project, developing structures in the Authorware environment and incorporating animations, video, sound, and graphics. Collaborated closely with other team members to develop overall instructional plan, to design the interface and navigation, to edit the scripts, and to coordinate the graphic design. Developed solutions for cross-platform sound, video, and graphics display issues.

Other Experience

Good Company General Store, Rochester, NY
Co-owner, Buyer, Manager, 1981 to 1995.
Responsible for all aspects of operation: long-range planning, finances, marketing, personnel management, customer service problem solving, and purchasing. Wrote business plans, successful grant proposals, procedure and policy manuals, advertising copy, press releases.

Affiliations
- Member ACM, 1996-present
- Member SIGSIM (ACM Special Interest Group on Simulation and Modeling), 2004
- Member SIGITE (ACM Special Interest Group on Information Technology Education), 2003-present
- Member of SIGITE's precursor organization, SITE (Society for Information Technology Education), 2002-2003
- Member GMMUG (Greater Rochester Macromedia Users' Group) 1999-present
- Graduate Assistantship, 1997-1998
- Member, Phi Theta Kappa National Honor Society
- Treasurer, Genesee Center for the Arts, Education, and New Ideas, 1982-1989

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

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Christopher A. Egert, Ph.D.
Curriculum Vitae
August 31, 2006

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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.

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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

7/2005	**Summer Instructor,** Kids on Campus (KoC) Program Rochester Institute of Technology (Rochester, NY)
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*, CCSC Eastern Conference Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1*", Journal of Computing Sciences in Colleges (Eastern Conference of the Consortium for Computing Sciences in Colleges),* New Rochelle, NY, 21(2), pp. 12-18, October 14-15, 2005
2001	*Excellence in Teaching Award*, University at Buffalo

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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. 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", to appear in *Companion to the 21st Annual ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA)*, Portland, OR, in Press, October 2006

2. Phelps, A., Egert, C., and Bierre, K., "Games First Pedagogy: Using Games and Virtual Worlds to Enhance Programming Education", *Journal of Game Development,* 1(4), pp. 45-64, May 2006

3. Decker, A., Ventura, P., and Egert, C., "Through the Looking Glass: Reflections on Using Undergraduate Teaching Assistants in CS1", in *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education,* Houston, TX, pp. 46-50, March 2006

4. 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", in *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education,* Houston, TX, pp. 354-358, March 2006

5. 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", in *Proceedings of the 35th Annual Frontiers in Education Conference,* Indianapolis, IN, pp. S2H-8 - S2H-15, October 19-22, 2005

6. Decker, A., Haydanek, S., and Egert, C., "When Objects Collide: Abstractions over Common Physics Problems for Capstone Projects in CS1*", Journal of Computing Sciences in Colleges (Eastern Conference of the Consortium for Computing Sciences in Colleges),* New Rochelle, NY, 21(2), pp. 12-18, October 14-15, 2005

7. Ventura, P., Egert, C., and Decker, A., "Ancestor Worship in CS1: On the Primacy of Arrays", in *Companion to the 19th Annual ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA),* Vancouver, British Columbia, Canada, pp. 68-72, October 24-28, 2004

8. 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

9. 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

10. 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

11. 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

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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. None current

INVITED TALKS / PRESENTATIONS

1. Phelps, A. and Egert, C., "Learning by Playing Together: The Impact of Collaborative Virtual Environments on Student Interaction and Program Cohesiveness", *Conference on Games, Learning, and Society,* Madison, WI, June 2006

2. 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

3. 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 Techniques (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
2000-2003	Knowledge Media Lab (KML), University at Buffalo
1997-2000	Integrated Digital Explorations in the Arts and Sciences (IDEAS) Center, University at Buffalo
1995-1997	GLAIR Robotics Lab, University at Buffalo

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RESEARCH PROJECTS

2006-present   **DF3D Project**
Interactive Media Group, Rochester Institute of Technology
Collaboration with Andrew Phelps
Designed and implemented a system by which students can create and
manipulate 3D objects using Adobe Flash's ActionScript 2.0 language. The
system leverages the Adobe Director accelerated 3D environment to create
compelling, interactive graphics. By fusing the qualities of Flash and Director,
students receive the benefits of both platforms: an object-oriented robust
language from Flash as well as a web-deliverable, robust graphics engine within
Director. The development process has included the development of
Flash/Director bridge technology such that high-speed communication can occur
between the two platforms.

2005-present   **M.U.P.P.E.T.S. Research Group (Research Team Member)**
Interactive Media Group, Rochester Institute of Technology
Collaboration led by Andrew Phelps and with Kevin Bierre
The Multi-User Programming Pedagogy for Enhancing Traditional Study
(M.U.P.P.E.T.S.), is a virtual world environment in which students can learning
programming through the creation of compelling graphical, interactive content.
The M.U.P.P.E.T.S. engine has been developed using state-of-the-art practices
from the Entertainment Technology sector, boasting such features as
OpenGL/DirectX accelerated multipass rendering solutions, octree systems,
support for model formats, advanced lighting and shading, and much more.
Along with graphics support, the engine supports networking, user interface
creation and layout, persistence mechanisms, and audio. These features are also
combined with support for Sun Microsystem's Java and Microsoft's C#
programming languages. Involvement with this project has included the
development of project materials to support an objects-first pedagogy for
introductory programmers. In addition, involvement has included the
supervision, instruction, and co-development with students attempting to solve
difficult problems within M.U.P.P.E.T.S., including managed/unmanaged code
interoperability, thread management, and debugging for multi-processor systems.

1998-present   **Integrated Online Seminar System**
Interactive Media Group, Rochester Institute of Technology (2004-present)
Knowledge Media Lab/IDEAS Center, University at Buffalo (1998-2004)
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.

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| 1999-present | **Multimedia-Enabled Online Assessment Environment**
Interactive Media Group, Rochester Institute of Technology (2004-present)
Knowledge Media Lab/IDEAS Center, University at Buffalo (1999-2004)
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. |
|---|---|

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.

— 1999

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).

— 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.

— 1997-1998

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.

— 1997

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INTERDISCIPLINARY COLLABORATION

2006-present   **meme-garden (Co-Technical Director)**
Collaboration led by Mary Flanagan (Hunter College)
with co-technical director Junming Mei (N.Y.U.)
Meme garden is a web-based installation that explores the relationship between people, their web searches, and the various communities to which they belong. *Meme garden* uses WordNet, a database for lexical relationships between words, as the basis for interactive exploration and combination of search terms. Involvement with this project has included the design and implementation of Adobe Flash visualization tools for the installation. The first tool is a front-end application, which allows the user to interact with WordNet queries to form a search group visually, dependent upon lexical relationships between the searchers. The second tool visualizes the transformation of the search group over time, as compared to interest groups and communities such as de.lici.ous, subscribed news feeds, Google, and other sources.

1997-2000
2005-present   *The Adventures of Josie True* **(Technical Director/Game Engine Architect)**
Interactive Media Group, Rochester Institute of Technology (2005-present)
Team led by Christopher Egert starting Fall, 2005
Department of Media Study, University at Buffalo (1997-2000)
Interdisciplinary team led by Mary Flanagan from 1997-2001
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*.

2004-2005   **Six Circles (Technical Director)**
Interactive Media Group, Rochester Institute of Technology (2004)
Collaboration led by 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)**

Interactive Media Group, Rochester Institute of Technology (2004)
Department of Media Study, University at Buffalo (1999-2004)
Collaboration led by 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, University at Buffalo
Collaboration led by 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, University at Buffalo
Collaboration led by 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.

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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
Bernhardt, Matthew	Mouse tracking enhancements to the Molly website system (MC Fall Quarter 20051 – Spring Quarter 20053)
Filler, Daniel	Automated Book Publishing: An Automated Layout System for Self-Publishing (MA Winter Quarter 20042 – Summer Quarter 20044)
Gaul, Matthew	Dynamic Web-Based Database-Driven Game Application (MA Fall Quarter 20051 – Spring Quarter 20053)
Gritmon, Jennifer	A Usability Study of an Online Parent/Teacher Collaborative Environment (MA Fall 20051 – Summer Quarter 20054)
Stanley, Cher	Nude Descending a Staircase: An Interactive Narrative (MC Summer Quarter 20044 – Present)
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
Agarwal, Titikksha	Practices, Pitfalls and Solutions in Data Modeling of Web Games (MA Summer 20054 – Present)
Asija, Jitender	Multiple Files up Loader (MA Spring 20053 – Present)
Cary, David	Generational Play (MA Winter 20052 – 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 (MC Fall Quarter 20052 - Present)
Herrera, Jesus	Generating Architectural Windows' 3D Models to Improve a Window Manufacturing Company's E-Commerce "Business to Consumer" (B2C) Interaction XSLT Transformations from XML to XHTML and xVRML (MA Winter 20052 – Present)
Kurniawan, Benny	Online Centralized Events Center For Rochester Institute of Technology (MA Winter 20052 – Present)
Lu, Louis	Game Engine Development for Alternative Platforms (MC Spring 20053 – Present)
Milizia, Peter	Dynamic Reputation Manager for Multiplayer Game Environments (MC Fall Quarter 20041 - Present)

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Morse, James	Increasing Social Capital within Ecumenical Organizations using Virtual Community-building Techniques *(MA Fall Quarter 20051 – Present)*
Ramirez, Luis	Introducing the C# Programming Language into the M.U.P.P.E.T.S. Virtual Environment *(MC Summer 20054 – 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)*
Vazquez, Albert	M.U.P.P.E.T.S.: Design, Development and Integration of a DirectX 9.0 Render Pipeline *(MC Summer 20054 – Present)*

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

Student	Supervised Research or Project
Broida, Stephen	Extending Game World Design and Interactive Narrative Techniques *(Summer Quarter 20054 – Undergraduate)*
Cardillo, Vincent	Josie True Project *(Spring Quarter 20053 – Undergraduate)*
Dolan, Joe	The Design and Implementation of Blogging Software *(Spring Quarter 20043 – Graduate)*
Doyle, Matthew	Data-Driven Time-Based Media Development *(Spring Quarter 20053 – Undergraduate)*
Gong, Xuili	Advanced Interactive Media Development in Flash *(Summer Quarter 20054 – Graduate)*
Herrera, Jesus	Design and Testing of Flash and Database Integration Solutions for Web-Based Educational Games *(Winter Quarter 20052 - Graduate)*
Kirshner, Adam	Extending RTFtoXML for Publication Services *(Summer Quarter 20044-Fall Quarter 20051)* Exploration of Extended MVC Web Technologies for Server-Side Programming *(Fall Quarter 20051 - Undergraduate)*
May, Timothy	Integrating a Conversational Agent with Web Services and Flash *(Spring Quarter 20053 – Graduate)*
Root, Scott	Server-Side Architecture for Web-Driven Gaming Systems *(Spring Quarter 20053 – Graduate)*
Stanton, Craig	Rich Internet Application Development with Adobe Flex 2.0 *(Summer Quarter 20054 – Graduate)*
Sujan, Mehak	Exploration of Next Generation Java Web Application Technology *(Winter Quarter 20042 - Undergraduate)*

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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
(Fall 2004 – present)

Quarter	*Course*	*Division*	*Class Size*
Spring 20053	Game World Design (4004-732)	Graduate	9
Spring 20053	Web Database Integration (4004-751)	Graduate	7
Winter 20052	HCI1: Human Factors (4002-425)	Undergraduate	35
Winter 20052	Interactive Digital Media (4002-330)	Undergraduate	31
Fall 20051	Game Engine Design and Development (4002-836)	Ugrad/ Grad	4/3
Fall 20051	Web Database Integration (4004-751)	Graduate	5
Fall 20051	Interactive Digital Media (4002-330)	Undergraduate	31
Spring 20043	Web and Database Integration (4004-751)	Graduate	26

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Spring 20043	Introduction to Programming for New Media I (4002-230)	Undergraduate	15
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
(Summer 1998 – Spring 2004)

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	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	Computer Organization (CSE341)	58	2
Fall 2002	Introduction to Computer Programming I (CSE113)	81	2
Summer 2002	Introduction to Computer Literacy (CSE101)	23	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
Fall 2000	Introduction to Operating Systems (CSE421)	73	2
Summer 1999	Short Course – Adv. Macromedia Director	5	0
Summer 1998	Introduction to Computer Literacy (CSE101)	48	0

Teaching Assistantships at University at Buffalo
(Fall 1994 – Spring 1997)

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

6/2006-present   Co-author of the "Bachelors Degree in Game Design and Development" degree proposal document with Andy Phelps and Stephen Jacobs

6/2006-present   Co-developer of the revised "New Media: Games and Web" degree proposal document with Andy Phelps, Stephen Jacobs, Nancy Doubleday, and Steve Kurtz

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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-present	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

9/2005-6/2006	Member – Graduate Curriculum Committee

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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

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

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JOE GEIGEL, D.SC.
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

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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.

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| 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

- **Photographic Tone Reproduction for Computer Graphics**
  Publications:
  - 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:
  - Raun Krisch and Joe Geigel, "Real-time Photographic Simulation for Video Games" (poster), Sandbox: An ACM SIGGRAPH Video Game Symposium, Boston, MA, July 29-30, 2006.
  - 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

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Mutimedia Storytelling

- **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 and Theatre

- **Virtual Theatre**

  Publications:

  - Joe Geigel, "Virtual Theatre -- One Step Beyond Machinima", *The Leonardo Electronic Almanac*, 13(11), November 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, "Theatrical Storytelling in a Virtual Space" , *ACM Workshop on Story Representation, Mechanism and Context*, New York, NY, October 2004, 39 - 46.

  Invited Talks / Presentations

  - Joe Geigel, "Virtual Theatrte: Adapting Gaming Technology for Theatrical Purposes", Virtual Scenography in Live Performance: New Frontiers International Symposium, Indiana University at Bloomington, March 2-4, 2006.

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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

Curriculum Development

- **Image Synthesis as Virtual Photography**
  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.

- **Collaborative Coursework for Artists and Technologists**
  Publications:
  - 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.

- **Computer Graphics Knowledge Base**
  Publications:
  - Tony Alley, Cary Laxer, Tereza Flaxman, Joe Geigel, Susan Gold, Lewis Hitchner, Genevieve Orr, Bary Pollack, "A Knowledge Base for the Emerging Discipline of Computer Graphics", Educators program from the 33rd annual conference on Computer graphics and interactive techniques, Boston, MA, August 2006.

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

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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

2006 Tony Alley, Cary Laxer, Tereza Flaxman, Joe Geigel, Susan Gold, Lewis Hitchner, Genevieve Orr, Bary Pollack, "A Knowledge Base for the Emerging Discipline of Computer Graphics", Educators program from the 33rd annual conference on Computer graphics and interactive techniques, Boston, MA, August 2006

2005 Joe Geigel, "Virtual Theatre -- One Step Beyond Machinima", *The Leonardo Electronic Almanac*, 13(11), November 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, pp 109-116.

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	F2005, F 2003, Sp 2003, F2002
	4003-380: Introduction to CS Theory	F2005, F 2004, F 2003, Sp 2002, F 2002
	4003-570/4005-761: Computer Graphics I	W2005
	4003-571/4005-762: Computer Graphics II (*)	F2005, W 2004, F 2004, Sp 2004, W 2002, W 2001, Su 1999
	4003-572/4005-763: Computer Animation – Algorithms & Techniques (*)	W2005, W2004, W 2003, Sp 2003
	4003-590/4005-769: Procedural Shading(*)	Sp 2006
	4003-590/4005-769: Virtual Theatre (*)	Sp 2006, Sp 2005, Sp 2004
Stevens Institute of Technology	Programming Methods Using FORTRAN.(*)	W 1984

(*) Indicates course that I designed

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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
Reader	Binil Kurian	Making Presentations web-ready	On-going
Chair	Kristin Smith	Interpretive Visualization of Blogging Interaction through the Manipulation of Images	On-going
Chair	Vinayak Suley	High Dynamic Range and Full Spectral Lighting Simulation	On-going
Chair	Raymond Tordoff	Application Program Interface (API) for Motion Capture Hardware	On-going
Thesis Chair	Michael Murdoch	Nonverbal Vocal Interface	6/2006
Thesis Observer	Edward Dale	Visualizing the Inner Structure of N-Body Data Using Splatting and Skeletonization	6/2006
Thesis Chair	Alex Jaroha-Ernst	Creating Landscapes with Simulated Colliding Plates	6/2006
Chair	Yi-Ping Lin	Reducing Time for Rendering Computer Animation: Using Frame Coherence with Multi-processors	5/2006
Chair	Jeremy King	Simulation and Visualization of Air Force Drills Using Motion Capture and Behavioural Models	5/2006
Observer	Lomax Escarmant	Real-Time Color Segmentation and Tracking	5/2006
Reader	Robert Conan St. Pierre	Survey and Visualization of Current Pathfinding Algorithms and Techniques	5/2006
Chair	Saad Radif	JbioEditor	3/2006
Chair	Raun Krisch	Real Time Photographic Tone Reproduction for Computer Graphics	12/2005
Chair	Catherine Sullivan	Family Tree Manager	11/2005
Chair	Todd Newell	Introducing Legacy Program Scripting to Molecular Biology Toolkit (MBT)	10/2005
Reader	Ting-Yee Liao	3D Fly Through Path System	9/2005
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

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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
Alex Jarocha-Ernst	Real time fractal terrain generator	Fall 2005
Jeremy King	Motion Capture Systems	Fall 2005
Kristin Smith	Non-Photorealistic Image Manipulation Using Processing	Fall 2005
Vinayak Suley	FBX Importer	Fall 2005
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 Romanowski	Cueing System for Virtual Theatre	Spring 2006
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.

International 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.
Participant in SIGGRAPH Curriculum Workshop, SIGGRAPH 2006, Boston, August 4, 2006.

Reviewer

Paper Reviewer for Journal of Electronic Imaging

Paper Reviewer for *IEEE Systems, Man and Cybernetics*

Paper Reviewer for *Optical Engineering (SPIE)*
Paper Reviewer for the International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision

Book Reviewer for Morgan-Kauffman Computer Graphics Series

Course Reviewer for SIGGRAPH 2004 and SIGGRAPH 2005.

Paper Reviewer for SIGGRAPH 2005 and SIGGRAPH 2006.

University/College/Department Committees

Member, RIT Fulbright Committee, 2004-2005.

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 Assessment Committee, 2003-present

Head of Graphics Cluster, Computer Science Department, Graduate Faculty, 2003-present

Member, Computer Science Department Curriculum Committee, 2001-2002, 2004-present

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Member, Computer Science Hiring Committee, 2005-present

Member, Computer Science Department Ad Hoc Committee on Curricular Issues, 2005-present

Member, GCCIS Computer Science Chair Search Committee, 2005-2006

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

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**11.	W. Michelle Harris, M.P.S. – Information Technology, GCCIS**

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W. Michelle Harris - Assistant Professor, Information Technology

Interaction Design, Multimedia Development, Multimedia Performance Spaces

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Work Experience

Faculty
Sept 2003 - present

Rochester Institute of Technology, Rochester, NY
Instruction in multimedia development, physical computing, interaction design, and other subjects in the Interactive Media area.

QA Analyst
Jun - Aug 2001

Wet Electrics, New York, NY
MIDI and serial communication testing specialist for first release of Production Designer, theatrical multimedia show control software.

Information Architect
Mar - Aug 2000

Organic, New York, NY
Researched and documented interactive design requirements for customer's website, addressing specific approaches to customer support, community-building, application integration, e-commerce, and investor relations. Produced task analyses, usage scenarios, site architecture maps, and site schematic prototypes.

IT Research Scientist
Jun 1993 - Dec 1999

Pacific Northwest National Laboratory, Richland, WA
Developed interactive CD-ROMs and presentations in Director and PowerPoint for customers and for internal strategic use.

Trained local multimedia company in use of Macromedia Director and associated tools.

Proposed new visualization approaches, developed interactive concept prototypes in Director, designed user interfaces in Photoshop, and produced online manuals for information visualization and analysis software research projects.

Development and interface design for WWW-based collaboration software. Responsibilities included CGI and HTML development.

Responsible for UI training and overall interface design, and member of GIS development team for the FEMIS, a Visual Basic/SQL emergency management support system.

Key contributor to the initial architecture and design of Pachelbel, a WWW-based structured learning environment.

Computer Skills

Applications:	Director, Flash, Final Cut Pro, iMovie, Photoshop, Illustrator, MAX/MSP, Isadora
Languages:	HTML/CSS, JavaScript; Old: Perl, VRML, C, C++, Visual Basic
Electronics:	PIC microcontrollers, serial & MIDI communication, variable resistance sensors
Equipment:	Camcorders, video & slide projectors, DV decks, MIDI modules, audio equipment, light boards

Education

2000 - 2002
M. P. S. Interactive Telecommunications
Tisch School of the Arts, New York University, New York, NY 10003

1990 - 1993
Graduate Research Assistant, Center for Human-Machine Systems
Georgia Institute of Technology, Atlanta, GA 30332

1986 - 1990
B. S. Computer Engineering
Carnegie Mellon University, Pittsburgh, PA 15213

Honors

Most Innovative of GCCIS Digital Arts Competition (2006)
Patent 6,897,866 for relationship visualization (2005)
Patent 6,466,211 for data visualization methods (2002)
NYU Tisch Graduate Fellow (2000-02)

PNNL Software Creator Award - SPIRE (1998, 1996)
PNNL Software Creator Award - Pachelbel (1998)
PNNL Software Creator Award - FEMIS (1995)
National Science Foundation Graduate Fellow (1990-93)

Exhibitions

2006 "Searching Upper NY Bay 2001" (interactive video projection) Harris, W. Exhibited at the GCCIS Digital Arts Competition, Rochester, NY.

"Woman Hanging On" (dance with video-projected set), Suarez, J., W. Harris, E. Oyzon. Performed at the ImageMovementSound Festival, Rochester, NY.

2005   "Hairline Cracks" (dance and interactive light painting within video-projected set), Harris, W., E. Oyzon, J. Suarez. Performed at SUNY Brockport DanScore, Brockport, NY.

"Hairline Cracks," Harris, W., E. Oyzon, J. Suarez. Performed at the National Dance Education Organization Conference, Buffalo, NY.

"Hairline Cracks," Harris, W., E. Oyzon, J. Suarez. Performed at the ImageMovementSound Festival, Rochester, NY.

2004   "Laser Stripe" (interactive disco platform), Donadee, J., Harris, W., Smith, A. Exhibited at the RIT Brick City Interactive Dance Club, Rochester, NY.

"Mediated Sentinel" (interactive video projection), Harris, W. with E. Oyzon. Performed at the Media Ecology Association 5th Convention, Rochester, NY.

"My Dress Hangs There," (dance within a sculptural and video-projected set) Suarez, J., W. Harris, S. Yang. Performed at the ImageMovementSound Festival, Rochester, NY.

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2002   "Wave Shadows," (dance with the Soft Wall - invented fabric instrument to control music, lights, and projected video) Harris, W. Performed at the NYU/ITP Spring Show, New York, NY.

       "MicWrapper - Baby, I Love You," (song with the MicWrapper - invented MIDI instrument) Harris, W. Performed at the NYU/ITP Spring Show, New York, NY.

2001   Interactive hopscotch design for "Squaring the Circle" (dance within a multi-video set) Harris, W. Performed by the AMDaT dance company in the Maria Hernandez Park, New York, NY.

Refereed Publications & Presentations

2006   "Hairline Cracks," Oyzon, E., W. Harris, J. Suarez. Presented at (re)Actor: The 1st Int. Conference on Digital Live Art, London, UK.

2005   "Hairline Cracks," Harris, W., E. Oyzon, J. Suarez. Presented at the Expressions of Diversity Conference, Rochester Institute of Technology, Rochester, NY.

2004   "Transient Reformations: Transforming Place Through Projection," Harris, W. Presented at the Media Ecology Association 5th Convention, Rochester, NY.

1998   "Visualizing the Full Spectrum of Document Relationships," Hetzler, B., W. Harris, S. Havre, P. Whitney.
Proc. of the 5th Int. ISKO Conference: Structures and Relations in Knowledge Organization. Lille, France.

1997   "Sonic Exploration of Thematic Information," LoPresti, E. and W. Harris.
Proc. of the Audio Engineering Society 102nd Convention, Munich, Germany.

       "Initial Test and Evaluation of the Millimeter-Wave Holographic Surveillance System," McMakin, D., D. Sheen, A. Schur, W. Harris, G. Piepel. SPIE Proceedings Vol. 2932. Boston, MA.

1996   "loudSPIRE, an Auditory Display Schema for the SPIRE System," LoPresti, E. and W. Harris.
Proc. of the International Conference on Auditory Display (ICAD96), Palo Alto, CA.

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12. Tona Henderson, M.S. – Information Technology, GCCIS

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Tona Henderson

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Penfield, NY 14526
tah@mail.rit.edu
585 383-8121

SELF ASSESSMENT

Principal Assignment

I am an assistant professor in the Department of Information Technology (the Department) at the Rochester Institute of Technology (RIT). My background and professional degrees are in Health Care Management (M.S.) and Library and Information Science (M.S.L.I.S.). The M.S.L.I.S. is considered the terminal degree for a librarian. Since being hired at RIT, I have been a member of the Interactive Media Group in the Department. . I participate in the Interactive Media group meetings, processes and decisions actively. As a member of this group, I teach a variety of multimedia and web site implementation courses at both the undergraduate and graduate level. Additionally, I teach graduate courses in both Thesis/Project Preparation and Current Themes in IT.

Portfolio: Blended

Expectations of the blended portfolio include teaching, research, scholarship and service. I transitioned to this portfolio at the end of my third year at RIT. My prior assignment included only teaching and service.

Teaching

My teaching style is interactive and goal oriented. Each term, I develop and/or revise materials to engage and better educate students. I mix lecture, discussion, and hands-on activities to assure each student a quality learning experience. I am an excellent teacher and my student evaluations consistently reflect this assessment. In the last five, I have taught 32 sections in 9 unique courses to nearly 1,000 students. In both 770-Intro to XML and 772-Transformations, I am the sole developer of all the course materials. With others (Professors Bogaard and Vullo), I worked collegially to completely redevelop all the materials for 409-Website Design and Implementation. I also worked with a larger group of the Interactive Media group to revise and re-develop 320-Introduction to Multimedia. As result of my continuing interest in information retrieval, I have been actively involved in the redesign of the Medical Informatics degree over regular evening meetings since last year.

Research and Scholarship

My scholarship and research interests are focused on information retrieval and women in information technology. I have published a number of articles in these areas focusing respectively on libraries and on the experience of undergraduate women in information technology programs. I am currently the co-principal investigator on a $335,000 grant funded by the National Science Foundation to study gendered attrition in IT programs.

Service

I continue to participate in the American Libraries Association as a professional librarian. I am also a member of the Association for Computing Machinery and Special Interest Group for Information Technology Education (SIG-ITE). My service component includes, among other assignments, membership on the Institute-level Campus Environment Committee and the Department-level governance committee. My initiatives include creating and implementing the first 320-Introduction to Multimedia Written and Practical Test-out, creating and implementing the Departmental Honors program, and coordinating an annual Industrial Advisory Board meeting for the Department.

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EDUCATION

B.S. Recreation (Southwest Missouri State University, 1981)
M.S. Health Care Administration (University of Missouri, 1988)
M.S. Library and Information Science (University of Missouri, 1992)

EXPERIENCE

Assistant Professor, Department of Information Technology, The Rochester Institute of Technology (2000-current)

Teach undergraduate and graduate courses in information technology; participate in self-governance and collaborative activities of the faculty, department and Institute; develop curricular materials including lecture notes, in-class activities, handouts, projects, and tests; conduct research and scholarly activities including publication and presentation in two primary research areas – women in information technology and information retrieval in libraries; nominated for Eisenhardt Teaching Award in Fall 2000 and Fall 2002.

Head, Gateway Library/Laptop Library, The Pennsylvania State University (1998-2000)

Implemented the Gateway Library: Designed and developed concepts, services, products, and space requirements for a fully electronic library; coordinated with other library committees and planning groups to prepare a formal implementation plan. Planned and coordinated start-up activities of the Gateway Library including facilities renovation, staffing, training, budgeting and programming to improve electronic reference services in the main library; completed implementation in eight months; Served as head of section including all budgeting, facilities and supervisory responsibilities.

Implemented the fully electronic Pollock Laptop Library: Presented original proposal and vision statement; lead proposal development team and benchmarking efforts; facilitated renovation, improved staffing, developed training, implemented budgeting and designed programming to showcase digital library; completed implementation in seven months; Served as head of branch library including all budgeting, facilities and supervision.

Business Reference Librarian, The Pennsylvania State University (1992-1998)

Led the development of the Libraries' Gopher; planned, directed, and managed implementation team; coordinated initial design, technical training, and developed administrative policies; provided coordination to computing support staff to initiate and authorize access; completed implementation in 4 months. (1993)

Implemented listserv discussion list (BIZBIT-L) for current awareness and input from Smeal College of Business Administration faculty; coordinated with Academic Computing to identify list subscriptions, welcome message, and deletions; developed periodic update messages and monitored list traffic to respond to questions. (1993-1995)

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Created and managed an anonymous FTP site for the University Libraries in order to expedite distribution of informational and instructional materials; designed directory structure; created, identified and obtained digital information to post onsite. (1993-1996)

Directed the development of the Libraries' World Wide Web Home Page; planned, organized and managed implementation team; coordinated initial concept, layout, and directory architecture; monitored content completion for style and substance; coordinated monthly review activities; successfully transitioned homepage responsibilities to Libraries Public Relations Office. (1995)

Developed and implemented Internet training for the M.B.A. program (1995-1998); conducted full day hands-on M.B.A (150 students). orientation to Internet resources (August 23, 1996; with Mel Westerman and Zaida Diaz)

Taught three-hour credit course (Business Resources and Reference) to graduate students enrolled in the M.L.S. program at Clarion University. (Fall 1996)

Developed and taught, "Business on the Internet" and "Legal Ethical Issues on the Internet" to Webmaster Certificate candidates; founding member of the Webmaster Certification Program at The Pennsylvania State University, Continuing and Distance Education (April 1999)

RESEARCH AND/OR SCHOLARLY PUBLICATIONS

Articles published in refereed journals.

Henderson, Tona. "Retaining Women in Undergraduate Information Technology Programs." Encyclopedia of Gender and IT. Eileen Trauth, ed. In press (2005)
LETTER OF ACCEPTANCE ATTACHED

Henderson, Tona. "Why Do Women Leave IT Programs?" Proceedings of the American Association of Computers in Education E-Learn Conference. In press (2005)
LETTER OF ACCEPTANCE ATTACHED

Lawley, Elizabeth and Tona Henderson. "Understanding Gendered Attrition in IT Programs." Proceedings of the 4th Conference on Information Technology Curriculum – Association for Computing Machinery. pp.122-125 (2003)

Maple, Amanda, and Tona Henderson. "Prelude to a Digital Music Library at the Pennsylvania State University: Networking Audio for Academic Library Users." Library Resources & Technical Services 44(4): 190-95 (2000)

Henderson, Tona and Bonnie MacEwan. "Electronic Collections and Wired Faculty." Library Trends 45(3): 488-498 (1997)

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Henderson, Tona. "Weaving The Web: Using The World Wide Web In Library Acquisitions." Library Acquisitions: Practice and Theory. 20(3): 367-374 (1996)

Henderson, Tona. "Using Text-Based Multi-User Environments To Create The Virtual Library" In Proceedings of the National Online Meeting. 199-206. Learned Information, Inc., Medford, NJ (1994)

Henderson, Tona. "MOOving Towards A Virtual Reference Service." The Reference Librarian, 41/42: 173-184 (1994)

Parts of books.

Henderson, Tona. "Expert Systems," "Computer Conferencing," "Automated Office Security," "Employee Recruiting," "Microcomputers in Business," "Office Automation," and "Digital Scanning." Selected encyclopedia entries in the Encyclopedia of Business. Edited by John G. Maurer, et al. Gale Research, Detroit, MI (1995).

Henderson, Tona. "Computer Network Support Services," "Digital Imaging," and "Information Management Systems." Selected encyclopedia entries related to new business technologies in the Encyclopedia of Emerging Industries. Edited by Sue Cindric. Gale Research, Detroit, MI (1998).

Books.

Henderson, Tona. Legal and Ethical Issues on the Internet (spiral bound). Published by Continuing and Distance Education, The Pennsylvania State University, 1999.

Grants

Henderson, Tona. Internal Development Grant, The Pennsylvania State University Libraries "Brainfood". (1998-1999), $65,000. Production grant to students to create multimedia resources for the Libraries including tutorials and online resources.

Dr. Elizabeth Lawley (principal) and Tona Henderson (co-principal). NSF Grant #0305973 "Understanding Gendered Attrition in Departments of Information Technology (2003-2005), $325,000. Grant to study the causes of attrition among female, undergraduate students in Information Technology (target audience). Based on in-person and e-mail interviews, a national set of surveys will collect data about IT programs across the country and from individual survey respondents. Results will be used to create recommendations for programmable action in improving the retention of undergraduate female IT majors.

Editorial Contributions

Associate Editor, Library and Information Science Research (LIBRES). (1992-1995).
Henderson, Tona. Book Reviewer, Science and Technology Libraries. (1992-1994).

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Henderson, Tona. Book Reviewer, <u>Library Software Review</u>, (1993-1998).
Henderson, Tona. Web Reviewer, <u>Business and Finance Librarianship</u>, (1997).
Peer Reviewer/Web Editor, <u>Technology Electronic Reviews </u>(TER). (2000-2003).

Presentations at Technical and Professional meetings (External Review)

"Women As IT Students", Crossing Cultures, Changing Lives Conference.
speaker, Oxford University, Oxford, England (2005).

"Diversity in Technology: What's Happening?", Information Resources Management
Association International Conference, panelist, New Orleans, LA (2004).

"Women and Girls: The Right Fit for Technology?, Rochester Institute of Technology,
panelist at Cyber-Communities: Uniting Us or Dividing Us? (2004).

"Future of Technology and Reference Services". Rochester Regional Library System,
co-presenter with Walt Crawford, Rochester, NY (2001)

"Future of Reference Services and Programs." American College and Research Libraries
Delaware Valley Chapter. Invited speaker. Great Valley, PA (1999)

"Electronic Business Tools and Resources." The Benjamin Franklin Technology Center,
Invited Speaker. State College, PA (1998)

"Usability Testing." American Libraries Association Annual Conference (Human
Machine Interface Special Interest Group - Panel Moderator). San Francisco, CA (1997)

"Enter Tomorrow Here: The Penn State Gateway Library." Library Information and
Technology Association National Conference. Speaker. Pittsburgh, PA (1996)

"What A Tangled Web." SUNY/OCLC Network Regional Conference. Speaker.
Rochester, NY (1996)

"Business Information Sources on the Internet." American Libraries Association Annual
Conference (Business Reference and Services Section). Speaker. Philadelphia, PA
(1995)

"The WWW and Acquisitions Libraries." American Libraries Association (Automated
Acquisitions and Cataloging Library Technical Services Section). Invited speaker.
Chicago, IL (July 1995)

"Weaving Your Web: The Penn State Case Study." SUNY/OCLC Network Regional
Conference. Speaker. New York, NY (1995)

"Recipes for Success: Using the Internet in Academic Libraries." Speaker. Online/CD
ROM Conference, San Francisco, CA (1994)

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"It's Not About Cows At All. MOOs and Libraries." Poster Session at EDUCOM. San Antonio, TX (1994)

"Teaching the Internet: The Internexus." Poster Session at the American Libraries Association Annual Conference, New Orleans, LA (1993)

"Information Leverage and Special Libraries," Special Libraries Association, Information Technologies Division. Student speaker. San Francisco, CA (1992)

"Multimedia and Implications for Reference." Provost's Lecture Series Panel on Electronic Imaging, Multimedia and the Future: Implications for Libraries and Librarians. Panelist. Penn State University, Harrisburg, PA (1992)

TRAINING AND CONSULTING ACTIVITIES

"Internet Basics and Advanced Topics." Full day workshop conducted for Lycoming College to introduce faculty and librarians to the Internet, Williamsport, PA, (April 30, 1993).

"Introduction to the Internet." Invited full day presentation to employees of the Commonwealth of Pennsylvania at the request of Sara Parker, Deputy Commissioner of Education, Harrisburg, PA, (July 27, 1993). (With Gerry Santoro, Dan Burnitt, and John Harwood)

"Using a MOO Library." Two-hour workshop presented at Internet and Implications for Librarians, University of Missouri, Columbia, MO, (June 9, 1994).

"Introduction to the Internet." Two-hour workshop presented to the Elderhostel participants, The Pennsylvania State University, University Park, PA, (June 28, 1994).

"BIZNET: The Internet Business District." Two hour workshop presented at Internet and Implications for Librarians Conference, University of Missouri, Columbia, MO, (July 8, 1995).

"Rural Librarians on the Net." Three-day workshop co-presented with Dr. Steven Herb to the NASA SpaceLink librarians introducing email, ftp, Gopher, and the World Wide Web, University Park, PA, (July 11-13, 1995).

"Doing Business on the Internet." Full day conference in conjunction with Continuing and Distance Education, The Pennsylvania State University, University Park, PA, (August 10, 1995). (Academic Chair and workshop presenter)

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Developed and delivered custom instruction and tutorials for a day-long session on using Internet resources in business for the Penn State Continuing and Distance Education Department, University Park, PA, (October 25, 1995).

"Internet Workshop." Full day workshop for the Keystone School District presented in Lock Haven, PA, with Dr. Steven Herb (December 5, 1995).

Designed and developed a custom World Wide Web Home Page to enhance business activities and improve Internet access for the Penn State Scanticon Team Decision Center. (Fall 1995)

"REFNET: Using the Internet at the Reference Desk." Internet Workshop presented by the Susquehanna Library Cooperative, Danville PA, (December 8, 1995).

Developed and conducted training seminar for Center for Academic Computing employees on remote access support issues with Libraries including delineated responsibilities, referral procedures, and ongoing communication channels. (April 18, 1996)

"Internet For Libraries." Full day workshop for the River Bluffs Regional Library presented in St. Joseph, MO, (March 21, 1997).

Researched, developed, and wrote 12,000 word help text for online business product, Statistical Universe, including statistical overviews, descriptions of important federal agencies, search strategies, and glossary. (Spring 1997)

"Electronic Business Tools and Resources." Invited presentation to the Benjamin Franklin Technology Center, State College, PA. (February 26, 1998)

Researched, developed, and wrote 10,000 word help-text for online business product, Lexis-Nexis Academic Universe, including company research, industry research, and general research. (Spring 1999)

Researched, developed, and wrote a descriptive database plan to create a new industry information product for Lexis-Nexis Academic Universe (Fall 2002)

DEVELOPMENT ACTIVITIES

The Pennsylvania State University Libraries

Developed and conducted special presentations to The Pennsylvania State Libraries Development Advisory Board (September1995; February, 1996; September 6,; Octobee, 1996;; September, 1998)

Developed and conducted presentation on Doing Business on the Internet for the Penn State University Board of Trustees (January, 1997)

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Developed, coordinated and drafted WinMill Faculty Associate agreement resulting in a $500,000 gift in kind (donated employees), from WinMill Software, Inc. (October, 1998)

The Rochester Institute of Technology

Planned, coordinated and implemented annual Industrial Advisory Board meeting including program, special events and logistics (May 2002)

SERVICE AND COMMITTEE WORK

The Pennsylvania State University

University

Faculty Advisory Committee on Academic Computing, (1996-2000)

Libraries

Reference Automation Team, Leader, (1993-1998)
Libraries Curricular and Instructional Affairs Committee, (1993-1994)
Libraries Faculty Organization Vice Chair/Chair Elect, (1994-1995)
Libraries Faculty Organization Chair, (1995-1996)
Libraries Copyright Committee, (1995-1997)
United Way co-chair, University Libraries, August-December (1995)
Web Development/Advisory Group, (1996- 2000)

The Rochester Institute of Technology

Institute

RIT Campus Environment Committee, member, 2002-current.

College

Golisano College of Computing and Information Sciences Honors Committee, member, 2002-2003.

Department

Department of Information Technology Online Presence Committee - chair 2001-2002.
Department of Information Technology Honors Advocate, 2002-2003.
Department of Information Technology Governance Committee, member, 2003-current.

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American Library Association (Library Information Technology Association).

Publications Committee, 1994-1995 (intern); 2003-current.
Human Machine Interface Special Interest Group.
Vice Chair, 1994-1995.
Chair, 1995-1996.

Community

"Women in IT at RIT", Presentation at the Golisano College of Computing and Information Science, Rochester, NY. Open to the public. (2004)

"Future of Technology and Reference Services". Rochester Regional Library System, co-presenter with Walt Crawford, Rochester, NY Open to the public. (2001)

HONORS AND AWARDS

1992 Conference Award, Information Technologies Division of the Special Libraries Association, June 1992.

Beta Phi Mu (International Library Science Honor Society), April, 1993.

University Libraries Award, The Pennsylvania State University, June 1999. (Awarded for excellence, innovation, and creativity in librarianship.)

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13.   Edward Holden, M.B.A. – Information Technology, GCCIS

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B. Thomas Golisano College of Computing & Information Sciences
Department of Information Technology

Curriculum Vita

1. **NAME:** Edward Holden

   CURRENT ACADEMIC RANK: Assistant Professor

   TENURE STATUS: Untenured – tenure track

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

Dates	Ranks of Advancement
September 1, 2000	Original Appointment

3. **Degrees with fields, institutions, and dates:**

Degree	Field	Institution	Date
MBA	Finance	Rochester Institute of Tech.	May, 1995
BA	Mathematics	SUNY Oswego	June, 1972

4. **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:**

   Completed the equivalent of a minor in Computer Science while an undergraduate at Oswego
   Completed many IT training programs while employed in industry

5. **Conferences, workshops, and professional development programs in which you have participated to improve teaching and professional competence in IT:**
   - Society for Information Technology Education (ACM/SIGITE, CITC4) (October 16 – 18, 2003) Purdue University
   - Oracle Database Administration I Training, July, 2003
   - Oracle Database Administration II Training, August, 2003
   - Information Assurance Faculty Development Workshop (July 29 – 31, 2003), The University of Tulsa, Tulsa OK
   - Informing Science and IT Education Conference (June24 – 27, 2003), Pori, Finland
   - Secure E-Commerce Workshop (March 28 – 29, 2003), George Washington University, Washington, DC
   - Society for Information Technology Education (ACM/SIGITE, CITC3) (September 19 – 21, 2002) Rochester Institute of Technology, Rochester, NY
   - Informing Science and IT Education Conference (June 19 – 21, 2002), Cork, Ireland
   - I attended the Faculty Institute on Teaching and Learning to improve my skills in the classroom.
   - I also attended the Informing Systems and IT Education Conference in Flagstaff, AZ.

6. **Other related computing experience (including teaching, industrial, governmental, etc.):**
   1997 – 2000   College of Business, Management Information Systems

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Adjunct Professor – Instructed undergraduate courses in Business Computer Applications and Software and Hardware. Also instructed a graduate course in Information Systems Theory and Practice.

1972 – 2000: Eastman Kodak Company, Worldwide Information Systems,
343 State Street, Rochester, NY 14650
1994 – 2000: Systems Coordinator / Supervising Analyst
1983 – 1994: Senior Supervising Systems Analyst
1979 – 1983: Supervising Systems Analyst
1972 – 1979: Systems Analyst

Overview: Managed project teams performing systems development, operations and continued support for business applications, e-commerce, e-mail and groupware. Responsible for budgeting, cost control, client interface, project management, technical consultation, interface with other support groups, interviewing prospective employees, and employee development and evaluation. Perform all phases of system's life cycle from proposal through continued support, and negotiation and management of outsourcing contracts. Often selected for special assignments. Clients have included finance, marketing, sales, research and development, and supply chain.

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

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8. **For the academic year in which the Self Study was written list your assigned duties, (committee membership, advising, etc) 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 or part time faculty, please indicate here which courses.**

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9. **For the four years proceeding the self-study, list all department, college, and/or university committees of which you are a member:**
    2002 – present: GCCIS Curriculum Committee
    2001 – present: IT Undergraduate Curriculum Committee

10. **Principal publications of the last five years; please state in standard bibliographic format.**
    Holden, Edward; Perry, Ron; Yacci, Michael, Technology Transfer – Before and After, Conference for Information Technology Curriculum, September, 2002.

    Holden, Edward, Technology Transfer – the Human Side of IT, Informing Systems and IT Education Conference, June, 2003

    Holden, Edward; Weeden, Elissa, The Impact of Prior Experience in an Information Technology Programming Course Sequence, Conference for Information Technology Curriculum, October, 2003.

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Border, Charles; Holden, Edward, <u>Security Education within the IT Curriculum</u>, Conference for Information Technology Curriculum, October, 2003.

Holden, Edward; Weeden, Elissa, <u>The Experience Factor in Early Programming Education</u>, SIG/ITE, October, 2004.

Holden, Edward; Weeden, Elissa, <u>Prior Experience and New IT Students</u>, Proceedings of the Informing Science and IT Education Conference, June, 2005, Flagstaff, Arizona, USA. Also published in The Journal of Issues in Informing Science and Information Technology, Volume 2, 2005, ISSN 1547-5840

11. **Other scholarly activity: grants, sabbaticals, software development, etc.:**
Computer and Network Security Curriculum Development, co-PI, Funded by the University of Tulsa under a grant from the National Security Administration; Developed the Secure E-Commerce course under this broader grant, July, 2003

RIT Provost's Learning Innovations Grant (PLIG) for Faculty, Adaptation and Implementation Program, "Implementing Active Learning and Student Cohorts in the First Course of the IT Introductory Programming Sequence", June, 2004

12. **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.**
   - 2004-2005 Fall
     - 4002-485-02 Database Architecture and Implementation
     - 4002-485-44 Lab
     - 4004-484-01 Database Client / Server
   - 2004-2005 Winter
     - 4002-485-01 DB Architecture and Implementation
     - 4002-485-70 DB Architecture and Implementation
     - 4002-485-85 Lab
     - 4002-219-01 Programming for IT III
   - 2004-2005 Spring
     - 4002-485-01 DB Architecture and Implementation
     - 4002-485-70 DB Architecture and Implementation
     - 4002-485-85 Lab
   - 2004-2005 Summer
     - 4002-460-01 Technology Transfer
   - 2005-2006 Fall
     - 4002-219-01 Programming for IT III
     - 4002-219-02 Programming for IT III
     - 4002-871-90 IT and Organizational Process
   - 2005-2006 Winter

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R·I·T

- o 4002-360-02 Intro to Database and Data Modeling
- o 4002-220-70 Programming for IT II-A
- 2005-2006 Spring
  - o 4002-221-70 Programming for IT II-B
  - o 4002-876-90 Secure E-Commerce

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.

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13. **Estimated percentage of time devoted to scholarly and/or research activities:** 33%

    Please give a brief description of your major research and scholarly activities:
    - The impact of experience on IT curriculum – this involves surveys of students and comparison against their performance in early courses.
    - Technology Transfer – this involves examining how innovations are communicated through a social system.

14. **If you are a part time faculty member or a full-time faculty member without full-time commitment to the program, state what percentage of full-time you are assigned to the program:** ___NA__%.

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14.   Jay Jackson, Ph.D. – Information Technology, GCCIS

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Jay Alan Jackson
100 Yorktown Drive
Springfield, MA 01108
jaj@it.rit.edu

EDUCATION:

Ph.D. June 1985, Florida State University, Mathematics

M.S. June 1979, Florida State University, Mathematics

B.S. Cum Laude, June 1977, Florida State University, Mathematics (major), Music (minor)

EMPLOYMENT:

September 2002 – Present
Associate Professor, Information Technology Department, Rochester Institute of Technology

September 1999 – August 2002
Associate Professor, Department of Mathematics and Computer Science, Western New England College

September 1990 – August 1999
Assistant Professor, Department of Computer Science, University of Louisiana - Lafayette

September 1989 - August 1990
Assistant Professor, Mathematics Department (visiting), Duke University

September 1985 - August 1989
Assistant Professor, Mathematics Department, Michigan Technological University

April 1981 - June 1985
Research Assistant, Department of Mathematics, Florida State University

January 1980 - March 1981
Associate Programmer/Analyst, Control Data Corporation, Arden Hills, MN

COURSES TAUGHT

> Algebra, Trigonometry, Analytic Geometry
> Calculus
> Differential Equations
> Linear Algebra
> Discrete Mathematics
> Numerical Methods
> Programming in C, C++, Java
> Data Structures I, II
> Introduction to Database Methods
> Computer Organization
> Computer Architecture
> Design and Analysis of Algorithms
> Computer Graphics

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Computer Networks
Operating Systems
Software Engineering
Scientific Computing
Unix/Linux Systems Administration
Network Routing and Switching
Digital Audio and Computer Music
Web development (html/css/javascript/php)

ADDITIONAL INSTRUCTIONAL ACTIVITIES:

Instructor for online courses in computing and networking for the University of Maryland University College, which serves students at military bases overseas.

Supervisor for student co-op/interns at the National Wetlands Research Center, and C&C Technologies.

Thesis advisor for the Ronald McNair Achievement Program and Honors Program.

Instructor for scientific visualization courses at the US Army Corp of Engineers Waterways Experimental Station in Vicksburg, MS 9/26-27/97.

Participant in SIGGRAPH/NSF Undergraduate Faculty Enhancement Scientific Visualization Workshop, 9/18-25/97.

Mathematics instructor for Upward Bound program, 11/96-5/97. Program provided Saturday sessions to help prepare underprivileged high school students for college.

Advisor for ACM programming team UL Student Chapter 1993.

Conducted a Mathematics Workshop for minority students at Duke University, Fall 1989-Spring 1991.

Faculty advisor for student chapter of the Audio Engineering Society at MTU, 1986-89. Group participated in designing and building various electronics devices such as amplifiers, equilizers, synthesizers, etc.

COMPUTATIONAL WORK EXPERIENCE

NCSA/University of Illinois
Visualization Scientist, June-August 1997. Provided training and consulting on the use of scientific visualization tools to affiliates of NCSA.

Los Alamos National Laboratory
Visiting Scientist, June-August, 1992.
Developed parallel computation and scientific visualization code.

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University of Louisiana – Lafayette
Director, Multimedia Computing Lab: Supervision of student
projects in the areas of computer graphics (scientific visualization,
CAD, image processing) and multimedia (film scoring, computer music, and digital audio processing)
. Also served as the Systems/Network Administrator

Researcher: (University of San Francisco funded) project to port circuit simulation code,
SPICE, to the NCUBE parallel computer.

Researcher (NSF grant): Developed tools to synchronize visual
and aural displays for run-time behavior analysis of parallel
algorithm

Michigan Technological University
Researcher, Center for Experimental Computation: Development and
study of parallel algorithms for FPS T-series Hypercube.

Consultant, Groundwater Research Group/Biosource Institute (EPA
grant): Numerical modeling of contaminant transport in layered
aquifer systems.

Florida State University
Research Assistant, Applied Mathematics Department (NASA grant):
Numerical modeling of shocks and instability waves in supersonic
jets to identify the sources of coherent noise.

Research Assistant, Mesoscale Air-Sea Interaction Group (ONR
grant): Numerical modeling of internal gravity waves between
stratified layers in the ocean.

Control Data Corporation
Associate Programmer Analyst, EE CAD/CAM Group: Development of
software for the design and analysis of circuits.

PUBLICATIONS AND PRESENTATIONS

(1) Jackson, Jay Alan and Jaffe, Andy, "Bridge: The Evolution of A Multimedia
Work," in Proceedings of the 2005 Conference of the Association for Technology
in Music Instruction, November 2005.

(2) Francioni, Joan M. and Jackson, Jay Alan, "Breaking the Silence:
Auralization of Parallel Program Behavior," in Journal of Paral-
lel and Distributed Computing, June 1993, pp. 181-194.

(3) Jackson, Jay Alan and Pacheco, Peter S., "Circuit Simulation on
Multicomputers" in Proceedings of the Sixth SIAM Conference on
Parallel Processing for Scientific Computing, March 1993.

(4) Jackson, Jay Alan and Francioni, Joan M. "Synchronization of
Visual and Aural Parallel Program Performance Data," Auditory
Display, Santa Fe Institute Studies in the Science of Complexity,
Proceedings Series Volume XVIII, Addison Wesley, November 1993,
pp. 291-306.

Game Design & Development
Entertainment Technology Lab
B. Thomas Golisano College of Computing & Information Sciences
Rochester Institute of Technology
games.rit.edu

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(5) Jackson, Jay Alan, and Francioni, Joan M., "Aural Signatures of Parallel Programs," in Proceedings of 25th Hawaii International Conference on System Sciences, Hawaii, January 1992, pp. 218-229.

(6) Francioni, Joan M., Albright, Larry, and Jackson, Jay A., "Debugging Parallel Programs with Sound," ACM SIGPLAN Notices, 26(12) December 1991, pp. 68-75 (special issue for the ACM/ONR Workshop on Parallel and Distributed Debugging, May 1991).

(7) Francioni, Joan M., Jackson, Jay A., and Albright, Larry, "The Sounds of Parallel Programs," Proceedings of the Sixth Distributed Memory Computing Conference, Portland, Oregon, April 1991, pp. 570-578.

(8) Jackson, J. A., Liebrock, L., and Ziegler, L., "A Hybrid Hypercube Algorithm for the Symmetric Tridiagonal Eigenvalue Problem," in Proceedings of the 3rd Conference on Hypercube Concurrent Computers and Applications, Vol. II, Pasadena, CA, January 1988, pp. 1546-47.

(9) Francioni, J. and Jackson, J. A., "An Implementation of a 2^d-Section Root Finding Method for the FPS T-Series Hypercube," in Hypercube Multiprocessors 1987, SIAM, 1987.

(10) Jackson, J. A. and Francioni, J., "Complementary Algorithms for Parallel Architectures," Computer Science Technical Report, CS-TR 86-6, Michigan Technological University, July 1986.

(11) Tam, C.K.W., Jackson, J. A., and Seiner, J. M., "A Multiple Scales Model of the Shock-cell Structure of Imperfectly Expanded Supersonic Jets," Journal of Fluid Mechanics, vol 153, 1985, pp. 123-149.

(12) Tam, C.K.W. and Jackson, J. A., "On the Shock Cell Structure and Noise of Supersonic Jets," in Proceedings of the 8th AIAA Aeroacoustics Conference, Atlanta, GA, April 1983. 1983.

REFERENCES:

Dr. Dennis Luciano
Head, Department of Mathematics and Computer Science
Western New England College
dluciano@wnec.edu

Dr. Martyn Smith
Dean, Graduate School
Michigan Technological University
martyn@mtu.edu

Dr. Joan M. Francioni
Head, Department of Computer Science
Winona State University
jfrancioni@winona.edu

additional references supplied upon request

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15.   Stephen Jacobs, M.A. – Information Technology, GCCIS

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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

Dates	Ranks of Advancement
9/01/1995	Hired as Tenure Track Assistant Professor
9/01/2002	Tenured
9/01/2003	One Year Professional Leave of Absence/Sabbatical

Education:

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

Assistant Professor, Information Technology, Rochester Institute of Technology 1995-Present

Courses and curriculum work:

Created new courses: *Seminar in Thesis/Project Development, Design for Interactive Multimedia, Writing for Interactive Multimedia, History and Analysis of Computer Games, Interactive Narrative, On-line Community and Social Behavior, Building On-Line Communities (pending CCC approval).*

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.*

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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.

Spring (requested)

On-line Community and Social Behavior	(Blended)	(4004-734)
Human Factors		(4002-425)

Winter (requested)

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)

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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)

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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)

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Fall

Introduction to Interactive Media   (06-04-741)
Software Scripting   (06-02-203)
One Course release for 1st quarter teaching

Thesis/Capstone Committees:

50 certified graduates for the department, 20 as chair. 13% of the total MSIT graduates.

Faculty Recruitment:

I recommended/recruited the following Faculty members for the Department

Elizabeth Lawley: First learned of us through her mother, a student of mine in one of the CAROL project courses. She and I then had several e-mail conversations and I encouraged her to apply.

Elouise Oyzon: An old friend who was also a year behind me in the computer animation MFA program. I recommended her to Eydie Lawson and encouraged her to bring her on as an adjunct. I later encouraged Elouise to apply for a tenure-track position.

Daniel Garrison: A student of mine in the multimedia certificate program. I recommended him to Eydie Lawson and encouraged her to bring him on as an adjunct. I later encouraged Dan to apply for a tenure-track position.

Michael Axelrod: A friend and fellow student in the computer animation MFA program. I recommended him to Eydie Lawson and encouraged her to bring him on as an adjunct. I later encouraged mike to apply for a tenure-track position.

Jon Schull: I had known Jon for a year or so when I brought him and his company Softlock Services with us to ACM '97. When he completed his career as an entrepreneur, I encouraged Jon to apply for a tenure-track position with us.

Major Research and Scholarly Activities:

2000-Present. Computer Game Design and Development, Research of Integration and Teaching: Over the past several years I've been working with Professor Andrew Phelps and other colleagues to develop a computer Game Design and Development Graduate Concentration and Degree Proposal. These efforts included…

- o   A professional leave/sabbatical to research the industry and its practices.
- o   Creation of five new graduate courses.
- o   One article, "Writesizing", published in <u>Game Developer</u> (the major trade journal in the field) November, 2004)
- o   Presentations at the Serious Games and Media Ecology Conferences in 2004
- o   Service on the Executive Board of the Writers' Special Interest Group of the Independent Game Developer's Association.
- o   Service on the Advisory Board of the International Association of Game Educators and Researchers.
- o   Contributing a chapter to a forthcoming book on Writing for Computer Games and editing another. Completion date 1st quarter 2006 for publication 4th quarter 2006.

2002-Present. Technological Literacy, Research of Application, Integration and Teaching.
Initial project, *What The Tech!* radio show. Begun in September of 2002, the show became the first project of the CASCI Lab for Technological Literacy, which I direct, and acquired $100,000 of funding from RIT and GCCIS in September of 2004. Current lab projects included…

In-Progress and Funded:

What the Tech! **Radio Show, Research of Integration, Application and Teaching.**
The show began as an outside effort 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..

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 Dean's office offered a list of three, and 320 was preferred by Wayne County. The Dean's office is the contractual agent for this pilot and will collect and diburse the funds. The Lab will take the results of this first experience and use it to begin seeking grant funding to continue to offer, expand and extend the concept to other schools..

In-Progress and Seeking Funding:

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. Grant Applications are being written with the Eastman House and RIT working together, with myself as Co-PI and Guest Curator of the project. 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.

In Development:

Networking/multimedia boot camp and summer jobs program for city high school students. Research of Application and Teaching

Summit of local Homeland security focused companies. Research of Integration and Application

Summer training series in technology for working journalists.

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…

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- 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/Exhibitions:

Serious Games Summit, Washington, DC, 2004.
> **"Game Developer Isn't in the Yellow Pages"**
> Spoke on Industry/University partnering as a panelist.

Media Ecology Association Annual Convention, Rochester, NY 2004

> **"The Challenges of Audience as Author: Multiplayer Online Games and Virtual Worlds."** Panel Presenter and Moderator

> **"Digital Poetry and Poetics."** Presented the history of multimedia and poetry as a panelist.

> **"Nationwide Technological Illiteracy and What The Tech!: Can One Radio Show Save the Country?"** Paper on the research on technological illiteracy and its influence on the design of the radio show.

HighEdWeb Professionals Conference, Rochester, NY 2003
> **"Information Architecture: What's it all about Webbie?"**
> Presented on Information Architecture.

CITC3, Rochester, NY 2002
> **"Interactive Television, We Really Mean It This Time"**
> Presentation on the History of the Digital Television Standard ATSC, the interactive aspects of that technology and its application to the IT Curriculum.

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

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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:

Jacobs, Stephen, Interactive Television, We Really Mean It This Time Proceedings CITC3, Rochester, NY. 2002

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

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

Professional Development:

Grant Writing:

National Endowment for the Humanities, Planning Grant, 2005
Contributed to Narrative portion, named as one of the experts funded by the grant.

NSF Grant Application, Informal Science Education Program, 2003
PI on application for funding for *What The Tech!*

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, 2000 and Consumer Electronics Show, 2000

Consulting:

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.

Creator, Producer, Director:

What The Tech, September 2002-Present
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 Show is currently 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

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.
http://www.gadgetboy.com

Contributing Editor: (Regular Columnist)

CNET Consumer Electronics' Future Tech, 2000-20001:
Monthly technology futurist pieces.

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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

Conference Attendance:

- ACM SIGGRAPH, 2006, (anticipated)
- Electronic Entertainment Exhibition, 2006 (anticipated)
- Game Developers Conference and Serious Games Summit, 2006 (anticipated)
- 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:

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

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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

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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

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:

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
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.

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16. Steve Kurtz, M.F.A. – Information Technology, GCCIS

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R·I·T

B. Thomas Golisano College of Computing & Information Sciences
Department of Information Technology

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

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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.

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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%

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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.

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17. Elizabeth Lawley, Ph.D. – Information Technology, GCCIS

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elizabeth lane lawley: curriculum vita

education

University of Alabama, Tuscaloosa, Alabama

School of Library and Information Studies
Ph.D. in Information Studies, 1999
James D. Ramer Outstanding Dissertation Award, 2000
Graduate Council Fellowship, 1992-93

The University of Michigan, Ann Arbor, Michigan

School of Information and Library Studies
M.L.S. in Library & Information Science, 1987
Beta Phi Mu Honorary Society, inducted 1987

College of Literature, Science, and the Arts
A.B. in American History, 1984
University Honors Program, 1980-82

employment

Microsoft Research

Visiting Researcher, Community Technologies Group, 2005-2006
Currently managing the development and implementation of a enterprise-based social bookmarking and personal library tool, intended for studying information roles and dissemination within organizations. Provide internal consulting on social features for search-related products at MSN and Windows Live. Coordinator for the 2006 Social Computing Symposium.

Rochester Institute of Technology

Associate Professor, Department of Information Technology, 2004-present
Assistant Professor, Department of Information Technology, 1997-2004
Develop and teach courses on current themes in information technology, introductory multimedia, web design & technology, web/database integration, XML, programming for the web, data communications and networking, telecommunications, and computer hardware, operating system, and software concepts. Currently developing a new curriculum on social computing to be offered on both the MS and PhD levels.

Director, Lab for Social Computing, 2004-present
Established and direct activities for this lab, part of RIT's CASCI (Center for the Advancement of the Study of CyberInfrastructure) initiative. The lab has offered a series of talks, provided opportunities for students to pursue related research projects, and most recently has taken on responsibility for the MSR-sponsored project PULP (described below under "funded research).

University of Alabama

Adjunct Associate Professor, College of Communication, 1996
Appointed to the faculty of the Journalism Department to teach classes in new media on the graduate and undergraduate levels.

Adjunct Instructor, School of Library & Information Studies, 1993-1995
Taught courses in information technology and information science as part of the MLS curriculum.

University of Oklahoma Extension Services

Adjunct Instructor, 8/94 and 8/93
Designed and presented a five-day intensive academic course on the Internet, sponsored by the School of Library and Information Studies and presented to graduate and continuing education students. This class was repeated the following year due to its popularity.

Internet Training & Consulting Services

Owner, 7/92 - present
Provide training and consulting on Internet topics to libraries, law firms, businesses, military bases, government agencies, educators, and K-12 students. Developed extensive WWW resources for ITCS and client organizations.

Congressional Information Service, Bethesda, Maryland

Support Supervisor, 1/90 - 6/92
Supervised CD-ROM telephone support and training to worldwide users, internal testing of CD-ROM software products, production of print and online user documentation, and product fulfillment. With programming staff, developed new CD-ROM user interfaces.

Office Automation Coordinator, 4/89 - 6/92
Specified, purchased, and installed 250-node, 4-server Novell local area network with CD-ROM server, and supervised all network operations. Provided technical support to all company employees on a wide range of hardware and software configurations. Supervised PC support staff. Prepared and administered departmental budgets.

The Library of Congress, Washington, DC

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Bibliographer in Government and Law, Library Services Division, 1/88 - 4/89
Prepared bibliographies on topics relating to government and law for Members of Congress and their staff, as well as for subject analysts in the Congressional Research Service.

Library Intern, Staff Training and Development Office, 9/87-1/88
Selected as a member of the Library of Congress Intern Program for 1987-1888. Participated in a series of tours, seminars, and work experiences providing an overall view of functions performed by the Library and its staff.

University of Michigan, School of Education, Ann Arbor, Michigan

Graduate Student Staff Assistant, Instructional Strategy Services, 1/87 - 8/87
Managed the operations of a microcomputer resource center providing facilities for software and hardware evaluation by students and faculty of the Schools of Education and Information and Library Studies. Supervised two student programmers responsible for upkeep of a software database and for routine maintenance of equipment. Presented workshops on microcomputer use in the fields of education and information science. Evaluated software for purchase.

Stanley H. Kaplan Educational Center, Ann Arbor, Michigan

Instructor, Graduate Management Admissions Test Course, 9/86 - 8/87
Taught eight-week preparation courses for the GMAT to groups of 30-40 students. Gave presentations, and prepared a promotional videotape, for students considering application to business schools.

funded research

PULP: Personal Ubiquitous Library Project

Obtained $25,000 in funding for the Lab for Social Computing to support the development of a social information tool intended to aggregate web-based resources, books, and articles into personal, shareable libraries, using both web-based and mobile interfaces.

Understanding Gendered Attrition in Departments of Information Technology

Obtained NSF-funded grant Grant No. EIA-0305973 for $323,524 (with co-PI Tona Henderson) to explore the experiences of undergraduate women in IT programs, focusing primarily on reasons for entry into IT programs, and reasons for departure after matriculation. This grant research will take place between July 2003 and June 2005.

publications & presentations

Lawley, E. (2004). "The Use of Digital Backchannels in Shared Physical Spaces." Panel presentation at ACM CSCW (Computer-Supported Collaborative Work), Chicago, IL.

Lawley, E. (2004). "Weblogs and Cross-Disciplinary Communication." Panel presentation at Media Ecology Assocation, Rochester, NY.

Lawley, E. (2003). "Cultural Capital and Dominance in the Weblog Economy." Presented at Association of Internet Researchers, Toronto, Canada.

Lawley, E., & Henderson, T. (2003, October). *Understanding Gendered Attrition in Departments of Information Technology.* ACM Proceedings of the CITC4.

Lawley, E. L. (2002, September). *Beyond Design: Toward a Web Application Development Curriculum.* Paper presented at the Conference on Information Technology Curriculum 3, Rochester, NY.

Lawley, E. L. (1999). Making sense of doctoral student attrition in library and information science. (Doctoral Dissertation, University of Alabama, Tuscaloosa, AL, 1999) *Dissertation Abstracts International, 61,* 11.

Lawley, E. L. (1994). Choosing an Internet Trainer or Consultant. In *Internet Unleashed.* Indianapolis, IN: SAMS.

Lawley, E. L. (1993). *Discourse and Distortion in Computer-Mediated Communication.* Student paper presented at the International Communication Association, Washington, DC.

Lawley, E. L., & Summerhill, C. A. (1992). *Internet Primer for Information Professionals: A Basic Guide to Internet Networking Technology.* Westport, CT: Meckler.

Lawley, E. (1990). *Microcomputer Management and Maintenance for Libraries.* Westport, CT: Meckler.

lectures and presentations

SXSW/Interactive (March 2006)

Speaker on three panels: "Book Digitization and the Revenge of the Librarians," "Beyond Folksonomies," and "Global and Local Social Play"

Syndicate Conference (December 2005)

Speaker on "Searching the Syndisphere"

Corante/Berkman Symposium on Social Architecture (November 2005)

Speaker on "Is Social Software a Mirror or a Lens?"

Internet Librarian (October 2005)

Keynote speaker on "Top Technology Trends for Libraries"

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C2: Connect & Collaborate!

Keynote speaker on "Social Networking and Collaboration Inside the Enterprise"

Social Software in the Academy Workshop II (May 2005)

Invited participant in this workshop on social computing and curriculum topics.

Microsoft Research 2005 Social Computing Symposium (April 2005)

Invited participant, and speaker on "digital backchannels."

SXSW/Interactive (March 2005)

Moderator, "Spam, Trolls, and Stalkers: the Pandora's Box of Community"

7th Woibex Women in Business Conference (Dubai, UAE)

Keynote speaker

NVHA Innovations Conference on Social Network Media (March 2005)

Speaker on "Social Publishing Tools" panel.

Social Software in the Academy Workshop (October 2004)

Moderator and organizer for workshop held at the USC Annenberg Center for Communication

Supernova (June 2004)

Participant in a panel on "Closing the Backchannel Loop."

Microsoft Research Social Computing Symposium 2004

Invited participant at this limited-attendance academic/industry meeting.

SXSW/Interactive (March 2004)

Panel participant, "Streetwise Librarians and the Revolution in Public Information."

O'Reilly Emerging Technologies Conference (February 2004)

Presented a conference session on "Breaking Out of the Boys' Club: How Diversifying your Development Team Can Expand Your Market."

Internet Librarian 2003

Spoke on a keynote panel entitled "Top Technology Trends," and presented a separate session entitled "Beyond Blogging."

Supernova 2003

Participated on the wrap-up panel at the end of this conference on decentralization of communications, software, and media.

University at Buffalo "Gender Week" Program, 2002

"What's a nice girl like you doing in a place like this?": The female experience in information technology education. (This presentation served as the basis for the NSF ITWF grant proposal funded in 2003.)

Web 2001 Conference (San Francisco, CA), 2001

Presentation on "Web/Database Technologies" accepted by program committee and delivered at the conference.

Public Relations Society of America, 2000

Featured speaker at a meeting of the Rochester chapter of the Public Relations Society of America (PRSA), on the topic of using the web as a public relations medium.

Western New York Library Resource Council, 1998

A presentation focused on the use of filtering software in libraries.

RNews "756-TALK" Community Affairs Program, 1998

Participated on a community affairs television show, discussing the topic of "Hate Speech on the Internet."

professional activities

Library & Information Technology Association (A Division of the American Library Association)

- Top Technology Trends Expert, 1999-present
- Board of Directors, 1994-1997
- Chair, LITA/CLSI Scholarship Committee, 1993-1994
- Chair, Leadership Development Committee, 1990-1993
- Nominating Committee, 1992
- Interest Group Coordinator, 1989-1991
- Microcomputer Users' Interest Group Chair, 1988-1989

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Telecommunications Electronic Reviews

- Editorial Board, 1/94-7/98
- Commentary Editor, 1/94-7/98

Association for Library & Information Science Educators (ALISE)

- Gender Issues SIG convenor, 1995
- Gender Issues SIG panel presentation given 1993

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18. Sharon Mason, M.S. – Networking, Security, and Sys. Admin., GCCIS

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Sharon P. Mason, M.S., CCNA

E-Mail Address: spm@it.Rit.EDU
Web Page: http://www.it.rit.edu/~spm

Summary of Experience

Experienced networking instructor. Accomplished curriculum developer, student advisor and mentor. Skilled network administrator with experience in design, setup, configuration, and analysis.

Education

Rochester Institute of Technology, Rochester, NY 14623
Masters Degree, August 1997   Concentration: Telecommunications
Program of Study: Information Technology   GPA: 3.83

Ithaca College, Ithaca, NY 14850   Concentration: International Communications
Bachelor of Science, May 1994   Minor: Economics
Major: Television and Radio Communications   Major GPA: 3.5

RIT Graduate Assistantship
Xerox Scholarship Recipient
Scripps Howard Foundation Scholarship Recipient
Completed Bachelor Degree in three years

Computer Skills

Operating Environments: Windows, DOS, UNIX and Linux (working knowledge)
Networking Concepts: Bridging, Switching, Routing, Serial Communications, Ethernet, Token Passing, PPP, ARP, TCP/IP, UDP, Infrared Wireless, Subnetting, Access Lists, NAT, RIP, IGRP, EIGRP, OSPF, Queuing, STA, VLANs, VTP, Encoding Schemes, Firewalls, VPN, Packet Sniffing and Analysis
Programming Languages: Java, C, HTML, VB (working knowledge of all)

Teaching and Instruction

Faculty *Rochester Institute of Technology, Rochester, NY*   Sept 1997-present
Instructor, 1997 – 1999, Assistant Professor, 2000 – present
Developed and taught undergraduate networking courses, labs and lectures. Course objectives focused on data communications, information assurance, various network topologies and protocols, routing, bridging, packet and traffic analysis. Participated as crucial member in the building of the current networking lab infrastructure. Contributed significantly to the Bachelor of Science degree in Applied Networking and Systems Administration. Developed undergraduate database course and lab materials as well as undergraduate database concentration. Designed and budgeted database lab. Served as a member of Institute Appeals Committee, RIT Academic Retention Implementation Committee, RIT Security Education Committee, RIT Eisenhart Committee, GCCIS Security Education Committee, GCCIS Academic Conduct Committee, GCCIS Faculty Load Evaluation Committee; and IT Curriculum, MSIT, Facilities, Strategic Planning, Evaluation, and Scholarship Committees. Provided recommendations on equipment purchases and implementation. Advisor to ITSO (Information Technology Student Organization) and CSH (Computer Science House).

Graduate Teaching Assistant *Rochester Institute of Technology, Rochester, NY*   1996-1997
Taught undergraduate Applied Database Management course. Developed course materials including projects and tests. Course objectives focused on data modeling techniques, Entity Relationship Modeling, Semantic Object Modeling, procedures for transforming data models into relational databases, normalization, Structured Query Language, relational algebra, and database interface design.

Software Instructor *Professional Development Group, Farmington, CT* 1994-1995
Instructed public and private Macintosh and PC database, word-processing, spreadsheet, and operating systems classes. Recommended software platforms for individual business needs. Provided phone support for clients. Edited instruction manuals.

Networking

Graduate Assistant, System Analyst *Rochester Institute of Technology, Rochester, NY* 1995-1997
Assisted Information Technology Department System Analyst in daily maintenance and operation of the Information Technology lab of 130 computers. Installed, upgraded, and maintained software for use on a LAN. Assisted in setup of Windows NT server and client machines. Maintained daily server backups.

First Class Administrator *Office of Distance Learning, Rochester Institute of Technology, Rochester, NY* Summer, Fall 1996
Administered First Class electronic conferencing, e-mail, and chat software for Distance Learning Information Technology courses. Responsible for setup and support of all course conferences. Created all student, faculty and staff accounts. Provided faculty, staff, and student training as well as technical phone support for users.

Network Consulting

Everest Solutions, LLC October 1999-2004
Implemented and supported network infrastructure. Recommended services and equipment purchases. Duties included server maintenance, internet connection configuration, firewall configuration, NAT and PAT configuration, backup and disaster recovery setup.

Ecora.com Summer 2000
Systems Engineer for product documentation software (together with Professor Lutz). Provided knowledgebase for the Cisco suite of products. Recommended project scope and defined network topology parameters. Interfaced with programmers and project managers.

Remington, Gifford, Williams & Colichio, LLP May 1997-2001
Upgraded and implemented new network infrastructure for a local law firm. Executed hardware, operating system, mail, and software upgrades. Recommended updated network infrastructure.

Professional and Scholarly Activities

Textbook Chapter Reviewer, The Handbook of Information Security, Chapter "Digital Forensics, Digital Evidence, and Law Enforcement" Wiley Publishers	October 2004
Textbook Chapter Reviewer, The Handbook of Information Security, Chapter "Computer Forensics Procedures and Methods" Wiley Publishers	February 2004
NSF Grant Application, Principal Investigator, Division of Undergraduate Education, Scholarship for Service, "Expanding and Disseminating an Applied Information Assurance Track," with Daryl Johnson and Bruce Hartpence. Not funded.	January 2004
Forensics Educator Working Group (sponsored by U. of Tulsa and FBI) – Contributing Member	2002- 2004
NSF Grant Application, Co-Principal Investigator with Eydie Lawson, Keith Whittington, Paul Tymann, and Trudy Howles, Division of Undergraduate Education, Course, Curriculum, and Laboratory Improvement Program-Adaptation and Implementation "Female-Friendly Pedagogy and Classroom Culture in Introductory Programming Sequences in Computing" Not funded.	December 2003
Information Assurance Educators Conference, Invited Attendee	July 2003
Subcontract PI/Author, Computer Security Curriculum Development – U. Tulsa and NSA ~ $40,000	Summer 2003
Cisco Security Equipment Donation ~ $50,000	Summer 2003
Abstract and Paper Reviewer – CITC4	May – July 2003
FEAD Grant Co-Recipient – Cyber Security Training ~ $15,000	April 2003
Consortium for Computing in Small Colleges: Northeastern Conference, Panel Speaker	October 2002
Association for Women in Computing Networking and Career Event, Panel Moderator	September 2002
CITC3 – Conference on Information Technology Curriculum III, Presenter	September 2002
CyberCorps Conference, University of Tulsa, Invited Attendee	July 2002
Cisco Security Conference, Washington, D.C.	July 2002
NCISSE – National Colloquium for Information Systems Security Education Attendee	June 2002 and 2003
FLCC Project ACE – Achieving Career Equity in Nontraditional Occupations, Presenter	May 2002
Cyber-Security NSF Workshop and Conference, IUP Attendee	July 2001
First Year Enrichment and Retention Conference Attendee	October 2001
Linux World Conference Attendee	August 2001

ITEC Conference Attendee	June 2001
CCNA Certification	October 1999
Webster School Cmtee. for Equal Opportunity (girls in computing)	September 1999
University of Rochester Summer Physics Program Guest Speaker	July 1999
Cisco CCDP Prep Class	May 2000
Cisco BCMSN Training	April 2000
Cisco ACRC Training	January 2000
Cisco ICRC Training	May 1999
Cisco Networking Academy Training	July 1998
Cisco Regional Academy Setup	April 1998
Girl Scouts Girl Career Power Guest Speaker	March 1999
Faces of Change Conferences Guest Speaker	October 2000
	May 1998
FEAD Grant Recipient – FDDI Networks ~$20,000	April 1999
Oracle Training	January 1998
Board of Trustees Department Presentation	1997
Council for the Arts Volunteer Database Consulting	1998

Publications and Presentations

Co-author (2005) "Education and Training in Digital Forensics: A Guide for Digital Forensic Laboratories, Educational Institutions, and Students" Technical Working Group Education in Digital Evidence, U.S. Department of Justice, National Institution of Justice

Mason, S., Johnson, D. (2004) "Network and Systems Security, A Collaborative Approach" Poster Paper, SIGITE Conference, Brigham Young University, October 2004

Mason, S. (2003) "Developing and Integrating Forensics in a BS in Networking and Systems Administration"
Forensics Educators Working Group, June, Department of Defense Forensics Laboratory, Bethesda, Maryland (presentation)

Mason, S., Lutz, P. and Yacci, M. (2002) *"Experiential Learning Approaches in Networking and Systems Administration"* Conference for Information Technology Curriculum III, September 19-21, Rochester Institute of Technology

Mason, Sharon (2002) *"Logistics Issues in Designing a Cyber Security Lab"* Consortium for Computing in Small Colleges: Northeastern Conference, October 18-19, Bloomsburg University, PA (also published in the *"Journal of Computing Sciences in Colleges"*)

Professional and Honorary Memberships

Cisco Users Group
Association for Women in Technology, National and Rochester Chapters, 2000-2003
Golden Key International Honor Society
I was honored as the faculty mentor to " Alpha Sigma Lambda Honorary Society"

Courses Taught (* substantial curricular contributions made, ** course developed solely or in conjunction with another professor)

Undergraduate

VKSF 540	Network Design
VKSF 517	Network Forensics and Security
VKSF 581	Computer and Network Forensics
VKSF545**	Advanced Routing and Switching Lecture
VKSF 545**	Advanced Routing and Switching Lab
VKSF 342*	Internetworking Lab Lecture
VKSF 342*	Internetworking Lab Lab
VKSF 515*	Introduction to Routing and Switching Lecture
VKSF 515*	Introduction to Routing and Switching Lab
VKSF 360*	Introduction to Database and Data Modeling
VKSF 485**	Fundamentals of DBMS Architecture Lecture
VKSF 485**	Fundamentals of DBMS Architecture Lab
VKSF 341	Data Communications
VKSF 516	Introduction to Network Administration Lab

ICSA215	Visual Programming I Lab
Graduate	
VKSF 733	Fundamentals of Telecommunications Technology
VKSF 750	Distributed Systems

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Curriculum Development

During the 2003 summer, I was the Principal Investigator and author of a Security Curriculum Development subcontract. This subcontract was approved by the University of Tulsa after submission at the invitation of the Tulsa PI and grant recipient for funding from the National Security Agency.

During the 2001 academic year, I was a significant contributor to the new B.S. degree in Applied Networking and Systems Administration. In addition to the necessary curriculum planning and development, I was responsible for acquiring industry support for the degree and liaising with our corporate contacts.

During the summer of the 1999 academic year, I developed a new Networking course in Advanced Routing and Switching as part of the undergraduate networking sequence. This lab-based course was offered for the first time in Winter, 2000(2). Students built advanced networking architectures and explored topics such as queuing methods, advanced routing protocols, interactions of switching protocols as well as network scalability issues.

During the summer of the 1996 academic year, I was an instrumental member of the database concentration development team. Together with the other group members, I researched current database technologies and laid out a three-course database sequence examining client server issues, database architectures, web based database systems and database programming. Additionally, I was responsible for designing and planning the database lab infrastructure including all equipment and software purchases and configurations.

Master's Theses/Projects

2005, Committee Member, Roberty B. Wilkie "Detecting Potential Security Problems with SNMP/MIB Enabled Devices"
2004, Chairman, Rajat Mandal "IPv6"
2004, Chairman, Mark Merlino, "IPv6 Security"
2004, Committee Member, Huda Al-Habsi "Delivering Video Services Over IP Networks"
2004, Committee Member, George Danilovics "Evaluating the Usability and Security of Wireless Networks"
2003, Chairman, Todd Wilson, "IP Telephony"
2003, Committee Member, Paul Scully "Secure Wireless Networks"
2002, Chairman, Victor Wainwright, "Providing a Secure Open Web Environment Using a Reverse Proxy"
2002, Chairman, Michael Pangallo, "Kick the PC Habit: Planning and Implementation of a Thin Network"
2002, Committee Member, Lund, Eric, "Implementing a Distributed Personal Timing System"
2001, Committee Member, Amit Datta and Paul Zam, "Voice Over IP"
2000, Chairman, Dean Laury, "LAN Based Intranet: Desktop Video Conferencing"
1998, Chairman, Nataliya Usacheva "Database Design and Data Modeling"
1998, Chairman, Galina Kaminsky, "Database Design and Data Modeling"
1997, Committee Member, Dragana Vasic "Network Security and Internet Firewalls"

Department of Information Technology - Committees & Service

Curriculum Committee	1997, 1998
MSIT Subcommittee	1997, 1998
Facilities Committee	1999, 2000
Electronic Resources Subcommittee	2000
Faculty Search Committee	1998
Strategic Planning Committee	1998
Evaluation Committee Chair	1999
Scholarship Committee Chair	1999-2004
ITSO Faculty Advisor	1998-present
Explorer Post Program Development (Women in Technology)	2003

Golisano College of Computing and Information Sciences - Committees & Service

Security Education Evaluation Committee Chair (Ad Hoc)	2003
Computer Science House Advisor	2000-present
Academic Conduct Committee	1999-2001
Faculty Load Evaluation Committee	2001

RIT Committees and Service

RIT Move-In Day	September 2002
RIT Midnight Breakfast	2002, 2003
RIT Security Education Committee	2001 - 2002

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Eisenhart Committee	2003
Institute Appeals Committee	2001-present
Academic Retention Implementation Committee	2000-2003
NTID Faculty Support Team Search Committee	1998

Other

User Support Associate *Academic Computing and Client Services, Ithaca College, Ithaca, NY*   1993-1994

Audited purchase records totaling over one million dollars. Helped students, faculty, and staff to maintain VAX/VMS disk quota. Extensive use of various database files. Coordinated computer retail information and assisted students with daily computer trouble shooting.

Student Engineer *Ithaca College Television, Ithaca College, Ithaca, NY*   1992-1994

Worked with studio technicians in daily operations. Scheduled daily operations on Media Net. Responsible for updating and maintaining all KU and C band satellite coordinates using the Tracker IV. Phased VT decks and cameras, operated character generator, patched, made windows dubs, and assisted professors and students in lab sessions.

19.   Elouise Oyzon, M.F.A. – Information Technology, GCCIS

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Elouise R. Oyzon

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Rochester Institute of Technology
Rochester, NY, 14623-5608, USA
ero@it.rit.edu http://www.it.rit.edu/~ero/ (585) 475-6542

Educational Background

Master of Fine Arts, Computer Animation
Department of Film/Video/Animation
Rochester Institute of Technology, Rochester, NY 1999

Bachelor of Fine Arts, Printmaking
Department of Fine and Applied Arts
Rochester Institute of Technology, Rochester, NY 1992

Industry Experience

Professor, Rochester Institute of Technology, Rochester, New York
Current rank: Assistant Professor
Fall 2000 to present

Host, Radio Show, "What the Tech!?"
September 2002 to present

Owner, Oyzon Animation
Web design, Graphic design and Animation
February 1999 to present

Visiting Professor
Rochester Institute of Technology, Rochester, New York
Fall 1999 to 2000

Adjunct Faculty
Rochester Institute of Technology, Rochester, New York
Fall 1996 to 1999

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Academic Scholarship

"Woman Hanging On", performances of solo and collaborative works by Elouise Oyzon, Michelle Harris, and Juanita Suarez, State University of New York Geneseo, September 2006

"Hairline Cracks: from blog to performance", re(Actor): First International Conference on Digital Live Art, joint Conference British HCI Group & ACM, Queen Mary University, London, UK, September 2006

Executive Committee, Art Director/Web Master, Sandbox: ACM SIGGRAPH Video Games Symposium, July 2006

ImageMovementSound Festival 2006
    "Woman Hanging On" Collaboration involving experimental video, dance and music. April '06

"Not from Scratch, How the Fine Arts informs HCI", Microsoft Research Colloquium (by invitation), January '06

DANSCORE, Faculty-Choreographed Dance Concert
Hartwell Dance Theatre, SUNY Brockport
Brockport, December '05.

Society for the History of Technology Annual Meeting, Minneapolis, MN, November 2005, "What the Tech!" Panelist in "Technology Goes Public: Australia, Norway, and the U.S."

2005: The 7th Annual National Dance Education Organization Conference: The Spirit of Creativity: Its Essence in Dance and Education. Bufallo, New York. November '05.

"Not Quite from Scratch: Taking Aesthetics from Fine Art to Digital Interaction," HCI 2005, Edinburgh, Scottland. *Understanding and Designing for Aesthetic Experience, Workshop Papers*, November 2005

"What the Tech!", Weekly hour radio magazine in science and technology, WXXI. September '03 – July '05

Expressions in Diversity Conference
    "Hairline Cracks" Collaboration involving experimental video, dance and music. April '05

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ImageMovementSound Festival 2005
"Hairline Cracks" Collaboration involving experimental video, dance and music.
April '05

Media Ecology Association Annual Convention, Rochester, NY June 2004
"Blogs: A first person narrative in real time", Panel presentation about the
narrative aspect of web logs.

HighEdWeb Professionals Conference, Rochester, NY 2003
"Interface Design, A dialog in three parts"

High Falls Film Festival, October 2001
"Evolution in the First Person" exhibited

ImageMovementSound Festival 2000
"Reticular Matter" Collaboration involving experimental video, dance and music.
April '00

SIGGRAPH Electronic Theatre, July '99
"Evolution in the First Person" placed in regular rotation at SIGGRAPH's
electonic theater for the duration of the conference.

ImageMovementSound Festival '99
"WYSIWYG" a collaborative piece involving experimental animation,
improvisational dance and music. April '99

140th Annual SMPTE Conference and Exhibit, Pasadena, CA
"Evolution in the First Person" exhibited, October '98

Ovarvideo '98
"Evolution in the First Person" included in Ovarvideo '98 Festival, Ovar, Portugal.
October, 1998

Next Frame, Philadelphia, PA
"Evolution in the First Person", finalist in experimental category October, 1998

Director's Award, Best of Show
Rochester Institute of Technology, "Best of" Screenings
May 1998

Switzer Gallery Invitational Exhibition
Monoprints in Group show, Switzer Gallery, Rochester, New York,
January to February 1998

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RiOt TV
> " Evolution in the First Person " included in a compilation program of video and animation shown in numerous cities across the US.
> May 1998 to present

Offline
> "Conjugations" included in volume 41. Offline, a national arts organization and public access shown in numerous cities across the US.
> September 1996 to present

RiOt TV
> "Conjugations" included in a compilation program of video and animation shown in numerous cities across the US.
> May 1996 to present

Installation
> Mural created over a six month period, Mercer Gallery, Rochester, New York
> September to January 1992

"Everything Leaves Tracks Through Your Head"
> Solo exhibition of large scale monoprints, Cell Gallery, Rochester, New York
> September to November 1991

"Installations"
> Collaborative piece, created with Kate Quackenbush. Sculptures made of concrete, glass and paper installed at various sites throughout the city and documented by photography, Rochester, New York.
> January to February 1991.

Niagara Frontier Art Exhibition
> Group exhibition, etching "Money Where Your Mouth Is", winner Raphael Beck Award for
> exceptional work, Buffalo, New York
> July 1990

"Sisters of One Eye"
> Solo exhibition of drawings, made in conjunction with dance performance.
> Washington, DC, 1987

Curriculum Development

Graphical Elements of the User Experience

Digital Video for the World Wide Web

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Design of Graphical User Interfaces

HCI 2: Interaction Design

Grants, Contracts & Gifts

National Center for Deaf Health and Research (NCDHR) Health and Risk Behavior Survey, Research Committee/Application Development, funded by a grant from Center for Disease Control.

What the Tech! brought in $100,000 of seed funding from RIT and GCCIS.

Service to the Profession

Juror, *Rochester Business Journal*, Best of the Web

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Press & Public Appearances

Millimeter Magazine, October '99 issue
"Evolution in the First Person" reviewed in the article "Impressions of
SIGGRAPH: Standouts from the show floor."

Service to the Rochester Institute of Technology

Institute Level
Web Advisory Committee
Women's Advisory Group

Departmental Level
Online Presence Committee
Governance Committee
Search Committee

CASCI Affiliations
Lab for technological literacy, 2003 to present
Lab for Social Computing, 2004 to present
Lab for Fusion of the Arts and Technology

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20.   Andrew Phelps, M.S. – Information Technology, GCCIS

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Andrew Phelps
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Rochester Institute of Technology
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(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.

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- "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 game 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.

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- "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.

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- "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"* (locally WXXI-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*

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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.

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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.

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- 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.

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21.   Johnny Robinson, M.F.A. – School of Film and Animation, CIAS

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Not on file

22.   Jeffrey Sonstein, M.A. – Information Technology, GCCIS

Jeffrey Sonstein, M.A.

102 Lomb Memorial Blvd – Rochester NY 14623

jeffs at it dot rit dot edu

➤ Career Milestones

• Multiuser 3D Cyberspaces

Sending a *presence* off into the internetwork to meet and converse with others has long been a dream, and thanks to *Java and VRML* I have been able to help make this a reality. *VNet* demonstrated that *multiuser 3-D cyberspaces* can be deployed and operated with totally *portable code*, and that ordinary consumer-grade software can be used to access *powerful social experiences* on the Internet.

• The World Wide Web

Recognizing the power of HTML in 1994, I created one of the *first 2500 Web sites in the world: the InfoPark* at New College of California. In 1995 I built one of the *world's first half-dozen VRML sites: the vrmLab*. Since the beginning of 1997 I have been building *platform–independent Java programs* which use the Web to access resources. Since mid 1999 I have worked on several major *XML-based projects*.

• Telecommunications and Computers

Working with *telecommunications* since serving in the Army in the late 1960s, with *computers* since returning to college in the early 1970s, and with local and wide-area *networks* since the early 1980s, I have been responsible for creating and maintaining networks ranging in size from 15-seat LANs to a WAN with hundreds of seats; I have provided network administration and programming expertise to internal corporate networks (such as the *California Medical Association*) and to public-access networks and sites (such as *New College of California*, the *Digital Demos*, and the *Arcadium Gamer's Site*).

➤ Relevant Experience

Assistant Professor
March 2000 – Present
Department of Information Technology
Rochester Institute of Technology
Rochester NY

Teaching graduate and undergraduate courses. Tenured as of September, 2006.

Director of Technical Support
April 1999 – October 1999
blaxxun Interactive
San Francisco CA

Primary responsibility for providing technical support to all U.S. operations of this Munich DE -based organization.

Computer Scientist
September 1998 – April 1999
NASA Ames Research Center
Moffett Field CA

Primary responsibility for developing collaborative applications in Java, using CORBA and Java 3D.

Java & JDBC Applications Developer
April 1997 – January 1998
N/Volve, Inc.
San Mateo CA

Primary responsibility for developing database administration applications in Java, using JDBC and platform-independent GUI elements to provide a true *compile–once–run–everywhere* set of tools. The databases include both mSQL and Oracle, and serve as back-ends to a dynamic and servlet-based front-end technology providing personalized HTML.

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Networking Consultant
1996
California Medical Association
San Francisco CA

Provide primary leadership in the redesign and rebuilding of the California State Medical Association's corporate WAN, with the twin goals of better linking the Association's statewide offices and establishing a CMA Web presence while retaining a secure internal WAN.

Networks Administrator
1993 – 1996
New College of California
San Francisco CA

Planned, built, and managed Library Computer Lab; established and supported domain-wide internetworking services including a mixed-protocol WAN (using TCP/IP and IPX), dialup services, and distributed Internet information services; provided domain management services, email, news, and mailing list servers; domain-wide contact person for ISP, telco, and NIC; established one of the first 2,500 Web sites in the world in 1994; designed and constructed the *vrmLab*, a networked place for experiments in the Virtual Reality Modeling Language (VRML); conducted groundbreaking work with three-dimensional network interfaces at the vrmLab, cited by leading authorities and in textbooks in the field.

Graduate Student & Post-Graduate Intern
1988 – 1993
New College of California
San Francisco CA

Provided computer hardware, software, and systems support to the Information Resources Center.

Programmer and Consultant
1987 – 1988
Blue Lake Information Systems and Services
Arcata CA

Provided information management consulting to area small businesses.

Systems Administrator
1985 – 1986
Quadratron Systems, Inc.
Sherman Oaks CA

Provided Unix systems administration services and ported software in a multi-machine environment at a software house providing one of the first integrated suites of office automation products.

Partner
1981 – 1985
Office Automation Systems
Eugene OR

Provided office automation planning and conversion services to small- and medium-sized local businesses.

Lead Analyst
1979 – 1981
Judicial Information Systems Project
Department of Judicial Information
Lane County OR

Converted the District Courts from paper- to computer-based system as a Federal- and State-funded demonstration project; reduced archival storage requirements by 70% and enabled shifting of staff resources to direct public services; provided assistance to Circuit

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Courts during implementation of Federally-funded demonstration of Model State Judicial Information System.

Human Services Analyst
1976 – 1979
Social Services Division Administration
Department of Community Health and Social Services
Lane County OR

Provided administrative support services to various Social Services Division programs including budget-writing and -monitoring, recording and reporting systems design and implementation, and acting as Freedom of Information Act (FOIA) and Privacy Act Officer.

Freelance Programmer
1971 – 1975
Eugene OR

Provided consulting services in experimental design and analysis using University computer resources.

➤ Education

M.A., Social-Clinical Psychology

1991
New College of California
San Francisco CA

B.A., Humanities

1989
New College of California
San Francisco CA

➤ Publications & Workshops

XML-based 3D: Content Creators, the Web, and xVRML Are Ready for Each Other
Presented at the World Conference on E-Learning in October 2005

The xVRML Project: Building Web-based 3D virtual environments in XML
Presented at The Second Conference on Online Deliberation: Design, Research, and Practice '05

Schema editor as central design tool: the xVRML experience
Presented at Conference on Computing and Information Sciences '05

Untangling Regulatory Text: Multidimensional Separation of Concerns and Task-Oriented Linking
[with Jeffrey Lasky]
Presented at ACM HyperText '03

Workshop Creator & Leader
Java for Industry Programmers
2002 Intensive workshop for local high-tech firm

Co-Facilitator
JXTA BOF Session
2001 JavaOne Conference

Session Co-Leader
The Death of Narrative

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2000 Society for Literature and Science (SLS) Conference

Workshop Creator & Leader
Java for Industry Programmers
2000 Intensive workshop for local high-tech firm

Chapter 20 ("What Is VRML About?")
in *Using VRML* by Stephen N. Matsuba and Bernie Roehl (Que Corporation, 1996)

Various Articles
in *VRMLSite Magazine*, 1996

- Lights and VRML 2
- VRML Goes Dynamic
- Practical Applications for VRML 2.0

Various articles
in *CADD++/VRML Newsletter*, 1996

Last updated: 21 August 2006
Comments to: jeffs at it dot rit dot edu

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23.   Ronald Vullo, Ph.D. – Information Technology, GCCIS

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Ronald P. Vullo, Ph.D.

E-mail: rpv@it.rit.edu
Web: http://it.rit.edu/~rpv/
Office: (585) 475-7281

Professional Experience

Rochester Institute of Technology   12/01 - present
Assistant Professor

- Courses:
  320: Introduction to Multimedia:The Internet & the Web
  741: Fundamentals of Web-Based Multimedia
  409: Web Site Design & Implementation
  737: Website Design & Technology
  536: Web Client Side Programming
  539/739: Programming for the WWW
  546: Web Client Server Programming
  Discovery (Ph.D. Core)

- Co-Director, Laboratory for Information Visualization and Interaction
  http://www.casci.rit.edu/
- Director, Molly Web Development System Project
  http://molly.rit.edu/

- Committees:
  IT Department Facilities (chair)
  IT Department Graduate Curriculum
  IT Department Online Presence
  GCCIS Ph.D. Admissions Committee
  Medical Informatics Advisory Board

St. Jude Children's Research Hospital   5/00 - 8/01
Education Director, International Outreach

- Created education group, including writing job descriptions, hiring, and managing four
  direct reports.

- Designed, architected, and developed web-based learning, medical record, and online
  community system to support 15 partner sites world-wide (PHP, MySQL, Apache,
  Linux).

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- Initiated transition from ISDN-based teleconferencing to internet-based (H.323) teleconferencing.

- Managed multiple outside vendors.

- Managed on-site international fellows program (Over 100 fellows per year).

- Established streaming webcast system to allow international partner sites to participate in on-campus lectures.

izyx, inc.   9/99 - 5/00
Founding Vice President, Chief Information Officer

- Wrote the technology portions of the company's business plan.

- Designed and/or selected corporate intranet and extranet infrastructures, technologies, and policies.

- Participated in corporate strategic planning.

- Managed the RFP and technology vendor selection process.

- Translated the company's strategic vision into specific programmer and staff tasks.

- Managed the process of building a web-based enterprise de novo.

- Managed the recruitment and hiring of technology staff.

- Designed user interfaces and database structures for both internal tools and the company's web sites (TCL, Oracle, AOLServer, Unix).

- Stepped in and assumed graphical design responsibilities when the company's graphics arts vendor failed to deliver as promised.

- Assisted in investment capital development.

- Developed and managed all strategic partnerships between the corporation and academic institutions.

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University of Connecticut School of Dental Medicine   9/93 - 9/99
Director of Information Systems, Assistant Professor

- Managed all information systems for the school, including clinical, administrative, and academic computing for over 70 faculty, 120 staff, 260 pre- and postdoctoral students.

- Designed, planned, prototyped, and commenced implementation of a web-technology based electronic dental record for 180 chair clinic supporting over 250 providers and over 30,000 patients. Includes digital radiology and imaging, integral links to learning materials, and automated queries of library-based bibliographic databases.

- Designed the user interface and data dictionaries for a VAX-based dental clinic and billing system. Developed a cross-platform relational database data warehouse of the hierarchical data stored in that system.
- Developed a conceptual framework for online curricula, problem-based learning, and continuing education. Tightly integrated with the electronic dental record forming a single patient information/teaching/reference library environment, it is built with WWW technologies, and based on grant funded basic research.

- Webmaster and originator of the first dental school web site in the United States, authoring much of the content. First brought online when there were only approximately 2700 other web sites in the world, it continues to be a popular site receiving over 3,800 'hits' per day.

- Selected, tested, and implemented electronic application and admissions system, eliminating all paper applications to the school.

- Developed online Registrar, Transcript, and Course Schedule System. Built intranet web interface to same.

- Designed and supervised installation of dual platform (Windows and Macintosh) multimedia equipped classrooms including: computer & video projection, recordable whiteboards, teleconferencing, internet access, wireless audio, and wireless dual 35mm slide projection.

- Recruited and hired programming staff.

- Taught Clinical Medical Problem Solving (first and second year medical and dental course).

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- Committees

    - Information Technology Steering Committee (Chair)
    - Executive Committee of the Dental Staff
    - Standing Committee on Information Systems
    - Research and Technology Committee of Dental Council
    - Foundations of Dental Medicine Curriculum Committee
    - Quality Assurance Committee
    - Electronic Medical Record Committee
    - Multimedia Curriculum Coordinating Committee
    - Educational Information Technology Planning Committee
    - Web/Internet Steering Committee
    - Video Advisory Grant Committee
    - Year 2000 Steering Committee

State University of New York at Buffalo School of Dental Medicine   5/89-8/93
Director of Information Services, Assistant Professor, Research Scientist

- Founding member of the informatics program, and principal designer of the systems and infrastructure for the school. Including the design and installation the school's first network, and first connections to the internet. Established the school's first ethernet.

- Recruited and hired programming staff.

- Developed the concept for, and co-authored a funded grant proposal to the Bureau of Health Professions Education to develop a prototype multimedia authoring and learning environment.

- Designed an online curriculum analysis system and supervised its development by an outside consulting firm. The current version is now a commercial product sold by the American Association of Dental Schools.

- Invited lecture series at three universities in Sweden on the design of hypermedia learning environments.

Apollonia Systems, Inc.   10/88-12/92
President and CEO
- Developed and marketed shrink-wrapped dental office management software for the Macintosh (second such system on the market).

- Established and maintained a Dentist-only dial-up bulletin board system.

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- Developed and marketed a PC (MS DOS) word processor and drawing application for young children.

- Provided individual small business consulting

New York State Department of Education   4/88-10/88
Administrator, New York State Summer Institute for Science and Mathematics

- Administered and co-developed a pilot summer residential program for state identified gifted and talented science and mathematics students. Management of program counselors, staff, university faculty volunteers, and all arrangements for housing, meals, supplies, and travel.

SUNY at Buffalo Center for Learning and Technology   6/85-5/89
Associate Director

- Instrumental in the organization and management newly established state university center to research and develop new teaching technologies. Acting director during the director's sabbatical leave.

- Developed and formally tested a hypertext learning environment incorporating a simulation of an electron microscope.

- Developed Macintosh version of an Apple II Morse code speech prosthesis system for individuals with cerebral palsy and other communication disabilities.

- Supervised multiple ad hoc programming teams working on multiple projects on PCs, Macintoshes, Amigas, and Apple IIs.

Education

University at Buffalo Science Education / Instructional Software Design	Ph.D.	1991
University at Buffalo Science Education / Instructional Design	Ed.M.	1985
LeMoyne College Biology	B.S.	1981

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Professional Associations

SIGITE: Special Interest Group for Information Technology Education
AMIA: The American Medical Informatics Association
ADEA: American Dental Education Association
  (Formerly AADS: American Association of Dental Schools)
NAPP: National Association of Photoshop Professionals

Publications, Presentations and Software

- Vullo, Ronald P., Ph.D., Bogaard, Daniel S., Hartpence, Bruce H.; Visualization Tool Development for Research, Learning, and Implementation, Upstate NY IEEE Workshop on Communications and Networking (2004)

- Vullo, Ronald P., Ph.D., Bogaard, Daniel S.,; Visualization with Dynamically Generated SVG, SIGITE Conference, 2004.

- Bogaard, Daniel S., Ronald P. Vullo, Ph.D., Christopher D. Cascioli; SVG for Educational Simulations, SIGITE Conference, 2004.

- Vullo, Ronald P., Ph.D., Bogaard, Daniel S.; Better than HTML Web: XML for Programming-Free Dynamically Generated Web sites, WWW@10 (2004)

- Bogaard, Daniel S., Ronald P. Vullo, Ph.D.; Better than HTML Web: Dynamically Generated SVG Web sites, WWW@10 (2004)

- Vullo, Ronald P. Ph.D., Catherine I. (Irving) Beaton, M.I.T.E., Michael W. Axelrod, M.F.A., Daniel S. Bogaard, M.S.I.T., Sean Boyle, M.S.I.T. *Perceptions and Reality: How Students Hear the Web* Paper presented at the Pacific Rim Conference on Disabilities, Honolulu, HI, March 29-30, 2004.

- Beaton Catherine I. (Irving), M.I.T.E., Ronald P. Vullo, Ph.D. *Perceptions of Blended Learning Benefits*. Paper presented at the Pacific Rim Conference on Disabilities, Honolulu, HI, March 29-30, 2004.

- Vullo, Kathryn T. Ph.D, Ronald P. Vullo, Ph.D. (2003) *Quit for Life: A Clinical Guide to Smoking Cessation*

- Roberson, Bobby J. Ph.D., Richard O'Brien, Ronald P. Vullo, Ph.D., Raul C. Ribeiro, M.D., Jesse J. Jenkins, M.D., Francisco Pedrosa, M.D., Teresa Santiago, M.D., Patricia D. Shearer, M.D., Thomas A. Key, Bassem I. Razzouk, M.D.*Cure4Kids: A Multilingual Medical Education and Patient Record Web Site.*Poster Presentation at the American

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Telemedicine Association Annual Meeting, June 2-5, 2002, Los Angeles California.

- Wilimas, Judith A. M.D., Emily Goldenberg, B.S., Bobby Roberson, Ph.D., Ronald P. Vullo, Ph.D., Deborah Blackstone, Raul C. Ribeiro, M.D.; *Access to Pediatric Hematology-Oncology Journals in Developing Countries.* Paper submitted to the World Health Organization, January 2002.

- Vullo, R.P., et al. (October, 2000).*Telemedicine initiatives in International Outreach at St. Jude Children's Research Hospital.* Presentation at the American and European Associations for Cancer Education Joint Meeting.

- Vullo, R.P., Lurie, A., et al. (July, 1999).*Health Sciences Education Development Center.* University of Connecticut Health Center Strategic Plan for Education, Farmington, Connecticut.

- Vullo, R.P. (December, 1998).*The Future of Information Technologies In Dentistry. International* College of Dentists Annual New York Section Luncheon, New York, New York.

- Vullo, K.T., Vullo, R.P. (June, 1997)*QuickQuit*™ Clinically based smoking cessation program.

- Vullo, RP (March, 1997). *Does Your Reach Expand Your Grasp? Innovative Solutions: Extending the Educational Web: Uses of the Internet for Clinical Instruction* Symposium Section, American Association of Dental Schools' Annual Session, Orlando Florida.
- Vullo, RP *Project DENTAL*

- Vullo, RP *Traci* (Real-Time Web "Chat Room" Engine, 1995)

- Vullo, RP *An Intermedia Learning Environment for the Health Sciences.*(Presentation, "Computers in the Health Sciences" Conference, Syracuse New York, June 1993)

- Tedesco, L.A., Eisner, J., Vullo, RP, Crow H & Certo M., J. *A Look at the Future of Dental Education.* (Academic Booth, AADS 1993 National Conference)

- Vullo, RP *DentLE: Features required of learning environments for the health professions.* (Presentation, "Multimedia in Medical Computing" Conference, Buffalo New York, January 1993)

- Vullo, RP *Multimedia Learning Environments for Higher Education.*(Presentation, "Multimedia Works-in-Progress" Conference, Troy New York, January 1993)

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- Vullo, RP *DentLE: The Dental Learning Environment: a prototype learning environment for the health professions.*(Presentation, "Teaching Tools for the 90s" Conference, Syracuse New York, November 1992)

- Eisner, J. & Vullo, RP *DentLE, The Dental Learning Environment: A Prototype.* Paper presented at the American Medical Informatics Association (AMIA) Symposium on Computer Applications to Medical Care (SCAMC) Baltimore, Maryland (November, 1992).
- Vullo, RP, & Eisner, J. *DentLE, The Dental Learning Environment: A Prototype Demonstration.* Demonstration Session at the American Medical Informatics Association (AMIA) Symposium on Computer Applications to Medical Care (SCAMC) Baltimore, Maryland (November, 1992).

- Eisner, J., Vullo, RP, & Crow, H.*Development of Computer-Mediated Problem-Based Learning in Temporo- Mandibular Disorders and Oro-Facial Pain.* Paper presented at The Second Conference for the Development of the Curriculum in Temporo-Mandibular Disorders and Oro-Facial Pain. Lincoln, Nebraska (October, 1992).

- Crow, H., Vullo, RP, & Eisner, J., *A Temporo-Mandibular Disorders and Oro-Facial Pain Case in DentLE.*Demonstration at The Second Conference for the Development of the Curriculum in Temporo-Mandibular Disorders and Oro-Facial Pain. Lincoln, Nebraska (October, 1992).

- Eisner, J. & Vullo, RP *DentLE and the Buffalo Approach to Changing the Dental Curriculum.* Invited presentation at the University of Gothenburg School of Dentistry, Gothenburg, Sweden (August, 1992).

- Eisner, J. & Vullo, RP *DentLE and the Buffalo Approach to Problem-Based Learning.* Invited presentation at the Lund University School of Dentistry, Malmö, Sweden (August, 1992).

- Eisner, J.,Hollway, J., Vullo, RP & Schroeder, E. (March, 1992). *Applications of UMLS (Unified Medical Language System) for Curriculum Content Analysis.*Poster Session, AADS Annual Meeting, Boston Massachusetts.

- Eisner, J.,Hollway, J., Vullo, RP & Schroeder, E. (March, 1992). *The Curriculum Database Project: Design by Consortium.* Poster Session, AADS Annual Meeting, Boston Massachusetts.

- Tedesco, LA, Eisner, J., Vullo, RP & Hollway, J. *University of Buffalo School of Dental Medicine Educational and Technological Initiatives.* (Academic Booth, AADS 1992 National Conference)

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- Tedesco, LA, Eisner, J., Vullo, RP & Hollway, J. (December, 1991). *The Buffalo Approach to Changing the Basic science Curriculum, or Toiling and Dreaming in the Vineyards of Dental Education.* Invited paper presented at the American Association of Dental Schools 33rd Annual Conference of Dental School Deans, Dallas, Texas.

- Vullo, RP *DentLE: The Dental Learning Environment, a Prototype Hypermedia System.* (Demonstration, "Teaching Tools for the 90s" Conference, Syracuse New York, November 1991)

- Vullo, RP (1991). *Technological Considerations in the Design of Knowledge Bases and the Delivery of Computer Managed Problem-Based Learning.* (in press)

- Vullo, RP *Microcomputers in Dental Education.* (Presentation, "We Don't Know What We Don't Know" Conference, Rochester New York, June 1991)

- Vullo, RP *Doctoral Dissertation: The Design and Evaluation of a Computer Based Learning Environment for Secondary Students Incorporating Hypermedia and Simulation.* (June 1991)

- Eisner, J., Tedesco, LA, & Vullo, RP (March, 1991). *Building an Integrated Knowledge Base for Problem- Based Learning.* Combined Sections Meeting Presentation, AADS Annual Meeting, New Orleans, Louisiana.

- Vullo, RP (March, 1991). *Hypermedia Authoring for Dental Educators.* Workshop, AADS Annual Meeting, New Orleans, Louisiana.

- Eisner, J., Vullo, RP, Johnson, L., & Osofsky, A. (March, 1991). *A New Conceptual Approach to Instructional Images.* Poster Session, AADS Annual Meeting, New Orleans, Louisiana.

- Tedesco, LA, Eisner, J., Vullo, RP & Hollway, J. *University of Buffalo School of Dental Medicine Educational and Technological Initiatives.* (Academic Booth, AADS 1991 National Conference)

- Vullo, RP *DentLE: An Application of HyperMedia in Higher Education.* (Presentation, MacAdemia 1990 Regional Conference)

- Vullo, RP *HyperMedia in Higher Education.* (Panel Presentation, SUNY Computing Officers' Association 1990 State Conference)

- Hollway, J., Tedesco, LA, & Vullo, RP (March, 1990). *Buffalo On-line Curriculum Information System (BOCIS).* AADS Annual Meeting, Cincinnati, Ohio.

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- Tedesco, LA, Eisner, J., Vullo, RP & Hollway, J. *University of Buffalo School of Dental Medicine Educational and Technological Initiatives.* (Academic Booth, AADS 1990 National Conference)

- Vullo, RP *HyperMedia in Dental Education.* (Workshop, AADS 1990 Annual Session)

- Tedesco, LA, Vullo, RP *InfoTech - Potential Educational Technologies Applications for the University at Buffalo School of Dental Medicine* (1989 Mini-conference on Educational Technologies in Dental Schools)

- Vullo, RP *Principles of Database Design* (Presentation, 1989 Rochester Business Expo)

- Vullo, RP *Principles of Database Design*(Presentation, 1989 Buffalo Business Expo)

- Vullo, RP *ADOMS*™ Computerized Dental Office Management System

- Vullo, RP *KidEdit*™ (Computer text processor for young children)

- Vullo, RP *Logo for Programmers* MacTech Quarterly, Volume 1, No, 2, (Summer 1989), pp. 111-14

- Vullo, RP *Socratic Dialog* (Computer aided instruction/Survey administration system)

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24.   Elissa Weeden, M.S. – Information Technology, GCCIS

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Elissa Weeden

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Rochester Institute of Technology
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Education	
	In Progress - 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 |

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Industry Experience	March 2001 – Sept. 2002	Rochester Institute of Technology	Rochester, NY

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

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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**
  - o Spring 1995-1996 (19953)
  - o Fall 1996-1997 (19961) - two sections

➢ **4002-201: Freshman Seminar**
  - o Fall 1998-1999 (19981)
  - o Fall 2001-2002 (20011)

➢ **0602-208: Introduction to Programming**
  - o Fall 1998-1999 (19981) – distance learning

➢ **0602-208 Lab: Introduction to Programming**
  - o Fall 1995-1996 (19951) - two sections
  - o Winter 1995-1996 (19952)
  - o Fall 1996-1997 (19961) - two sections
  - o Winter 1996-1997 (19962) - two sections

➢ **0602-210 Lab: Programming with Classes**
  - o Winter 1995-1996 (19952)

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- **0602-215: Introduction to Visual Programming I**
    - o   Fall 1998-1999 (19982)
    - o   Spring 1998-1999 (19983)
    - o   Winter 1999-2000 (19992) – Course Lead
- **0602-215 Lab: Introduction to Visual Programming I**
    - o   Fall 1998-1999 (19981)
    - o   Winter 1998-1999 (19982)
    - o   Spring 1998-1999 (19983)
    - o   Winter 1999-2000 (19992) - two sections – Lab Lead
- **0602-216 Lab: Introduction to Visual Programming II**
    - o   Winter 1999-2000 (19992)
- **0602-317: Visual Basic for Programmers**
    - o   Fall 1998-1999 (19981) – Course Lead
    - o   Winter 1998-1999 (19982) – Course Lead
    - o   Spring 1998-1999 (19983) – Course Lead
    - o   Fall 1999-2000 (19991) – Course Lead
- **0602-317 Lab: Visual Basic for Programmers**
    - o   Fall 1998-1999 (19981) – Lab Lead
    - o   Winter 1998-1999 (19982) – Lab Lead
    - o   Spring 1998-1999 (19983) – Lab Lead
    - o   Fall 1999-2000 (19991) – Lab Lead
- **4002-320: Introduction to Multimedia: The Internet and the Web**
    - o   Winter 2003-2004 (20042)
- **4002-483/360: Applied Database Management /**
    Intro. to Database and Data Modeling
    - o   Winter 1998-1999 (19982) - two sections
    - o   Spring 1998-1999 (19983) - two distance learning sections
    - o   Summer 1998-1999 (19984) - distance learning
    - o   Fall 1999-2000 (19991)
    - o   Winter 1999-2000 (19992) - distance learning
    - o   Spring1999-2000 (19993) - distance learning
    - o   Winter 2000-2001 (20002)
    - o   Spring 2000-2001 (20003) - Course Lead
    - o   Fall 2002-2003 (20021) - two sections - Course Lead
    - o   Spring 2002-2003 (20023)
    - o   Summer 2003-2004 (20034)
    - o   Winter 2004-2005 (20042) – Course Lead
    - o   Spring 2004-2005 (20043) – Course Lead
    - o   Fall 2005-2006 (20051)
- **4002-484: Multi-Client Database Implementation /**
    Fundamentals of Database Client/Server Connectivity
    - o   Winter 1999-2000 (19992) – co-taught with Prof. Stratton
    - o   Winter 2001-2002 (20012)
- **4002-484 Lab: Multi-Client Database Implementation /**
    Fundamentals of Database Client/Server Connectivity
    - o   Winter 1999-2000 (19992)
    - o   Winter 2001-2002 (20012)
- **4002-485: Database Client/Server Implementation /**
    Fundamentals of DBMS Architecture and Implementation
    - o   Fall 1999-2000 (19991) – co-taught with Prof. Stratton
    - o   Spring 1999-2000 (19993) – Course Lead
    - o   Fall 2000-2001 (20001) – two sections – Course Lead
    - o   Winter 2000-2001 (20002) – two sections - Course Lead
    - o   Spring 2000-2001 (20003) – Course Lead

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- o Fall 2001-2002 (20011) – Course Lead
- o Winter 2001-2002 (20012) – two sections - Course Lead
- o Spring 2001-2002 (20013) – Course Lead
- o Fall 2002-2003 (20021) – Course Lead
- o Winter 2002-2003 (20022) – two sections – Course Lead
- o Spring 2002-2003 (20023) – Course Lead

> **4002-485 Lab: Database Client/Server Implementation /**
   Fundamentals of DBMS Architecture and Implementation
  - o Fall 1999-2000 (19991)
  - o Spring 1999-2000 (19993) – Lab Lead
  - o Fall 2000-2001 (20001) – two sections - Lab Lead
  - o Winter 2000-2001 (20002) – two sections - Lab Lead
  - o Spring 2000-2001 (20003) – Lab Lead
  - o Fall 2001-2002 (20011) – Lab Lead
  - o Winter 2001-2002 (20012) – two sections – Lab Lead
  - o Spring 2001-2002 (20013) – Lab Lead
  - o Fall 2002-2003 (20021) – Lab Lead
  - o Winter 2002-2003 (20022) – two sections – Lab Lead
  - o Spring 2002-2003 (20023) – two sections – Lab Lead
  - o Fall 2003-2004 (20031)

> **4002-486 Multi-Client Server Database Configuration**
  - o Fall 2001-2002 (20011)
  - o Spring 2001-2002 (20013) – two sections – Course Lead
  - o Winter 2002-2003 (20022) – Course Lead
  - o Winter 2004-2005 (20042)
  - o Winter 2005-2006 (20052)

> **4002-486 Lab: Multi-Client Server Database Configuration**
  - o Spring 2000-2001 (20003) – two sections – Lab Lead
  - o Spring 2001-2002 (20013) – two sections – Lab Lead
  - o Winter 2002-2003 (20022) – Lab Lead
  - o Winter 2005-2006 (20052)

> **4002-720: Data Object Development**
  - o Fall 2000-2001 (20001)
  - o Fall 2001-2002 (20011)
  - o Fall 2003-2004 (20031)
  - o Fall 2004-2005 (20041)
  - o Fall 2005-2006 (20051)
  - o Winter 2005-2006 (20052) – distance learning

> **4002-890: Seminar in Database Performance and Tuning**
  - o Fall 2003-2004 (20031) – co-taught with Prof. Bills
  - o Spring 2003-2004 (20033) – co-taught with Prof. Bills

Independent Studies Directed

> Spring 2001-2002 (20013)
  - o An Analysis of Database Performance and Tuning Issues – Lance Farquhar
  - o Three-Tier Online Journal Web Project – Philip Jones
> Winter 2001-2002 (20012)
  - o Three-Tier Implementation – Alan Evans
  - o Evaluation of IT Database Concentration and an Analysis of Possible Expansion – Ayush Jain
  - o Expansion of Eval System Through Oracle Exploration – Neha Jain
> Spring 2000-2001 (20003)
  - o Multi-Tier Technology and Business Logic Representation – Ken

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Browning

- o 485 Reworking of the Lab "Experience" – Ray Reid
- o Student Worksheet Generation System con't – Kevin Parsons
- ➢ Winter 2000-2001 (20002)
  - o Desktop Notes – Adam Brentnall
- ➢ Fall 2000-2001 (20001)
  - o Database Design and Implementation – George Tennant
  - o Student Worksheet Generation System – Kevin Parsons
  - o 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	➢ Oct. 2005, Kaur, Rupinder, "A Database Monitoring Application", Co-Chair
	➢ 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*
	➢ Ren, Qinghu, "A Website for Customer Oligonucleotide Synthesis", *Chair*
	➢ Francis Lugemwa – in proposal stage

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Service

➢ **Department**

- o   Assisted with Department Open Houses
- o   Programming/Database Specialty Area
- o   Learning and Knowledge Management Degree Group
- o   Assembled Industrial Advisory Board Student Panel — 2000,2001
- o   Evaluation Committee — 2000-2001
- o   Scholarship Committee — 2001-2005
- o   Chair, Scholarship Committee — 2004-2005
- o   Online Presence Committee — 2001-2002
- o   Governance Committee — 2001-2004
- o   Strategic Planning Committee — 2001-2004
- o   Chair, Strategic Planning Committee — 2002-2003
- o   Reduced Load Adhoc Committee — 2002-2003
- o   Subgroup Chair, Oyzon Promotion Committee — 2002-2003
- o   Explorer Outreach group — 2003-2005
- o   Acting Undergraduate Program Coordinator — 20033-20034
- o   Member, JAD group for department database — 2004-2005

➢ **College**

- o   GCCIS Academic Conduct Committee — 2002-2004
- o   Mid-tenure Committee, Chair — 2005-2006

➢ **Institute**

- o   Academic Senate Faculty Affairs Committee — 2001-2003
- o   Faculty Advisor, Phi Sigma Pi — Sept. 2000-Present
  - ▪   Outstanding Faculty Advisor of the Year — 2002-2003
- o   Member, Faculty Learning Community — 2004-2005
- o   Academic Senate Student Affairs Committee — 2004-2006
- o   Participant, RIT ROCS — 2005, 2006
- o   RIT Eisenhart Committee — 2005-2006

Professional Development

➢ **Conferences and Workshops Attended**

- o   RIT Scholarly Workshop on Teaching and Learning — March 2005
- o   SUNY Buffalo Spring Conference on Teaching and Learning — Feb. 2005
- o   2004 Lilly Conference on College Teaching — Nov. 2004
- o   CITC 5 (Conference on Information Technology Curriculum) — Oct. 2004
- o   New Learning 2004 — May 2004
- o   CITC 4 (Conference on Information Technology Curriculum) — Sept. 2003
- o   Faculty Institute on Teaching and Learning — May 2003
- o   Faculty Institute on Advising, RIT — Nov. 2002
- o   CITC 3 (Conference on Information Technology Curriculum) — Sept. 2002
- o   SIGMOD/PODS 2002 (ACM Special Interest Groups on Management of Data/Principles of Database Systems) — June 2002
- o   WebDB Workshop — June 2002
- o   ITEC (Information Technology Exposition And Conference) — April 2002
- o   ITEC (Information Technology Exposition and Conference) — June 2001
- o   IOUG-A (International Oracle Users Group - Americas) National Conference — April 2001
- o   ITEC (Information Technology Exposition and Conference) — June 1999
- o   VBITS (Visual Basic Insiders Technical Summit) — Feb. 1996

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- ➤ **Conference Participation**
  - o Paper Reviewer, Informing Science & Information Technology Education Conference (InSITE) — Dec. 2005
  - o Session Co-moderator, RIT Faces of Change Conference — Nov. 2005
  - o 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 — Jan. 2005-Present
  - o Speaker, CITC5 — Oct. 2004
  - o Speaker and Moderator, New Learning 2004 — May 2004
  - o Paper Reviewer, Speaker, and Moderator, CITC4 — Oct. 2003
  - o Panel Moderator, CITC3 — Sept. 2002
- ➤ **Oracle Certification**
  - o Introduction to Oracle: SQL and PL/SQL (95%) — Aug. 2000
- ➤ **Oracle Training**
  - o Enterprise DBA Part 2: Performance and Tuning — July 2000
  - o Enterprise DBA Part 1B: Backup and Recovery — July 2000
  - o Introduction to Oracle: SQL and PL/SQL — June 2000
  - o Oracle 8 Database Administration — Aug. 1999
- ➤ **Publications**
  - o Co-wrote and edited: 0602-200 Survey of Computer Science Study Guides — Feb. 1998
  - o 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.
  - o 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.
  - o 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.
  - o 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.
  - o 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
  - o Submitted: Holden, E., & Weeden, E. (November 2005). What makes valuable pre-experience for students entering programming courses? submitted to Informing Science & Information Technology Education Conference (InSITE) 2006.

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Professional Memberships	➤ Member, ACM Special Interest Group for Information Technology Education (SIGITE)	2002-Present
	o Member of Four-Year Accreditation committee	2002-Present
	o 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	

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25.   Keith Whittington, M.S. – Information Technology, GCCIS

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Keith J. Whittington

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Professional Preparation
- M.S. in Computer Science, Nova Southeastern University, Ft. Lauderdale, FL (1999)
- B.S. in Aeronautical Engineering, Rennselaer Polytechnic Institute, Troy, NY (1977)
- A.S. in Engineering Science, Broome Community College, Binghamton, NY (1975)

Appointments

7/00 - present   Assistant Professor, Department Information Technology, Rochester Institute of Technology, Rochester, NY

9/92-6/00   Adjunct Professor, Department of Computer Science, Indian River Community College, Ft. Pierce, Florida

6/77-6/00   Computer Programmer and Systems Analyst, Sikorsky Aircraft, WPB, Florida

Research Interests
- Active learning
- Scholarship of Teaching and Learning

Research Projects

NSF CCLI-EMD Proof of Concept Grant Proposal, (2005) "Active Learning for Programming in Information Technology", (2005), Principal Investigator

RIT PLIG Grant (Provost's Learning Innovations Grant for Faculty) Adaptation and Implementation Program, (2004) "Implementing Active Learning and Students Cohorts in the First Course of the IT Introductory Programming Sequence", Principal Investigator

Peer Reviewed Publications

Whittington, Keith J., (2006) "Using Active Learning to Increase Student Learning and Retention in IT Introductory Programming Courses", Proceedings of Informing Science + Information Technology Education Joint Conference, Manchester, England

Whittington, Keith J. (2006), "Circle of Scholarship", Proceedings of the Teaching Professor Conference, Nashville, TN.

Gehringer, Edward, F., Deibel, Katherine, Whittington, Keith J., & Hamer, John, (2006), "Panel: Cooperative Learning – Beyond Pair Programming and Team Projects", Proceedings of the SIGCSE Conference.

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Whittington, Keith J. (2005), "Circle of Scholarship", The Teaching Professor, Volume 19, Number 8

Whittington, Keith J. (2005), "Progressive Programming Assignments", Journal of Informing Science & IT Education, 451-459.

Whittington, Keith J. (2005) "Circle of Scholarship", ASC Quarterly, RIT Publication.

Whittington, K. J., Bills, D., (2004) "Alternative Pacing in an Introductory Java Sequence", Proceedings of 5th Conference on Information Technology Curriculum, SIGITE, ACM Press. 118-121

Whittington, K. J. (2004), "Infusing Active Learning into Introductory Programming Courses," The Journal of Computing Sciences in Colleges, 19(5): 249 – 259.

Whittington, K. J., Bills, D., & Hill, L (2003), "Implementation of Alternative Pacing in an Introductory Java Sequence", Proceedings of 4th Conference on Information Technology Curriculum, SIGITE, ACM Press. 44-53

Whittington, Keith J. (2003), "A Project Designed to Assess Programming Skills", Journal of Informing Science & IT Education, 281-292.

Presentations, Workshops, and Panels (Peer Reviewed)

Whittington, Keith J., (2006) "Using Active Learning to Increase Student Learning and Retention in IT Introductory Programming Courses", Informing Science + Information Technology Education Joint Conference, Manchester, England, June 28, 2006

Whittington, Keith J. (2006), "Circle of Scholarship", The Teaching Professor Conference, Nashville, TN, May 19-21, 2006.

Whittington, K. J., "Simple Active Learning Activities for use in Technical Fields", Geneseo Faculty-Student Partnerships in Teaching and Learning Conference, Geneseo, NY, May 16-19, 2006

Gehringer, Edward, F., Deibel, Katherine, Whittington, Keith J., & Hamer, John, "Panel: Cooperative Learning – Beyond Pair Programming and Team Projects", SIGCSE, Houston, Texas, March 1-5, 2006.

Whittington, Keith J., "Active Learning Exercises for Use in Introductory Programming Courses", 25th Annual Lilly Conference on College Teaching, Oxford, OH, November 17-20, 2005.

Whittington, Keith J., "Workshop: Active Learning Exercises for Use in Introductory Programming Courses" Frontiers in Education Conference, October 2005. Accepted, but cancelled due to IT travel budget problems.

Whittington, Keith J., "Progressive Programming Assignments", Informing Science & IT Education Joint Conference, Flagstaff, Arizona, June 16-19, 2005.

Whittington, Keith J., "Circle of Scholarship," RIT Faculty Institute on Teaching and Learning Conference, Rochester, NY May 24, 2005.

Whittington, Keith J., "Workshop: Active Learning Exercises for Use in Introductory Programming Courses" The 10th Annual Computing Sciences in Colleges Northeastern Conference, Providence, RI, April 22 - 23, 2005. Accepted, but cancelled due to illness.

Whittington, Keith J., "Active Learning Exercises for Use in Technical Fields", 24th Annual Lilly Conference on College Teaching, Oxford, OH, November 18-21, 2004.

Whittington, K. J., Bills, D., "Success with Alternative Pacing", SIGITE Conference, Salt Lake City, Utah, October 28-30, 2004.

Whittington, K. J., Bills, D., "Improving Student Success with Alternative Pacing," RIT Faculty Institute on Teaching and Learning Conference, Rochester, NY May 25-26, 2004.

Donovan, S., Whittington, K., Rosenberg, P., Bayliss, J., Queensland, L., "Faculty Learning Community", RIT Faculty Institute on Teaching and Learning Conference, Rochester, NY, May 25-26, 2004.

Whittington, K. J., Bills, D., "Result of Alternative Pacing in an Introductory Java Sequence", Geneseo Faculty-Student Partnerships in Teaching and Learning Conference, Geneseo, NY, May 18-19, 2004

Donovan, S., Whittington, K., Rosenberg, P., Quinsland, L., Yambach, F., Brooks, B., Moon, J., Kelsey, P., Schaller, N., Young, T., "Faculty Learning Community", Poster Session given to the RIT community, Rochester, NY, April 2004.

Whittington, Keith J., "Infusing Active Learning into Introductory Programming Courses," The 9th Annual Computing Sciences in Colleges Northeastern Conference, Schnectady, NY, April 23-24, 2004

Whittington, K. J., Bills, D., & Hill, L, "Implementation of Alternative Pacing in an IT Introductory Programming Sequence", SIGITE Conference, Lafayette, Indiana, October 16-18, 2003

Whittington, Keith J., "Assessing Programming Skills", Informing Science & IT Education Joint Conference, Pori, Finland, June 24-27, 2003.

Whittington, K. J., Raj, R., Kazemian, F., Vallino, J., and Bayliss, J., "Collaborative Learning, The Good, the Bad, and the Ugly." RIT Faculty Institute on Teaching and Learning Conference, Rochester, NY, May 28-29, 2003.

Invited Presentations

Whittington, Keith J., "Implementing Active Learning Activities into the Classroom", RIT Faculty Workshop on Course Design, RIT, Rochester, NY, June 15, 2006

Whittington, Keith J., "How to Write a Successful Grant", RIT Grant Writing Boot Camp, RIT, Rochester, NY, November 23, 2005

Whittington, Keith J., "A Successful NSF Grant Proposal", PI Institute Workshop on Developing a Winning Proposal, RIT, Rochester, NY, October 19, 2005

Whittington, Keith J., "Engaging Your Students," RIT Leadership Institute Faculty Team, RIT, Rochester, NY, September 23, 2005

Whittington, Keith J., "Circle of Scholarship," RIT New Faculty Orientation, Rochester, NY August 26, 2005.

Whittington, Keith J., "Introduction to Active Learning," First Year Experience (FYE) Faculty training, Rochester, NY, July 18, 2005

Synergistic Activities

- Co-chair of the 2007 CCSCNE conference at RIT (planning stage)
- Advisory member for the 2007 Teaching Professor Conference
- NSF CCLI Review Panel, January 2005
- Faculty Learning Community Facilitator Training, June 2005
- Member of 2003 RIT Institute Faculty Learning Community
- Developed the alternative Java sequence for at-risk students
- Part of team that developed the Java sequence in the IT department
- Chair of IT undergraduate curriculum committee for 3 years (member 6 years)
- Member of Golisano undergraduate scholar committee for 5 years
- IT department programming group leader for 3 years
- Member ACM, SIGITE, and SIGCSE
- Founding member of Informing Sciences and Information Technology Education

Courses Taught

- 4002-215 Visual Basic I
- 4002-217 Programming for IT I
- 4002-218 Programming for IT II
- 4002-219 Programming for IT III
- 4002-220 Programming for IT IIA
- 4002-221 Programming for IT IIB
- 4002-318 Java for Programmers
- 4002-320 Introduction to Multimedia
- 4002-340 Computer Concepts
- 4002-425 Human Factors
- 4002-426 Interface Design
- 4002-571 Applications Programming
- 4002-714 Java for Programmers

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Appendix D: RIT Academic Costing Model

Appendix E: Full Course Proposals for New and Revised Courses

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1. 4002-417 Visual C++ for Programmers

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NEW COURSE: 4002-417

1.0	Title:	**Visual C++ for Programmers**
	Date:	August 31, 2006
	Credit Hours:	**4**
	Prerequisite(s):	**4002-219 – OR –**
		4002-414 – OR –
		4003-233
	Co-requisite(s):	None
	Course proposed by:	**Kevin Bierre, Keith Whittington, Chris Egert, Andy Phelps**

2.0   **Course information:**

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	5	35
Other (specify)		

Quarter(s) offered *(check)*
☒ **Fall**   ☐ **Winter**   ☒ **Spring**   ☐ **Summer**

Students required to take this course:

This is a core course for students matriculated in the Bachelors of Science in Game Design and Development program. Students will be scheduled for this course in their third year of study.

Students who might elect to take the course:

This course is appropriate for students who wish to learn the fundamentals of C++ programming within the context of the Microsoft Windows application framework. In particular, this course will prove desirable for students in programs such as Information Technology, Applied Networking and System Administration, and Medical Informatics.

3.0   **Goals of the course:**

This course places emphasis upon program design methodologies and problem solving techniques that support C++ programming within the Microsoft Windows environment. Upon completing the course, students will be able to apply procedural and object-oriented programming techniques to create applications that leverage the windows framework. In addition, students will learn how to utilize a development environment for code construction and debugging. In addition, this course will provide students with a foundation in an appropriate programming language,

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application framework, and development environment for the creation of video game and entertainment technology titles.

4.0   Course description

This course covers the basics of C++ development in the Windows environment. Topics covered include the use of an integrated development environment, basic C++ syntax, pointers, and Windows specific programming techniques. Emphasis is placed on the development of problem-solving skills. Large programming assignments are required. Prior programming experience is required. **Prerequisite(s)**: 4002-219 or 4002-414 or 4003-233 or equivalent programming experience.

5.0   Possible resources (texts, references, computer packages, etc.)

5.1   "Visual C++ .NET: How to Program" by Deitel, Deitel, Liperi, and Yaeger, 2004, Pearson Education, Inc, ISBN 0-13-437377-4

5.2   "C++ for Game Programmers" by Llopis, Charles River Media, 2003, ISBN 1-58450-227-4

5.3   "C++ How to Program, 5th Ed" by Deitel and Deitel, 2005, Pearson Education, Inc, ISBN 0-13-185757-6

5.4   "Practical C++" by Oualline, 2003, O'Reilly Media, Inc, ISBN 0-596-00419-2

6.0   Topics (outline):

6.1 Visual Studio overview
6.2 Windows programming environment
6.3 C++ Introduction
      6.3.1   Data types
      6.3.2   Defining a class
      6.3.3   Main method
      6.3.4   Creating objects
          6.3.4.1 Constructors and destructors
      6.3.5   C++ and other file types
          6.3.5.1 Source files
          6.3.5.2 Header files
          6.3.5.3 Resource files
          6.3.5.4 Other file types
      6.3.6   Attributes
6.4 Statements
      6.4.1   Decisions
      6.4.2   Iteration
      6.4.3   Functions
          6.4.3.1 Regular functions
          6.4.3.2 Inline functions
          6.4.3.3 Virtual functions
      6.4.4   Vectors and arrays
6.5 Pointers
      6.5.1   Definition
      6.5.2   How to declare and initialize a pointer
      6.5.3   How to reference a pointer
          6.5.3.1 Null pointer
      6.5.4   Passing pointers
      6.5.5   Returning pointers
      6.5.6   Pointers and arrays

6.5.7 Pointer arithmetic
6.5.8 Declaring a reference
6.5.9 Using a reference
6.5.10 How references differ from pointers
6.6 IO and Files
6.6.1 Creating files
6.6.2 Reading files
6.6.3 Command line input
6.7 GUI creation using MFC and Windows controls
6.7.1 Creating GUI's in Visual Studio
6.7.2 Basic components
6.7.3 Event handling in C++
6.7.4 Advanced GUI components
6.8 Memory Management
6.8.1 Allocating memory
6.8.2 Deallocating memory
6.8.3 Memory leaks
6.9 Use of windows.h and winmain
6.9.1 Structure of windows.h
6.9.2 Use of "Windows Lean and Mean" directive
6.9.3 Use of winmain vs main
6.10 Use of the Windows Event Queue
6.10.1 Getting events from the queue
6.10.2 Processing events
6.11 Custom object hierarchies
6.11.1 Multiple inheritance
6.11.2 Creating an object hierarchy
6.11.3 Using an object hierarchy
6.12 Use of the Standard Template Library (STL)
6.12.1 Definition of STL
6.12.2 Use of STL classes
6.12.3 Creating generic classes and functions

7.0 **Intended learning outcomes and associated assessment methods of those outcomes**
At the end of this course, the student will be able to:

7.1 Use an IDE to create and debug C++ programs. Demonstrate the use of object-oriented programming techniques such as class design, encapsulation, and inheritance. Assessed through in-class exercises and homework assignments.

7.2 Demonstrate the ability to use C++ arrays. Assessed through in-class exercises, practical exams, and homework assignments.

7.3 Demonstrate the use of pointers and the Standard Template Library. Students will be assessed through in-class exercises, practical exams, and homework assignments.

7.4 Demonstrate GUI creation in the Windows environment. Assessed through in-class exercises, practical exams, and homework assignments.

7.5 Use the Windows Event Queue correctly in a program. Assessed through in-class exercises, practical exams, and homework assignments.

7.6 Create custom object hierarchies in C++ and demonstrate how these class structures relate to existing languages, enforce scope, and relate to file structure. Assessed through in-class exercises, practical exams, and homework assignments.

7.7 Demonstrate the ability to use existing functions and create new functions. Assessed through in-class exercises, practical exams, and homework assignments.

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8.0 Program or general education goals supported by this course

8.1 Students will develop the ability to locate and use information about language and tool features from a variety of sources.

8.2 Students will develop problem solving skills through the need to analyze a problem and develop an appropriate solution. Students will be able to justify the approach taken to solve the problem.

9.0 Other relevant information

9.1 The course will be taught in an active learning classroom

9.2 Visual Studio .NET will need to be installed in the classroom.

10.0 Supplemental information for ABET

10.1 Course Coordinator:
The academic coordinators will assign a faculty member to coordinate the course in each quarter that the course is offered.

10.2 Prerequisites by Topic
Experience with at least one object-oriented programming language. In order to take this course, a student must possess the following skills:

10.2.1 Demonstrate the ability to configure a Windows machine to create, compile, and run programs. (4002-217)

10.2.2 Demonstrate the ability to write statements using different data types and operators that perform necessary operations based on the program's requirements. (4002-217)

10.2.3 Be able to analyze errors that occur when programs run and make changes based on this feedback. (4002-217)

10.2.4 Be able to use sequence, selection and loop statements to control the execution of a program. (4002-217)

10.2.5 Demonstrate the ability to create methods with or without return values that perform various operations, and be able to invoke them. (4002-217)

10.2.6 Be able to use such utility API classes Math and String, and use their methods to solve various problems. (4002-217)

10.2.7 Demonstrate the ability to create a class by defining both attributes that describe the state of the class, and methods that enforce OOP encapsulation principles. (4002-218)

10.2.8 Determine when to create and use arrays. (4002-217)

10.2.9 Demonstrate the ability to work with multiple classes and multiple instantiations of a class. (4002-217)

10.2.10 Write object-oriented programs with multiple class files and create objects used between class files. (4002-217)

10.2.11 Write event-driven programs using distinct listener class file objects and/or same class file listener objects. (4002-217)

10.2.12 Write object-oriented programs using class inheritance. (4002-218)

10.2.13 Write object-oriented programs using GUI components. (4002-218)

10.2.14 Write interface and abstract class files and use them in object-oriented programs. (4002-218)

10.2.15 Write object-oriented programs to read and write sequential data using an IO package. (4002-218)

10.2.16 Write classes with catch and throw exception class objects. (4002-218)

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10.2.17 Write programs that pass and receive objects via methods of an object. (4002-218)

10.2.18 Demonstrate the creation and use of reusable objects. (4002-219)

10.2.19 Demonstrate the use of the built-in data structure classes within a program. (4002-219)

10.2.20 Be able to create, examine, and use byte based files, showing knowledge of the way data is represented. (4002-219)

10.3   Laboratory projects (specify number of weeks on each)
10.3.1 Each class will have an in class exercise lasting 30+ minutes

10.4   Estimate ABET Category Content (check appropriate category)

	Core	Advanced		Core	Advanced
Programming		X	Computer hardware and networking		
Databases			Web technologies		
HCI					

10.5   Oral and Written Communications
Will not be covered as part of this course.

10.6   Social and Ethical Issues
Will not be covered as part of this course.

10.7   Problem Solving
Classes include in class exercises that require a student to analyze problem statements and create programs. The exercises take up 25 – 30% of the available class time. Homework questions also provide additional problem solving opportunities. This course provides 5-6 homework assignments during the quarter.

10.8   Collaborative Experiences
In class exercises can be done using paired programming techniques. Homework and practical exams are to be done individually.

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APPROVALS:

_____   _____
IT Program Coordinator   Date

_____   _____
IT Curriculum Committee Chair   Date

_____   _____
IT Department Chair   Date

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2. 4002-380 Fundamentals of Game Design and Development I

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B. Thomas Golisano College of Computing and Information Sciences
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NEW COURSE: 4002-380

1.0 **Title:** **Fundamentals of Game Design and Development I**
Date: August 31, 2006
Credit Hours: 4
Prerequisite(s): 4002-231 – OR –
4002-330
Co-requisite(s): None
Course proposed by: Stephen Jacobs and Chris Egert

2.0 **Course information:**

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	4	35
Other (specify)		

Quarter(s) offered *(check)*
☐ Fall   ☒ Winter   ☐ Spring   ☐ Summer

Students required to take this course:
This is a core course for students matriculated in the Bachelors of Science program in Game Design and Development . Students will be scheduled for this course in their second year of study.

Students who might elect to take the course:
This course is appropriate for students enrolled in the New Media Information Technology program.

3.0 **Goals of the course:**
In order to design modern video games, students must be able to comprehend and analyze the history of video games as a medium. In addition, students must be made aware of the different types and genres of video games and how content shapes and is shaped by play in an interactive medium. Students will acquire the skills to create the narrative and background portions of design documents and build game assets for a game engine.

4.0 **Course description**
This course addresses the history of video games as well as the analysis of games as a medium. Topics include the identification and assessment of types and genres within video games as well as how content shapes and is shaped by play in an interactive medium. Activities will include the

creation of design documents and the development of playable prototypes. Some projects may require working in groups. **Prerequisite(s):** 4002-330 or 4002-231.

5.0 Possible resources (texts, references, computer packages, etc.)
  5.1   Conference and journal articles as provided by the instructor.
  5.2   Online resources as provided by the instructor.
  5.3   Commercial and open-source game engine applications that support user modification
  5.4   Print as well as online game engine documentation for design as well as code modification tasks
  5.5   Software to support student journals and writing exercises, such as blog software, wikis , and forums.

6.0   Topics (outline):
  6.1   History and Evolution of Video Games
        6.1.1   History of Arcade Games
        6.1.2   History and Evolution of Home Game Console Hardware
        6.1.3   History and Evolution of PC Game Hardware
        6.1.4   History and Evolution of PC Game Software
        6.1.5   Definitions of Game, Interactivity and Play
        6.1.6   Video Game Genres
        6.1.7   Hardware and Internet History as relevant to games
  6.2   Story in Games
        6.2.1   Traditional Narrative Structures
        6.2.2   Interactive Narrative Structures
        6.2.3   Game Narrative Structures
        6.2.4   Massively Mulitplayer Online (MMO) Narrative
        6.2.5   Characters and Archetypes in Game Design
        6.2.6   Conveying Narrative within Game Design Treatments
        6.2.7   The Game Design Document
  6.3   Evolution of the Traditional Games Industry
        6.3.1   Serious Games
        6.3.2   Casual Games
        6.3.3   MMO Games
        6.3.4   Mobile Games
  6.4   Ethics in Video Games
        6.4.1   Developer Ethics
        6.4.2   Player Ethics
        6.4.3   Community Ethics
  6.5   Tools for Building Games and When to Use Them
        6.5.1   Authoring Packages
                6.5.1.1 Flash
                6.5.1.2 Director
        6.5.2   Animation Packages Overview
                6.5.2.1 3D Studio
                6.5.2.2   Maya
                6.5.2.3 Lightwave 3D
        6.5.3   Simple Game Engines
        6.5.4   Industrial Game Engines
        6.5.5   Building Your Own Engine

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7.0 Intended learning outcomes and associated assessment methods of those outcomes

By the end of the course, students will be able to:
7.1 Describe the historical evolution of computer games. This outcome will be assessed through written assignments, projects, and in-class exercises.
7.2 Identify different genres and platforms of computer games. This outcome will be assessed through written exercises, in-class discussions, in-class exercises, and projects.
7.3 Create the narrative and background design documents for computer games. This outcome will be assessed through in-class exercises and projects.
7.4 Create basic game assets (Geography, Characters, Items, Sound) in a game engine. This outcome will be assessed through in-class exercises and projects.

8.0 Program or general education goals supported by this course
This course supports the following program objectives:
8.1 Make effective oral presentations
8.2 Communicate effectively in written form
8.3 Identify needs, analyze tasks, and develop profiles of users
8.4 Program effectively within the student's specialty area
8.5 Design and develop a software prototype
8.6 Adhere to the ethical standards of the Game Design and Development profession
8.7 Participate effectively as a team member
8.8 Identify historical patterns in the game design and development field.
8.9 Analyze methods of construction and use for game design elements.

9.0 Other relevant information
9.1 This course requires an active learning classroom.
9.2 This course requires computers with appropriate 3D acceleration technology for games.
9.3 This course requires computers with network connectivity and sufficient bandwidth.
9.4 This course requires an appropriate software package complement as typically deployed within the multimedia active learning classrooms along with modeling software and game engine software.

10.0 Supplemental information for ABET
This course is part of the Bachelors of Science program in Game Design and Development and New Media Information Technology program. As such, this course is not subject to ABET accreditation.

APPROVALS:

_____   _____
IT Program Coordinator   Date

_____   _____
IT Curriculum Committee Chair   Date

_____   _____
IT Department Chair   Date

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3. 4002-381 Fundamentals of Game Design and Development II

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B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-381

1.0	Title:	**Fundamentals of Game Design and Development II**
	Date:	August 31, 2006
	Credit Hours:	**4**
	Prerequisite(s):	**4002-380**
	Co-requisite(s):	None
	Course proposed by:	**Stephen Jacobs and Chris Egert**

2.0   Course information:

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	4	35
Other (specify)		

Quarter(s) offered *(check)*

☐ Fall   ☐ Winter   ☒ Spring   ☐ Summer

Students required to take this course:
This is a core course for students matriculated in the Bachelors of Science program in Game Design and Development . Students will be scheduled for this course in their second year of study.

Students who might elect to take the course:
This course is appropriate for students enrolled in the New Media Information Technology program.

3.0   Goals of the course:
The goal of this course is to further the student's comprehension of game design and development techniques. This course continues the exploration of games as a creative medium, by building upon the game design documents, narrative structures, and prototypes developed in the prerequisite course. The course will allow students to investigate important topics such as game world creation and design, level design, level balance, and character development. Furthermore, the course will allow students to explore development practices and design concerns for online community-based game genres.

4.0   Course description
This course builds upon design documents and game assets created in the prerequisite course. The course focuses upon the creation and development of an industry-standard design document and playable levels in a game prototype. Key concepts in game design and development such as

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game world design, level design, level balancing, and game character development will be addressed. In addition, this course explores issues involving the development of online game communities. Some projects may require working in groups. **Prerequisite(s):** 4002-380

5.0 **Possible resources (texts, references, computer packages, etc.)**
5.1 Conference and journal articles as provided by the instructor.
5.2 Online resources as provided by the instructor.
5.3 Commercial and open-source game engine applications that support user modification
5.4 Print as well as online game engine documentation for design as well as code modification tasks
5.5 Software to support student journals and writing exercises

6.0 **Topics (outline):**
6.1 World Design and Creation
    6.1.1 Game Design Document and Game Asset Review
    6.1.2 Differentiating elements of Space and Place as part of the User Experience
    6.1.3 Backstory and World Arc Development
6.2 Level Design and Creation
    6.2.1 Puzzle Designs
        6.2.1.1 Short-Term Goals
        6.2.1.2 Long-Term Goals
        6.2.1.3 Obstacles
        6.2.1.4 Narrative Elements in Puzzle Design
    6.2.2 2D Level Design
    6.2.3 3D Level Design
    6.2.4 Audio and Video Integration for Game Systems
    6.2.5 Game Level Balance
6.3 Character Expansion and Development
    6.3.1 Creating Compelling Lead Characters
    6.3.2 Protagonist/Antagonist Relationships in Games
    6.3.3 Non-Player Character (NPC) Development and Structure
    6.3.4 Creating Emotional Resonances with Characters
6.4 On-Line Games
    6.4.1 Creating and Maintaining Identity
    6.4.2 Development of Player Community
    6.4.3 Social and Economic Behaviors Online
    6.4.4 Trust, Reputation, and Justice in Online Games

7.0 **Intended learning outcomes and associated assessment methods of those outcomes**
By the end of the course, students will be able to:
7.1 Build asset lists and object descriptions from the narrative portions of a design document. Assessed through performance on projects and in-class exercises.
7.2 Build playable levels from text descriptions in a design document. Assessed through performance on projects and in-class exercises.
7.3 Create playable levels for a pre-existing game engine. Assessed through performance on projects and in-class exercises.
7.4 Evaluate playability and adjust rule and play balance. Assessed through performance on projects and in-class exercises.

8.0 Program or general education goals supported by this course

This course supports the following program objectives:

8.1 Make effective oral presentations
8.2 Communicate effectively in written form
8.3 Identify needs, analyze tasks, and develop profiles of users
8.4 Program effectively within the student's specialty area
8.5 Design and develop a software prototype
8.6 Adhere to the ethical standards of the Game Design and Development profession
8.7 Participate effectively as a team member
8.8 Identify historical patterns in the game design and development field.
8.9 Analyze methods of construction and use for game design elements.

9.0 Other relevant information

9.1 This course requires an active learning classroom.
9.2 This course requires computers with appropriate 3D acceleration technology for games.
9.3 This course requires computers with network connectivity and sufficient bandwidth.
9.4 This course requires an appropriate software package complement as typically deployed within the multimedia active learning classrooms, modeling software, and game engine software.

10.0 Supplemental information for ABET

This course is part of the Bachelors of Science program in Game Design and Development and New Media Information Technology program. As such, this course is not subject to ABET accreditation.

APPROVALS:

_____   _____
IT Program Coordinator   Date

_____   _____
IT Curriculum Committee Chair   Date

_____   _____
IT Department Chair   Date

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4. 4002-387 Data Structures and Algorithms for Game Programmers I

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R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-387

1.0   **Title:**   **Data Structures and Algorithms for Game Programmers I**
        Date: August 31, 2006
        Credit Hours: **4**
        Prerequisite(s): **4002-330 – AND –**
                             1016-206 – AND –
                             1017-211 – AND –
                             (4003-233 – OR – 4002-219 – OR – equivalent programming experience)
        Co-requisite(s): **None**
        Course proposed by: **Andrew Phelps and Chris Egert**

2.0   **Course information:**

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	4	35
Other (specify)		

Quarter(s) offered *(check)*
☐ Fall   ☐ Winter   ☒ Spring   ☐ Summer

Students required to take this course:
This is a core course for students matriculated in the Bachelors of Science in Game Design and Development program. Students will be scheduled for this course in their second year of study.

Students who might elect to take the course:
This course is also appropriate for students who wish to build complex games, entertainment software titles, and complex simulations that rely upon the application of key concepts in data structures, algorithms, and Newtonian physics. In particular, this course might prove desirable to students in programs including Information Technology, Applied Networking and System Administration, and Medical Informatics.

3.0   **Goals of the course:**
The goal of this course is to provide students with grounding in the application of classical data structures, graphics algorithms, and fundamental Newtonian physics toward the construction of video game applications and entertainment software. It is to be noted that this course focuses specifically upon software construction techniques within the realm of game design and development, while drawing from the generalized body of knowledge in data structures, mathematics, and physics.

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4.0   Course description
This course focuses upon the application of data structures, algorithms, and fundamental Newtonian physics to the development of video game applications and entertainment software titles. Topics covered include trigonometric functions in game systems, 2D coordinate systems, 3D coordinate systems, geometric primitives, geometric tests, vectors, matrices, principles of transformation, and inclusion tests. In addition, traditional data structures and manipulation techniques will be applied to the context of game and entertainment software. Furthermore, Newtonian principles such as speed, acceleration, force, work, momentum, and motion will be examined in the context of developing game and entertainment software. Programming assignments are a required part of this course. **Prerequisite(s):** 4002-330, 1016-206, and 1017-211. Students will also be required to have 4003-233, 4002-219, or previous programming experience.

5.0   Possible resources (texts, references, computer packages, etc.)

5.1   Mathematics for 3D Game Programming and Computer Graphics, 2nd Edition. Eric Lengyel. Charles River Media, 2004.

5.2   Essential Mathematics for Games and Interactive Applications: A Programmers Guide. James M. Van Berth and Lars M. Bishop. Morgan Kaufmann Publishers, 2004.

5.3   Beginning Math and Physics for Game Programmers. Wendy Stahler. New Riders, 2004.

5.4   Game Physics. David Eberly. Morgan Kaufmann, 2004.

5.5   Core Techniques and Algorithms in Game Programming. Daniel Dalmau. New Riders, 2004.

5.6   Mathematics and Physics for Programmers. Danny Kodicek. Charles River Media, 2005.

5.7   3D Math Primer for Graphics and Game Development. Fletcher Dunn and Ian Parberry. Wordware Publishing, 2002.

5.8   Selected conference and journal articles provided by the instructor.

5.9   Supplemental web site materials provided by the instructor.

5.10   Software samples and demonstrations provided by the instructor.

5.11   Appropriate software packages that help illustrate data structures, algorithms, and Newtonian physics principles.

6.0   Topics (outline):

6.1   Angle Measurement Systems
    6.1.1   Degrees
    6.1.2   Radians
    6.1.3   Application of Measurement Systems in APIs

6.2   Trigonometry Functions
    6.2.1   Sin, cos, tan
    6.2.2   Asin, acos, atan
    6.2.3   Analysis of Trigonometry Functions and Use in Game Engines

6.3   2D Coordinate Systems
    6.3.1   Cartesian Coordinates
    6.3.2   Polar Coordinates

6.4   3D Coordinate Systems
    6.4.1   Adding the Third Dimension
    6.4.2   Left and Right Handed Coordinate Systems

6.5   Coordinate Spaces
    6.5.1   World Coordinates

7.0   Intended learning outcomes and associated assessment methods of those outcomes

7.1   Students will be able to apply principles of coordinate systems, trigonometric functions, and coordinate space conversions towards the construction of game and entertainment software systems. This will be assessed through projects and in-class exercises.

7.2   Students will be able to create game and entertainment software that utilizes classic data structures and their associated search and sort algorithms. This material will be assessed through in-class exercises and projects.

7.3   Students will be able to create geometric primitives from both implicit and parametric formulas. This is will assessed through project work.

7.4   Students will be able to apply geometric tests for distance, closeness, and intersection to a wide variety of geometric 2D and 3D shapes. This material will be assessed through projects and in-class exercises.

7.5 Students will be able to apply principles of vector and matrix operations and transformations towards the development of video game and entertainment software solutions. This outcome is assessed through projects and in-class exercises.

7.6 Students will be able to use image mapping algorithms and techniques for the proper texturing of geometric primitives and model meshes. This will be assessed through projects and take home exercises.

7.7 Students will be able to create game and entertainment software applications that utilize basic and intermediate Newtonian physics principles in their construction. This outcome is assessed through projects and in-class exercises.

8.0 Program or general education goals supported by this course

8.1 Students will program effectively within their specialty area.

8.2 Students will apply common algorithms and data structures related to game design and development principles toward the construction of software applications

9.0 Other relevant information

9.1 This course requires an active learning classroom.

9.2 This course requires computers with appropriate 3D acceleration technology for games.

9.3 This course requires an appropriate software package complement as typically deployed within the multimedia active learning classrooms, including programming packages such as Microsoft Visual Studio, Adobe Flash, and Adobe Director. In addition modeling software, DirectX software, and standard asset creation software will be required.

10.0 Supplemental information for ABET

10.1 Course Coordinator:
The academic coordinators will assign a faculty member to coordinate the course in each quarter that the course is offered.

10.2 Prerequisites by Topic

10.2.1 Apply fundamental programming concepts in a scripting/rapid prototyping environment (4002-330).

10.2.2 Implement object-oriented programming strategies that can scale from small to large-scale projects (4002-330).

10.2.3 Demonstrate the ability to write statements using different data types and operators that perform necessary operations based on the program's requirements (4002-217).

10.2.4 Analyze errors that occur when programs run and make changes based on this feedback (4002-217).

10.2.5 Use sequence, selection and loop statements to control the execution of a program (4002-217).

10.2.6 Demonstrate the ability to create methods with or without return values that perform various operations, and be able to invoke them (4002-217).

10.2.7 Be able to use such utility API classes Math and String, and use their methods to solve various problems (4002-217).

10.2.8 Demonstrate the ability to create a class by defining both attributes that describe the state of the class, and methods that enforce OOP encapsulation principles (4002-218).

10.2.9 Determine when to create and use arrays (4002-217).

10.2.10 Demonstrate the ability to work with multiple classes and multiple instantiations of a class (4002-217).

10.2.11 Write object-oriented programs with multiple class files and create objects used between class files (4002-217).

10.2.12 Write event-driven programs using distinct listener class file objects and/or same class file listener objects (4002-217).

10.2.13 Write object-oriented programs using class inheritance (4002-218).

10.2.14 Write object-oriented programs using GUI components (4002-218).

10.2.15 Write interface and abstract class files and use them in object-oriented programs (4002-218).

10.2.16 Write classes with catch and throw exception class objects (4002-218).

10.2.17 Write programs that pass and receive objects via methods of an object (4002-218).

10.2.18 Demonstrate the creation and use of reusable objects (4002-219).

10.2.19 Demonstrate the use of the built-in data structure classes within a program (4002-219).

10.2.20 Demonstrate the ability to use fundamental discrete mathematics principles to solve classical mathematical problems (1016-206).

10.2.21 Demonstrate the ability to apply fundamental Newtonian physics principles to classical problems studied at the college physics level (1017-211).

10.3   Laboratory projects (specify number of weeks on each)
There will be three to four laboratory projects for this course. Each of the projects will cover combinations of the major topic areas. Each project will have an approximate duration of two to three weeks.

10.4   Estimate ABET Category Content (check appropriate category)

	Core	Advanced		Core	Advanced
Programming		X	Computer hardware and networking		
Databases			Web technologies		
HCI					

10.5   Oral and Written Communications
Will not be covered as part of this course.

10.6   Social and Ethical Issues
Will not be covered as part of this course.

10.7   Problem Solving
Classes include in-class exercises that require a student to analyze problem statements and create programs. The exercises utilize 25 – 30% of the available class time. Homework questions also provide additional problem solving opportunities. This course provides 7-8 take home assignments during the quarter.

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10.8 Collaborative Experiences

Collaborative experiences will be considered where appropriate. In particular, some of the in-class exercises and projects may be conducive to paired or group programming techniques.

APPROVALS:

_____   _____
IT Program Coordinator   Date

_____   _____
IT Curriculum Committee Chair   Date

_____   _____
IT Department Chair   Date

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5. 4002-487 Data Structures and Algorithms for Game Programmers II

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R·I·T

B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-487

1.0 **Title:** **Data Structures and Algorithms for Game Programmers II**
Date: August 31, 2006
Credit Hours: **4**
Prerequisite(s): **4002-387 –AND-**
4002-417
Co-requisite(s): None
Course proposed by: **Andrew Phelps and Chris Egert**

2.0 **Course information:**

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	4	35
Other (specify)		

Quarter(s) offered *(check)*
☐ Fall   ☒ Winter   ☐ Spring   ☐ Summer

Students required to take this course:
This is a core course for students matriculated in the Bachelors of Science in Game Design and Development program. Students will be scheduled for this course in their third year of study.

Students who might elect to take the course:
This course is also appropriate for students who wish to build complex games, entertainment software titles, and complex simulations that rely upon the application of key concepts in data structures, algorithms, and Newtonian physics. In particular, this course might prove desirable to students in programs including Information Technology, Applied Networking and System Administration, and Medical Informatics.

3.0 **Goals of the course:**
The goal of this course is to provide students with further grounding in the application of classical data structures, graphic algorithms, and fundamental Newtonian physics toward the construction of video game applications and entertainment software. This course builds upon concepts developed in Data Structures and Algorithms for Game Programmers I, and addresses complex issues related to graphics, data structures, and physical simulations. It is to be noted that this course focuses specifically upon software construction techniques within the realm of game design and development, while drawing from the generalized body of knowledge in data structures, mathematics, and physics.

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4.0   Course description
This course continues the investigation into the application of data structures, algorithms, and fundamental Newtonian physics required for the development of video game applications and entertainment software titles. Topics covered include techniques for 3D orientation, angular displacement, Euler angles, quaternion representations and operations, barycentric coordinates, classifiers, recursion, clipping, culling, and advanced partitioning techniques. In addition, advanced data structures such as trees and graphs will be investigated from the context of game application and entertainment software development. Furthermore, the course will examine advanced Newtonian principles used in games and simulations. Programming assignments are a requirement for this course. **Prerequisite(s):** 4002-387 and 4002-417.

5.0   Possible resources (texts, references, computer packages, etc.)
5.1   Mathematics for 3D Game Programming and Computer Graphics, 2nd Edition. Eric Lengyel. Charles River Media, 2004.
5.2   Essential Mathematics for Games and Interactive Applications: A Programmers Guide. James M. Van Berth and Lars M. Bishop. Morgan Kaufmann Publishers, 2004.
5.3   Beginning Math and Physics for Game Programmers. Wendy Stahler. New Riders, 2004.
5.4   Game Physics. David Eberly. Morgan Kaufmann, 2004.
5.5   Core Techniques and Algorithms in Game Programming. Daniel Dalmau. New Riders, 2004.
5.6   Mathematics and Physics for Programmers. Danny Kodicek. Charles River Media, 2005.
5.7   3D Math Primer for Graphics and Game Development. Fletcher Dunn and Ian Parberry. Wordware Publishing, 2002.
5.8   Selected conference and journal articles provided by the instructor.
5.9   Supplemental web site materials provided by the instructor.
5.10   Software samples and demonstrations provided by the instructor.
5.11   Appropriate software packages that help illustrate data structures, algorithms, and Newtonian physics principles.

6.0   Topics (outline):
6.1   Recursion
    6.1.1   Formula-Based Recursion
    6.1.2   String Expansions for Recursive Structures
6.2   Orientation and Angular Displacement
    6.2.1   Matrix Forms
    6.2.2   Euler Angles
    6.2.3   Problems in Game Engine creation related to Angular Displacement
6.3   Quaternion Representations and Game Systems
    6.3.1   Quaternion Representations
    6.3.2   Quaternion Operations
        6.3.2.1 Negation
        6.3.2.2 Identity
        6.3.2.3 Magnitude
        6.3.2.4 Conjugates
        6.3.2.5 Inverse
        6.3.2.6 Cross Product
        6.3.2.7 Difference

6.3.2.8 Dot Product
    6.3.3   Interpolation / SLERPs
    6.3.4   Analysis of Quaternion Forms for Game Systems
6.4 Barycentric Coordinates and Relationship to Rendering
6.5 Advanced Data Structures
    6.5.1   B-Trees/B+-Trees
    6.5.2   Balanced Tree Structures
    6.5.3   Graphs
6.6 Algorithms for Render Optimization
    6.6.1   Clipping
    6.6.2   Culling
    6.6.3   Occlusion Testing
6.7 Partitioning Algorithms
    6.7.1   BSPs
    6.7.2   Heightmaps
    6.7.3   Quad Trees
    6.7.4   Oct Trees
    6.7.5   Portal Rendering
6.8 Classifier Algorithms
6.9 Curves and Surfaces
    6.9.1   Cubic Curves
    6.9.2   Hermite Curves
    6.9.3   Bezier Curves
    6.9.4   Cubic Splines
    6.9.5   B-Splines
6.10 Advanced Newtonian Physics for Games
    6.10.1 Rotational Motion
    6.10.2 Angular Velocity
    6.10.3 Projectile
    6.10.4 Oscillations / Harmonic Motion / Dampening
    6.10.5 Rigid Body Systems
    6.10.6 Elastic Body Systems

7.0   Intended learning outcomes and associated assessment methods of those outcomes

7.1   Students will be able to apply principles of recursion towards the construction of game and entertainment software systems. This will be assessed through projects and in-class exercises.

7.2   Students will be able to create game and entertainment software that utilizes matrix, Euler, and quaternion orientation and angular displacement techniques. This material will be assessed through in-class exercises and projects.

7.3   Students will be able to create game and entertainment software that utilizes classic data structures and their associated algorithms. This material will be assessed through in-class exercises and projects.

7.4   Students will be able to create splines and curves from both implicit and parametric formulas. This is will assessed through project work.

7.5   Students will be able to apply algorithms for render optimization and partitioning to common game application problems. This material will be assessed through projects and in-class exercises.

7.6   Students will be able to create game and entertainment software applications that utilize advanced Newtonian physics principles in their construction. This outcome is assessed through projects as well as in-class exercises.

8.0 Program or general education goals supported by this course
   8.1   Students will program effectively within their specialty area.
   8.2   Students will apply common algorithms and data structures related to game design and development principles toward the construction of software applications

9.0 Other relevant information
   9.1   This course requires an active learning classroom.
   9.2   This course requires computers with appropriate 3D acceleration technology for games.
   9.3   This course requires an appropriate software package complement as typically deployed within the multimedia active learning classrooms, including programming packages such as Microsoft Visual Studio, Adobe Flash, and Adobe Director. In addition modeling software, DirectX software, and standard asset creation software will be required.

10.0 Supplemental information for ABET

   10.1 Course Coordinator:
   The academic coordinators will assign a faculty member to coordinate the course in each quarter that the course is offered.

   10.2 Prerequisites by Topic
      10.2.1 Apply fundamental programming concepts in a scripting/rapid prototyping environment (4002-330).
      10.2.2 Implement object-oriented programming strategies that can scale from small to large-scale projects (4002-330).
      10.2.3 Demonstrate the ability to write statements using different data types and operators that perform necessary operations based on the program's requirements (4002-217).
      10.2.4 Analyze errors that occur when programs run and make changes based on this feedback (4002-217).
      10.2.5 Use sequence, selection and loop statements to control the execution of a program (4002-217).
      10.2.6 Demonstrate the ability to create methods with or without return values that perform various operations, and be able to invoke them (4002-217).
      10.2.7 Be able to use such utility API classes Math and String, and use their methods to solve various problems (4002-217).
      10.2.8 Demonstrate the ability to create a class by defining both attributes that describe the state of the class, and methods that enforce OOP encapsulation principles (4002-218).
      10.2.9 Determine when to create and use arrays (4002-217).
      10.2.10 Demonstrate the ability to work with multiple classes and multiple instantiations of a class (4002-217).
      10.2.11 Write object-oriented programs with multiple class files and create objects used between class files (4002-217).
      10.2.12 Write event-driven programs using distinct listener class file objects and/or same class file listener objects (4002-218).
      10.2.13 Write object-oriented programs using class inheritance (4002-218).
      10.2.14 Write object-oriented programs using GUI components (4002-218).
      10.2.15 Write interface and abstract class files and use them in object-oriented programs (4002-218).

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10.2.16 Write classes with catch and throw exception class objects (4002-218).
10.2.17 Write programs that pass and receive objects via methods of an object (4002-218).
10.2.18 Demonstrate the creation and use of reusable objects (4002-219).
10.2.19 Demonstrate the use of the built-in data structure classes within a program (4002-219).
10.2.20 Demonstrate the ability to use fundamental discrete mathematics principles to solve classical mathematical problems (1016-206).
10.2.21 Demonstrate the ability to apply fundamental Newtonian physics principles to classical problems studied at the college physics level (1017-211).
10.2.22 Apply principles of coordinate systems, trigonometric functions, and coordinate space conversions towards the construction of game and entertainment software systems (4002-387).
10.2.23 Create game and entertainment software that utilizes classic data structures and their associated search and sort algorithms (4002-387).
10.2.24 Create geometric primitives from both implicit and parametric formulas (4002-387).
10.2.25 Apply geometric tests for distance, closeness, and intersection to a wide variety of geometric 2D and 3D shapes (4002-387).
10.2.26 Apply principles of vector and matrices operations and transformations towards the development of video game and entertainment software solutions (4002-387).
10.2.27 Use image mapping algorithms techniques for the proper texturing of geometric primitives and model meshes (4002-387).
10.2.28 Create game and entertainment software applications that utilize basic and intermediate Newtonian physics principles in their construction (4002-387).

10.3   Laboratory projects (specify number of weeks on each)
There will be three to four laboratory projects for this course. Each of the projects will cover combinations of the major topic areas. Each project will have an approximate duration of two to three weeks.

10.4   Estimate ABET Category Content (check appropriate category)

	Core	Advanced		Core	Advanced
Programming		X	Computer hardware and networking		
Databases			Web technologies		
HCI					

10.5   Oral and Written Communications
Will not be covered as part of this course.

10.6   Social and Ethical Issues
Will not be covered as part of this course.

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10.7 Problem Solving

Classes include in-class exercises that require a student to analyze problem statements and create programs. The exercises utilize 25 – 30% of the available class time. Homework questions also provide additional problem solving opportunities. This course provides 7-8 take home assignments during the quarter.

10.8 Collaborative Experiences

Collaborative experiences will be considered where appropriate. In particular, some of the in-class exercises and projects may be conducive to paired or group programming techniques.

APPROVALS:

_____	_____
IT Program Coordinator	Date
_____	_____
IT Curriculum Committee Chair	Date
_____	_____
IT Department Chair	Date

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6. 4002-541 Data-Driven Time-Based Multimedia Programming

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B. Thomas Golisano College of Computing and Information Sciences
Department of Information Technology

NEW COURSE: 4002-541

1.0 **Title:** **Data-Driven Time-Based Media Programming**
Date: August 31, 2006
Credit Hours: **4**
Prerequisite(s): **(4002-231 –OR– 4002-330) –AND–**
4002-360 –AND–
4002-539
Co-requisite(s): **None**
Course proposed by: **Chris Egert**

2.0 **Course information:**

	Contact hours per week	Maximum students per section
Classroom		
Lab		
Active Learning/Active Learning Extended	4	35
Other (specify)		

Quarter(s) offered *(check)*
☐ Fall   ☒ Winter   ☐ Spring   ☐ Summer

Students required to take this course:
None.

Students who might elect to take the course:
This course is appropriate for the student who wishes to learn the process of creating multimedia applications that utilize and transform data of different types from a variety of sources. As such, his course is an appropriate elective for students matriculated in the Bachelors of Science program in Game Design and Development. In addition, this course is appropriate for any student matriculated in the Bachelors of Science in Information Technology program. Furthermore, this course may be of interest to students matriculated in the Bachelors of Science in New Media Information Technology program.

3.0 **Goals of the course:**
The primary goal of this course is to expose students to data driven software construction techniques for time-based multimedia applications. Data driven software construction involves understanding media types (text, image, audio, video, binary/byte code file formats), data storage mechanisms (flat files, XML documents, databases), and information transfer techniques (low-level communication protocols, FTP, HTTP). The need for this course is apparent since many multimedia applications (especially those delivered over the web) require access to a multitude of

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data sources and services. A secondary goal of this course is to expose students to transformative techniques for multimedia data from within a client or server/service application.

4.0 Course description
This course focuses upon the construction of time-based multimedia software that is data driven. Topics include the storage and retrieval of multimedia content such as text, image, audio, and video. In addition, the course will focus upon how media content can be managed both locally and remotely through flat files and database systems. The course emphasizes various server technologies and communication protocols that are appropriate to the delivery of data to multimedia applications. Furthermore, the course examines how to transform media types at various points along a data pathway in a variety of forms. Large-scale programming projects are required for this course. Prerequisite(s): 4002-231 or 4002-330, 4002-360, and 4002-539.

5.0 Possible resources (texts, references, computer packages, etc.)
5.1 Macromedia Flash 8 Bible. Robert Reinhardt and Snow Dowd. Wiley Publishing, Inc., 2006.
5.2 Flash 8 ActionScript Bible. Joey Lott and Robert Reinhardt. Wiley Publishing, Inc., 2006.
5.3 Essential ActionScript 2.0. Colin Moock. O'Reilley Media, 2004.
5.4 Foundation PHP5 for Flash. David Powers. Friends of ED, 2005.
5.5 Foundation XML for Flash. Sas Jacobs. Friends of ED, 2005.
5.6 Supplemental web site materials provided by the instructor.
5.7 Software samples and demonstrations provided by the instructor.
5.8 PHP Server access.
5.9 Adobe Flash 8 and Adobe Director MX 2004.

6.0 Topics (outline): (FIX Outline)
6.1 Identifying Essential Components for Data Driven Time-Based Media
  6.1.1 Web Browser
  6.1.2 Web Server
  6.1.3 Web Server Scripting Language
  6.1.4 Web Server File System
  6.1.5 Web Server Database System
  6.1.6 Time-Based Media Web Plugin
  6.1.7 Time-Based Media Standalone Application Frameworks
  6.1.8 Web Service Application Frameworks
6.2 Communication Mechanisms for Time-Based Media
  6.2.1 Browser-Server Communication
  6.2.2 Browser-Server-Scripting Language Communication
  6.2.3 Browser-Server-Scripting Language-Database Communication
  6.2.4 Browser-Plugin Communication
  6.2.5 Plugin-Server Communication
6.3 Communication Protocols for Time-Based Media
  6.3.1 HTTP/HTTPS
  6.3.2 SOAP/RPC
  6.3.3 Custom Application Protocols
6.4 Time-Based Media Plugin Configuration Parameters
  6.4.1 EMBED/OBJECT/JavaScript Techniques for Plug-In Use
  6.4.2 Configuring an HTML Page to Support Plugin Parameters
  6.4.3 Processing Plugin Parameters within a Time-Based Media Application

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6.14.4 Data Type Limitations for Web Services
6.14.5 Creating a Web Service Access Proxy

7.0 Intended learning outcomes and associated assessment methods of those outcomes

7.1 Students will be able to identify essential components for the construction of data driven time-based multimedia software. Assessed through in-class exercises and projects.

7.2 Students will be able to identify the role of communications mechanisms essential for the delivery of data driven time-based multimedia applications. Assessed through in-class exercises and projects.

7.3 Students will be able to create multimedia applications that send and receive text, image, audio, and video content to and from a local file system and server. Assessed through in-class exercises and projects.

7.4 Students will be able to create multimedia applications that store and retrieve content from flat files, XML files, server-side scripts, database systems, and web services. Assessed through in-class exercises and projects.

7.5 Students will be able to transform multimedia content for use in a variety of multimedia client applications. Assessed through in-class exercises and projects.

7.6 Students will be able to manipulate complex media objects retrieved from a data source. Assessed through in-class exercises and projects.

7.7 Students will be able to analyze security concerns inherent to the design of data driven time-based multimedia applications. Assessed through in-class exercises and projects.

8.0 Program or general education goals supported by this course

8.1 Program effectively within the student's specialty area.

8.2 Design and develop a software prototype.

8.3 Develop specialized IT skills in a self-selected specialty area.

9.0 Other relevant information

9.1 This course requires a multimedia active learning classroom.

9.2 Students must have access to development tools such as Adobe Flash and Adobe Director.

9.3 Students will need access to web server, server-side scripting, and database software.

10.0 Supplemental information for ABET

10.1 Course Coordinator:
The academic coordinators will assign a faculty member to coordinate the course in each quarter that the course is offered.

10.2 Prerequisites by Topic

10.2.1 Using a multimedia development environment, program interactive user control of various media types, including graphics, text, animation, audio, video, and 3D (4002-330).

10.2.2 Apply fundamental programming concepts in a scripting/rapid prototyping environment (4002-330).

10.2.3 Implement object-oriented programming strategies that can scale from small to large-scale projects (4002-330).

10.2.4 Map a relational model into a DBMS product through SQL DDL statements (4002-360).

10.2.5 Be able to query a relational database implemented with a DBMS product through SQL DDL statements (4002-360).

10.2.6 Build a medium-scale Dynamic Web Site (4002-539).

10.2.7 Use a server-side scripting language to retrieve data from files and database tables (4002-539).

10.2.8 Use cron and a scripting language to perform server-side tasks at predetermined times and intervals (4002-539).

10.2.9 Retrieve and cache web-based information from other web sites for presentation on the web (4002-539).

10.3 Laboratory projects (specify number of weeks on each)

There will be one multi-phased project throughout the 11 week quarter. Each phase will act as a checkpoint for the large-scale project due at the end of the quarter. The first checkpoint will test a student's knowledge of the plugin-browser-server-database pipeline. The second checkpoint will focus upon the student's ability to manipulate XML and image content. The third checkpoint will address advanced asset management techniques and content loading. The fourth checkpoint will be the realization of a final data driven time-based multimedia application. Checkpoints will occur in the 3rd, 5th, 7th, and 11th week of the quarter.

10.4 Estimate ABET Category Content (check appropriate category)

	Core	Advanced		Core	Advanced
Programming		X	Computer hardware and networking		
Databases		X	Web technologies		X
HCI					

10.5 Oral and Written Communications

Students are required to present their checkpoints throughout the quarter and will be required to submit a design and development document for their efforts.

Every student is required to submit at least __2__ written reports (not including exams, tests, quizzes, or commented programs) of typically __5__ pages and to make __4__ oral presentations of typically __15__ minutes duration as part of a presentation team.

10.6 Social and Ethical Issues

Will not be covered as part of this course.

10.7 Problem Solving

Each week, students will be expected to complete in-class exercises to demonstrate their progression

10.8 Collaborative Experiences

The project will be a collaborative experience. Students will work in teams toward the development of a large-scale data driven time-based multimedia application. Collaborative efforts will constitute approximately 25% of in-class exercises along with project work.

APPROVALS:

_____   _____
IT Program Coordinator   Date

_____   _____
IT Curriculum Committee Chair   Date

_____   _____
IT Department Chair   Date

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