

School of Computing and Informatics at Arizona State University

SCI MONITOR

Fall 2008



SCI Welcomes New Gaming Program

Students collaborate with business to develop new tools based on gaming technology



Director's Welcome



As we enter a new academic year, I am pleased to be able to share with you the recent exciting developments from the School of Computing and Informatics (SCI).

The Department of Biomedical Informatics (BMI) has launched a new Ph.D. program. BMI's strong collaborative relationships with a variety of health care organizations as well as bioscience, industry, and governmental agencies provide an unparalleled opportunity for doctoral students to explore and contribute to advances in bioinformatics, informatics related to imaging, clinical medicine, and public health, with special foci on cross-cutting areas such as cognitive science, data mining/predictive modeling, embedded sensors and simulation.

In addition, SCI launched a new undergraduate certificate in computer gaming. The gaming certificate teaches skills that not only make the student most suited to the rapidly-growing video game industry, but also to a variety of other enterprises, including business, medicine, geography, education, and biotechnology, amongst others.

Thanks to all our staff, faculty and students who continue to make this academic unit an excellent environment. I invite you to visit our Web site at <http://sci.asu.edu>.

[THE SCI MONITOR]

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BMI Students Conduct Research Through Partnership

Biomedical informatics is an exciting field experiencing a high demand for jobs both locally and nationally. In Phoenix alone, it is reported that employers have a need for over 300 biomedical informaticians over the next five years. Nationally, the numbers are much more dramatic as exemplified by the American Medical Informatics Association's *10x10 Campaign* which seeks to meet the need for 10,000 individuals trained in clinical informatics by the year 2010.

Students with a wide range of interests are attracted to the biomedical informatics field because of the variety of careers available. Some see this field as a unique way to combine their interest in life sciences and technology while others receive a biomedical informatics degree as a first step toward a medical degree.

Possible career choices include those with both technical and management roles in areas such as biomedicine, healthcare, public health, technology development and cognitive science and may include job titles such as Clinical Informatics Specialist, Decision Support Analyst, Program Research Analyst, Encounter Data Analyst, Health Plan Performance Analyst, Quality Improvement Analyst, Population Health Analyst, and Actuarial Services Manager.

Several graduate students in the Department of Biomedical Informatics at ASU have already gained experience in the field through the department's internship program. These opportunities are providing students with hands-on training in such areas as genomics research and development of software and systems to aid in collection of health care information.

Recent Student Internships



Bryan Hendrickson, second year BMI student, has an internship with Maricopa Integrated Health System (MIHS) in the information technology department. He is currently working on projects involving computer software and systems that nurses utilize. His position allows him to create technological solutions to the problems health care workers face when collecting health information. Hendrickson realizes that his training within BMI allows him to amass important skills. He said, "What I've enjoyed most about the BMI program is the opportunity to see where technology meets healthcare."



Ph.D. student Jeffrey Kriseman received an internship with Translational Genomics Research Institute under the Helios Scholars Program. He described it as, "an exciting opportunity which focused on the development and refinement of a next generation sequencing informatics pipeline." He conducts research under the direction of SCI assistant professor Valentin Dinu and Dr. David Craig, Translational Genomic Research Institute faculty. Kriseman's work focuses on next generation sequencing, workflow informatics tools for genomics research and development of tools that enable biomedical researchers to identify genetic/environmental factors associated with diseases like multiple sclerosis.



Second year BMI student Sarah Martin works as a research assistant at Emerge.MD with SCI adjunct faculty Shahram Partovi. Emerge.MD is a healthcare industry information technology firm specializing in the design, deployment and maintenance of data capture engines. She builds custom applications, electronic medical records and live web applications for departments within St. Joseph's Hospital and Medical Center. Her role at Emerge.MD is as a team leader who oversees the development of a project from the beginning to the end. "There are so many great aspects of working with Emerge.MD. I love the people I work with and everything that I am learning," she said.

Computer Gaming Arrives at the University

New Computer Gaming Certificate Available to Students

The certificate is open to any ASU student and is designed to provide a comprehensive game development skill set that the student can apply to their major. The goal is to apply gaming technology to domain-specific problems.

Students will learn skills that are not only useful in the rapidly-growing video game industry, but also used in a variety of other industries including business, medicine, geography, education and biotechnology, among others. Students will select one track for specialization, programming, art or education and complete a capstone project.



Students in the Game Development I course.

Students Receive Gaming Internships

Students participating in SCI's new computer gaming curriculum gain innovative skills and experience in building video games. SCI lecturer Ashish Amresh oversaw the process of launching the curriculum and locating industry sponsors for the gaming certificate program.

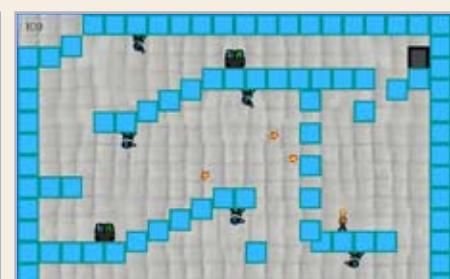
Industry leaders, like SRP, donated \$25,000 in exchange for fully functional student final projects that met their social and corporate responsibility needs. Senior Marketing Program Manager Jeffrey Cree from SRP said, "Partnering with ASU allowed us to remain true to our mission by partnering with our local community to create this projects additional resource for our customers." The course that SRP sponsored gave the students a chance to display their technological talents in software development. The aim of the final project was to create an energy efficiency game. Students taking the fall 2008 course, sponsored by Pearson Learning, worked on final projects aimed at a video game for biology education.

Mastering the skills necessary to build technologically savvy video games takes time, effort and talent. SCI students Amir Abdollahi, Andrew Fournier, Daniel Garvey and Michael Murcia received internships in the gaming industry after taking CPI 294: Game Development II. Three students interned with Pearson Learning,

a digital learning company, and two students interned with Flypaper Studio, Inc, a software development company. Director of Product Management Kieran Richardson of Flypaper Studio says, "The interns themselves did an excellent job. They stepped up to a number of new responsibilities and we quickly learned how to leverage their strengths."

The internship experience provided the students with an opportunity to apply the skills they learned in the class and enhance them with real world experience at the undergraduate level. Abdollahi, a junior, interned with Pearson Learning. He said, "You really get to feel how the development process works, all the approvals, team cooperation and other aspects of the business world." Amresh hoped that the experience would provide a meaningful background with industry. He adds, "Usually at a sophomore or junior level, it is tough to get internship experience. We are trying to promote and encourage a positive internship experience for students coming out of this curriculum."

With the arrival of the computer gaming curriculum, it is well poised for a strong start with the aid of brand new state-of-the-art facilities available within the Brickyard and Skysong.



Games created by students in Game Development I and II courses.

SkySong and SCI Unite for Research and Education

Students and faculty in SCI wishing to combine research with industry and cutting-edge technology now have a new place to pursue these interests. Within a short distance from ASU's Tempe campus is Skysong, a collaborative project between the university, the City of Scottsdale and various industry partners. The project provides an environment for faculty, researchers and entrepreneurs to collaborate both academically and professionally. SCI assists Skysong's recruiting efforts and operates several programs in this exciting new facility.

One of these programs is CampGame, a gaming laboratory that allows high school students to help build interest in careers involving science, math and technology. SCI instructors teach the camp in the gaming classroom developed by SCI at Skysong. This summer gaming program introduces students to the production side of the video game industry. The students learned about the basics of video game programming for six weeks. They spent the first three weeks in classroom instruction from instructors with advance industry experience in video game production. Then the students dedicated their time in the last three weeks to a team project building a video game. The final project's goal was in a team-oriented setting that simulates the work environment in the gaming industry.

Using Skysong's facilities, SCI researchers also collaborate with researchers from other disciplines. The Partnership for Research in Spatial Modeling (PRISM) utilizes resources within Skysong for joint research projects. The focuses of these projects are geometric modeling, visualization, computer graphics, visual analytics and rapid prototyping.

Currently, Skysong consists of two buildings and an outdoor social area. The second building includes classrooms and other academic resources for SCI researchers and students. Eventually, the complex will expand to include four buildings dedicated to academic and entrepreneurial pursuits, a four-star hotel and a 500 to 600 apartment home community. With the academic space available within Skysong, SCI aims to be the driving force for technological innovation and research by utilizing resources in industry and at ASU to make commercially viable products.

Skysong has evolved into a unique collaboration that fosters education, research and economic development by combining entrepreneurship, technology, art and education.



Rendering of Skysong Boulevard



Chitta Baral

As the new Department of Computer Science (CSE) chair with several on-going research projects, Baral has a dynamic future ahead of him.

Computer science has been a career focus for Baral since he was an undergraduate student at the Indian Institute of Technology in India. His career began after he graduated from the University of Maryland, College Park, Maryland. After completing his doctoral studies, he worked as an assistant professor at University of Texas at El Paso. He extended his research endeavors into the private sector by working as a visiting scientist at i2 Technologies. His main responsibilities were to plan and schedule methods for supply chain planners. In 1999, he joined ASU as a tenured associate professor. In his time at ASU, he has been involved with several research projects. As the director of BioAI lab, he oversees the lab's research goal of applying AI to molecular biology.

Since he became the chair in March 2008, the majority of his time is spent guiding the CSE curriculum for future students. He explained, "We are reformulating the ASU 101 as a mentoring class where we will use it to introduce students to computer science." Baral added, "We are hoping that exciting students about the four years ahead will motivate them to do well in their classes while increasing their enthusiasm for computer science."

While balancing his responsibilities, Baral actively conducts research within his field. The Intelligence Advanced Research Projects Activity funds one of his research projects. The aim of the project is to analyze the sociolinguistic markers from text. The idea is to develop a computer system that can analyze text and provide the social meanings of the word in addition to the dictionary definition. The software might one day be able to understand the times when a person is joking and ascertain the deeper meanings of text. The researchers hope to have a program that recognizes the colloquial use of English.



Yinong Chen

In a typical day, SCI lecturer Yinong Chen might prepare computer science materials for high school students, work with a graduate student on his or her robotics dissertation, conduct research with a colleague, or coordinate research with industry.

His main interests are in dependable computer system (software and hardware) design and analysis, distributed systems and fault-tolerant computing, embedded systems applications and trustworthy systems. After receiving his doctoral degree from the University of Karlsruhe, Germany, he accepted a postdoctoral position at Karlsruhe. He came to the U.S. as a SCI lecturer. He has authored several textbooks, written over seventy research papers, taught numerous computer science courses and developed the curriculum for ASU's Robotics Camp, now in its third year.

Part of his time is devoted to organizing the Robotics Camp, an initiative that provides high school students with hands-on experience building an operational robot. Chen, camp director, and others provide instruction to students as they worked in teams to build a moveable robot. He also wrote the program's grant proposals to the U.S. Department of Education, Arizona Science Foundation, Intel Corporation and ASU. "We used to teach high school students the same things we taught college students. We would teach them to write programs and print them out. But that wasn't very engaging. This is an outreach program to change the way we are teaching," Chen explains.

Chen is also a part of the research team for the project entitled, "Preparing high school teachers for service-oriented computer science education." He teaches in the honors summer Institute for computer science to freshman students participating in the FURI program. He also maintains an active lecture schedule teaching computer science classes at the 100, 200 and 300 level. Chen received the 2008 SCI Teacher of the Year for his teaching. His work is changing the face of computer science, one robot at a time.



Douglas Fridsma

Douglas Fridsma is one of the few SCI faculty members who conducts research and teaches while practicing medicine part-time. As a new member of the Department of Biomedical Informatics, he uses his experiences as a researcher and clinician to further academic pursuits within the department. His current research allows him to utilize his undergraduate and medical training from the University of Michigan through a joint B.S./M.D. program.

Fridsma has recently been working on ways to develop, implement and evaluate standards-based, interoperable clinical trials applications for managing clinical trials. Fridsma is one of the leaders of the Biomedical Research Integrated Domain Group project, a National Cancer Institute funded initiative. This project is a part of the Cancer Biomedical Informatics Grid program that aims to develop a comprehensive formal representation of the shared semantics of clinical trials research.

Recently, Telemedicine and Advanced Technology Research Center and Banner Health awarded \$442,000 in research funding to Fridsma to conduct research on a Colorado-based computer network system that supports telemedicine. The goal of this research project is to enhance collaboration between patients and clinicians to solve complex medical problems and create an informed, connected medical community. Future patients will benefit from this technology as it seeks to improve diagnoses, reduce medical errors and reduce unnecessary repeat medical visits.

Fridsma spends part of his time teaching practical applications of biomedical informatics to graduate students within BMI. Some of his classes have focused on medical decision-making, clinical trials for non-clinical technology students and software engineering course on developing biomedical models.



Yann-Hang Lee

As the new associate chair of the Department of Computer Science and Engineering, Yann-Hang Lee divides his time between his responsibilities as associate chair, lecturing to students and conducting research. His research interests are in embedded systems and real-time computing distributed systems.

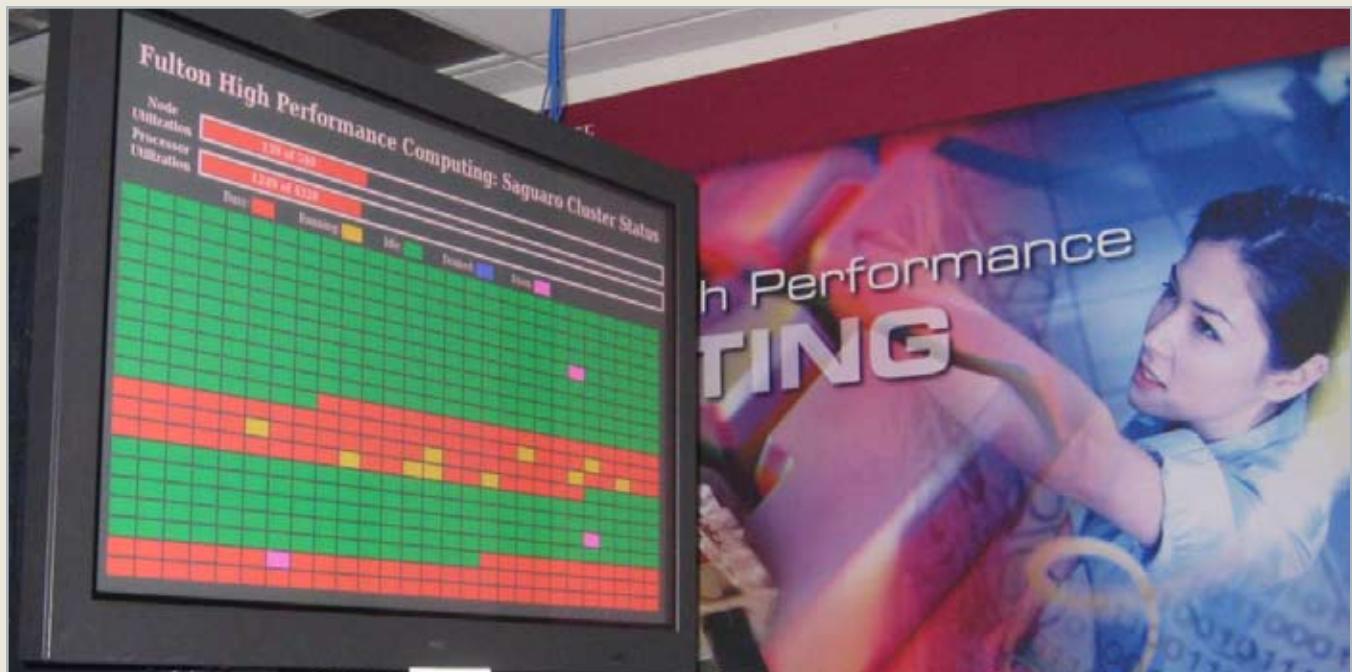
Lee's twenty-three year career in computer science initially began with an interest in engineering. He explained, "I was interested in engineering and realized that a computer can do a lot of things for engineering. So I began to look into the model system issue."

Lee's current research involves various software and system issues of mission and safety critical real-time embedded systems. One of his research projects is a joint project with the Electronics and Telecommunications Research Institute. The project entitled, "Smart Home" allows researchers to link home appliances together so that one can make the other operate. For example, researchers are trying to find a way for people to control their stove using their personal computers. The aim of the project is to construct generic sequence and control flow of the required activity in digital home environment.

After working in industry, Lee decided that he wanted to teach the next generation of computer scientists. He finds being a professor to be refreshing because the students, "bring new energy to the classroom."

"Computer Systems and Computer Science and Engineering are dynamic and exciting fields," Lee said. "To maintain our status as a department, we need to look for continuous improvement and bring emerging technologies and applications into our curriculum," he added. His position as associate chair enables him to recruit the best talent in computer science.

HPCI: Accelerating Innovation



Caption:

The first floor of the Goldwater Center for Science and Engineering is home to one of the top 10 academic computing sites in the world. With over 750,000 watts of power, the newly upgraded cluster of supercomputers ranks 64th on the current list of the Top 500 Supercomputers in the world. Run by the High Performance Computing Initiative, a SCI affiliated research center, this major computing center plays an essential role in health and safety concerns explored in a diverse selection of fields.



"My goal is to have every faculty member or researcher come to us and see what services we have to offer," said Dan Stanzione, director of HPCI.

Caption:

The High Performance Computing Initiative (HPCI) allows faculty members and industry researchers to maximize usage of their discoveries and data. According to the group's research scientist Gil Speyer, high performance computing "enables people to solve problems they normally wouldn't be able to solve." The average computer does not typically have the storage capacity or power needed to operate the complex programs or simulations that researchers need. This held true for Kyle Squires, a professor and chair of Mechanical and Aerospace Engineering. After working with Perry Miller, the HPCI's scientific visualization director, who helped Squires create a simulation of the flow around an F-16 fighter jet using supercomputing, he was able to gain greater understanding of the flight characteristics of the airplane. The simulation was performed in conjunction with colleagues at Cobalt Solutions LLC. Squires said the insight gained from the visualizations will eventually enable more rapid diagnosis of problems with existing aircraft and help in the design of future airplanes.

"High performance," "parallel," or "supercomputing" involves coordinating extremely fast computers that enable researchers to work with data bytes numbering in the trillions. As Stanzione explained, "There used to be two dimensions to science: theory and experimentation. Now, there are three: theory, experimentation and simulation," which is exactly where HPCI's faculty comes in.

"With high performance computing, researchers are able to reach a whole other level of science," Scott Menor, an assistant research scientist in the HPCI explained. "You're able to ask questions you weren't able to ask before." He has seen evidence of this while working with Hong Luo, a Ph.D. student in civil and environmental engineering, who studies how soil contaminants diffuse into homes. Supercomputing has allowed Luo to be more precise and efficient with her findings, helping her gather insight into achieving safer environments.

Using computers to benefit humanity is something everyone at HPCI believes in. The group constantly engages in internal research to see how they can offer even more efficient and effective services to their clients and users. "When you can produce a result that would normally take 100 hours in just one hour, that speeds up the entire discovery process," said Menor.

Stanzione is eager for more people to know about the possibilities inherent in high performance computing. "We have access to so much knowledge now, but how we make use of that knowledge is still something we're trying to figure out, in all sorts of fields." The HPCI is the only service on campus that offers support to every school at ASU. With enrollment now topping 67,000, supercomputing has become an essential component of ASU's progress and state-of-the-art resources.

Computer Science Graduate Student Makes a Difference

During Anthony DiGirolamo's senior year as a computer science major at ASU, he enrolled in a parallel programming course taught by Dan Stanzione, the director of the High Performance Initiative (HPCI). The class reignited his passion for computer science. "I'd thought about switching at that point," DiGirolamo said. "I figured I'd finish out my degree then do something else." Instead, he decided to pursue a master's degree in computer science, along with continued work at the HPCI. As a result, his current project with Stanzione, a parallel application debugger that allows users to debug any supercomputing systems offline and without any human intervention, will provide the basis for his master's thesis. "Most debugging systems only work on a limited number of processors and you have to be there to tell it what to do. But this one can work on Road Runner [the largest supercomputing system in the world]. We've never seen anything like it."



Research on Blog Mining Breaks New Ground

Information posted on blogs can be entertaining, informative or inspirational. But how would someone organize blog posts to gain an understanding of the social connections between different bloggers?

Finding information written on several different blogs is currently a challenging and daunting task. SCI professor Huan Liu and his research team of graduate students Nitin Agarwal, Sai Moturu, Lei Tang, Magdiel Galan, Xufei Wang, and Shamaanth Kumar are researching and developing algorithms and proof-of-concept systems to make blog mining manageable.

Liu and Professor Mark Woodward of cultural anthropology received funding from the Office of Naval Research to research technological solutions that could help social scientists solve the problem of finding interrelated relationships on blogs. The project entitled, "BlogTrackers: Combining Domain Knowledge and Novel Search Capabilities for Assessing Political Risks," began in the early part of 2008. Liu and one of his graduate students, Nitin Agarwal, have already written an article based on their initial findings. Their article, "Blogosphere: Research Issues, Applications and Tools," discusses the challenges of modeling and mining blog data in the Special Interest Group on Knowledge Discovery and Data Mining journal called Explorations.

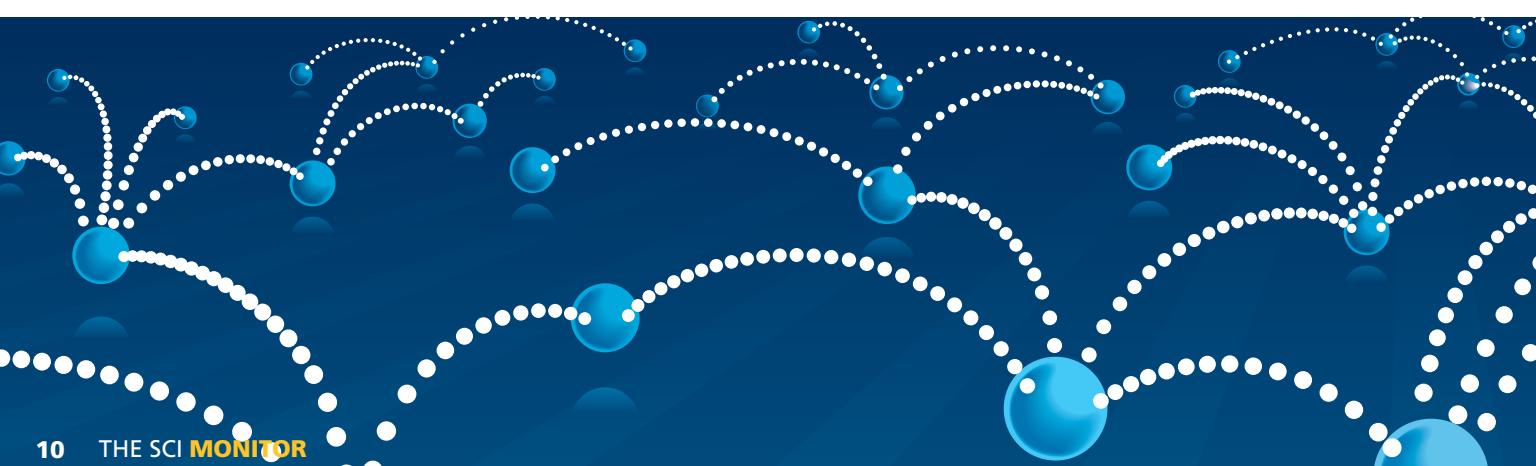
Recently, Liu and Agarwal created an online tutorial for others to understand their research on blogs. They presented the tutorial entitled, "Blogosphere: Research, Tools and Applications," at the ACM International Conference on the Knowledge Discovery and Data Mining. With the use of colorful images news stories and research developments, the tutorial illustrates what the researchers hope to accomplish in simplifying access to information on internet blogs. The tutorial currently ranks in the

top six most popular lectures among thousands on a popular video lecture website.

Blog mining research builds on the differences between the initial web 1.0 and the more advanced web 2.0. With convenient usability and desktop like experience, web 2.0 allows users to have immediate and direct access to web pages if they wish to make a written contribution. Web 2.0 is characterized by rich internet applications, user generated contents, user enriched contents, user developed widgets and collaborative environment of participatory web and citizen journalism. Some examples of web 2.0 services are blogs, wikis, social networking sites, digital media sharing websites and social tagging.

The initial research from this blog mining project shows that web 2.0 sites, like blogs, receive 40% of all internet traffic of sites in the top twenty most frequented websites on the internet. Blog mining aims to identify the social networks that exist among different internet users. Researchers from this project defines social networking as, "A social structure made of nodes (individuals or organizations) that are related to each other by various interdependencies like friendship, kinship, like, etc..." Blog writers, often called bloggers, drive the need to organize the connection between different social networks of writers and the people who visited the blog websites.

Blog writing is changing the face of the internet in several ways. In their tutorial on blog mining, Liu and his team demonstrate how blogging is increasingly becoming a popular means of



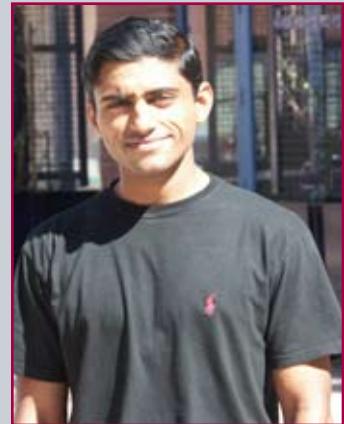
communication and that some bloggers are beginning to gain instant fame and make money from advertisements. They also point out that blogs are a new political arena for people to discuss their political viewpoints.

Ultimately, the researchers hope to gain insights into the relationships between bloggers, readers, blog posts, comments and different blog sites. With this project, they plan to create models that could help generate artificial data, tune the parameters to simulate special scenarios and compare various studies and different algorithms. They have also developed model that identifies the influential bloggers in a community by capturing different properties of the blogosphere and mapping these properties into social gestures of the influentials. This research leads to several exciting opportunities, like optimal ad placement strategies on blog sites, tackling information overload in Blogosphere, improving search and visibility from business point of view.

Last year, Paul Gillin, author of the popular book "The New Influencers on Social Media," said, "In January 2004, there were about one million blogs on the Internet. As of mid-2006, the population of the 'blogosphere' was well past fifty million and climbing." While blogs continue to grow in popularity, Liu and his research team work hard to improve upon current methods of obtaining the data generated by blogs.

Graduate Student's Research Targets Internet Blogs

SCI Ph.D. student Nitin Agarwal works with Liu on the blog mining project. He shares Liu's interest in developing technological tools that will allow researchers to obtain data from blogs. His primary research interest lies in knowledge extraction in social media especially blogospheres, a collective term encompassing all blogs and their interconnections. He researches blog mining clustering in high dimensional data and its applications. This research includes studying, developing computational models for phenomena like influence, trust and familiar strangers in blogospheres. He also researches blog clustering that occurs through the leveraging of collective wisdom and evaluation of blog mining computer models.



His graduate work focuses on social networks and internet blogs. Agarwal hopes to devise conceptual models and tools that aid database management and data mining. Agarwal began his studies in computer science in his native country of India at the Indian Institute of Information Technology as an undergraduate. He developed his current research interests after realizing there was a need to create new models to deal with the old models used to collect information from blogs.

As a fifth year doctoral student, he is currently working on his dissertation, which addresses social networks and blogs. His plans for the future are to become a research professor with a specialization in social networks and blogs.

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BMI Student Patents His Research



Robert Yao is one of seven graduate students in SCI's new Ph.D. program in the Department of Biomedical Informatics. He completed his undergraduate studies with a bachelor's of science in biology and started his graduate training in medicine in his hometown, Chicago, IL. While on leave from his medical studies, Yao strengthened his proficiency in computers. He took the medical information he learned from his lectures and created a template for disease management. He then applied that template to other diseases and conditions.

After several people saw the template that he developed, they pointed out that his work was within the field of biomedical informatics. From there, Yao decided to do two things. The first thing was to get a patent for the template he created to organize information about disease management. The second was to apply for admission to graduate programs in biomedical informatics.

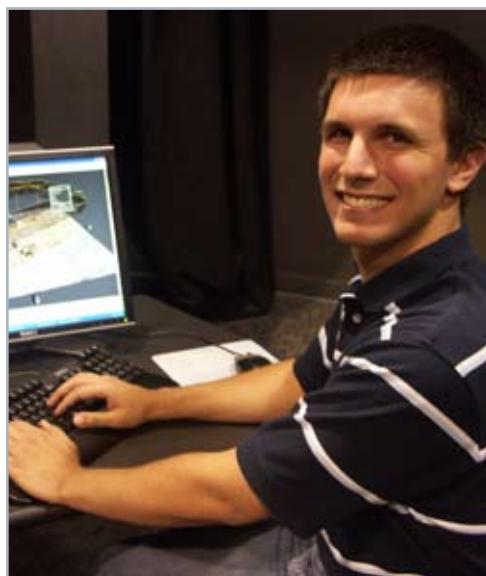
"I decided to come to ASU simply because it seemed like all the top people in the field were being attracted here."

He noticed a trend during his application process about the key faculty members, explaining, "I decided to come to ASU simply because it seemed like all the top people in the field were being attracted here." Prior to coming to ASU, Yao explored his interest in computers by taking them apart and putting them back together as a hobby. His academic work exposes him to the underlying theories that explain how the hardware and software of a computer works. Using computer science theory and his practical experience, he is poised to expand his research into applications health care providers use on a daily basis. Today Yao is a member of the inaugural BMI Ph.D. class with a patent pending on his software application on disease management.

As an undergraduate student, Yao excelled in the math and sciences. He advanced from most of the introductory math and skipped to his favorite kind of math class—advanced calculus. His biology coursework such as genetics helped provide the foundation for Yao's interest. "What fascinated me most about genetics is that it was computer programming on a biological level. The genes and proteins interaction were in the same biologic form of the same "if...then" statements that computer programmers use. I ended up picking a biology route that was very much like computer programming," said Yao. His previous training gives him added perspective about the tools physicians and health care providers need to organize health information.

In the coming year, Yao will be working as a research assistant under BMI Chair Robert Greenes. He adds, "I would like to take advantage of the partnerships ASU is forming and continue my medical education and training while doing research here in Arizona." For now he has his research on information management for disease to look forward to en route to achieving his goal of obtaining a M.D. and Ph.D.

Seniors Receive General Dynamics Internships



Nick Karavakis

General Dynamics C4 Systems in Scottsdale, Arizona has a long-standing relationship with ASU by providing internship opportunities to engineers interested in defense systems or software development. This past summer, the private defense company offered internships to two senior SCI undergraduates, Andrew Riggs and Nick Karavakis.

Both of the students worked in the engineering department on the Future Combat Systems (FCS) Sensor Data Management (SDM) program. Computer Science and Engineering (CSE) alumnus Raul Montreal, who works as the Engineering Section Manager of the FCS SDM program, hired them and supervised their work.

For both Riggs and Karavakis, General Dynamics is their first internship of their undergraduate careers. Riggs points to CSE's academic training as an integral part of his computer science training. He adds, "I think it is a credit to ASU that I ended up at General Dynamics after entering ASU without any programming experience. They give a lot of great educational opportunities." His internship gives him experience in the computer science field that is otherwise difficult to obtain. Riggs' main responsibilities in the systems engineering lifecycle was to understand SDM requirements, architecture and design, participate in requirements analysis and to design and implement an autonomous program which generates and validates code before that code moves to the next phase of development. He said, "Working for General Dynamics C4 Systems has been an invaluable experience which has given me tremendous insight into the skills required to succeed in the software engineering field. Through my work I have gained an incredible amount of respect for the countless people who work to protect our country."



Andrew Riggs

Karavakis sees his academic experience within CSE as an important part of his early career success. With his internship, Karavakis focused on fixing software defects as assigned, assisting in the implementation change requests by making use of the Rational Software Suite(r) and the UNIX operating system and participating in the technical peer review process.

"Over the summer, both Andrew Riggs and Nick Karavakis have become valuable members of my engineering department and have proven well prepared at ASU to significantly contribute to the technical software challenges we face day to day on our programs."

*Raúl A. Montreal III
Engineering Section Manager, Battle Command Applications
General Dynamics C4 Systems*

Montreal has had a sixteen-year career at General Dynamics. His career there began in 1991 when he interned as a CSE undergraduate intern from ASU. Since that time, he has had a variety of different professional roles as an engineer with the company such as providing technical support in combat fields. Riggs and Karavakis, SCI seniors, might follow in the footsteps of Montreal. Both students were offered and accepted positions to extend their internships into the fall 2008 and spring 2009 semesters. Additionally, they have accepted full-time engineering positions, which will begin after their graduation in the May 2009. Riggs and Karavakis will be joining the General Dynamics team as Professional Software Engineers. Riggs expresses his gratitude for the experience by saying, "I wanted to thank General Dynamics for the opportunity to complete this internship and ASU for teaching me the skills that I needed."

Alumnus Bernd Hamann Leads Research at UC-Davis



Debbie Aldridge / University Communications / UC Davis

Bernd Hamann and the University of California-Davis campus.

The need to create better methods for mathematical modeling and visualizing scientific data and information using computer graphics grows each day. CSE alumnus Bernd Hamann has spent most of his career in computer science working collaboratively on interdisciplinary teams to develop and improve methods to visualize data. He graduated from ASU in 1991 with a Ph.D. in computer science. From there, he started his career at Mississippi State University (MSU).

While working at MSU, Hamann became involved in a major research project funded by NSF that was devoted primarily to computational efforts concerning aircraft and car design. He researched ways to interactively design and manipulate complex geometry required for aircraft and car simulations as a faculty researcher within the NSF Engineering Research Center. In 1992, he won the Research Initiation Award from NSF, which enabled him to combine his research interest in data visualization and geometric design.

Hamann received a CAREER Award from NSF for his work on scientific data modeling and visualization upon transferring to the University of California-Davis (UC-Davis). His career expanded when he became the co-director of the Center for Image Processing and Integrated Computing (now called Institute for Data Analysis and Visualization) at UC-Davis. He traveled to Livermore, CA to work as a participating guest researcher and faculty computer scientist at the Lawrence Livermore National Laboratory operated by the University of California for the US Department of Energy. Over the past fifteen years, he has collaborated extensively with his colleagues from the Lawrence Livermore National Laboratory and the Lawrence Berkeley National Laboratory.

UC-Davis honored his research performance in 2000 by promoting him to a full professor of computer science. He was appointed to the position of associate vice chancellor for research at UC Davis in 2003. This position has enabled him to oversee most interdisciplinary and large-scale research projects performed on the entire UC Davis campus. Since 2005, he has also been serving as the co-director of the first Germany-US International Research Training Group (IRTG), funded by the German Research Foundation. The IRTG provides funding for Ph.D. students from the University of Kaiserslautern, Germany, who can spend several months per year at one of the official US partner institutions (UC Davis, ASU, the University of Utah, and UC Irvine).

In 2005, Hamann co-founded Stratovan Corporation, a data visualization and analysis company. His career spans several decades, universities and leadership positions, including a variety of university-based research, teaching and leadership positions. He considers his start at ASU to have been an important first step in his career. He said, "Whenever I reflect on my career path to date, I realize that I had wonderful academic role models - my caring Ph.D. advisor, many outstanding professors, highly effective research center directors, and visionary and dedicated administrators. I learned from them so much and always could count on their support and advice whenever I needed it." He adds, "My role models inspired me to do better, to try harder, and to attempt to teach and mentor the next generation of scientists and leaders well. I can only hope that I can touch some of my students in ways my former advisors and mentors who influenced me in so many positive and lasting ways."

SCI Students Attend Swiss Study Abroad Program



Swiss study program students



Ten undergraduate Computer Science and Engineering students travelled to Lausanne, Switzerland this past summer to study at The University of Applied Sciences. Although waking up at 7:00 a.m. during the summer is not normal for most students, the ten students maintained an early morning rise. They lived in the French-speaking, mid-sized city of Lausanne located near Geneva. Their classes were held on the campus of the Haute Ecole d'ingénierie et de gestion du canton de Vaud (HEIG-VD). Each day of the program, the students boarded trains in Lausanne and travelled to Yverdon-les-Bains where their classes convened.

There were approximately ten students from United States universities participating in the program. SCI's students received scholarships to participate in the program based on their academic performance. The students selected for this year's program were Richard Callingham, Jose Figueroa, Michael Fruchtman, Kimberly Grout, Barry Lumpkin, Samuel Olsen, Brian Partridge, Edward Raleigh, Jeff Shaw and Robert Trevino.

Over the course of three weeks, the students studied coursework in Wireless Security, Network Security, Bioinformatics and Open Source Software. Taking four classes in just three weeks required an extensive schedule starting early in the morning and lasting into the evening.

HEIG-VD, which has the largest advanced professional vocational training complex in Switzerland, has been the host for this study abroad program for several years. This year was ASU's first time sending students and faculty to the program. SCI professors James Collofello and Partha Dasgupta led the ASU delegation. SCI lecturer Mutsumi Nakamura and Richard Filley, Director of

the Global Futures Initiative, organized the program by coordinating with program leaders at HEIG-VD. The students took classes and lived with students from Switzerland. All of the students lived off campus in the Maison de la Bourdonnette, an apartment building. Their living experience gave them a chance to experience Swiss academics as well as the Swiss culture, transportation system and cuisine.

They also had a chance to experience language differences. Senior Brian Partridge gave an account of his experience with the multi-lingual culture, "When I arrived in Geneva, I didn't know where to go and immediately crashed head first into the language barrier. I had studied Spanish, Japanese and Portuguese. I can even fake a French accent, but the only person I saw on the train platform spoke German!"

Using funds from a state education grant, HEIG-VD paid for most of the students' major expenses for the trip, including tuition and airfare. Additionally, the program gave each student a train pass to travel around Switzerland during their free time. Traveling around Switzerland enabled the students to experience Swiss culture and cuisine as well as the most popular attractions. Some of the students like senior Jose Figueroa took thousands of photos of their biking trips near Lake Geneva and the Swiss Alps. Senior Barry Lumpkin said, "Studying in Switzerland was an unforgettable experience that gave me the opportunity to network with fellow students across the globe and see firsthand the nature of a globalizing industry. I strongly recommend for any student to study abroad, not only to see the world, but to personally discover how important these global networks are becoming in our generation."



SCI Job Fair

School of Computing and Informatics undergraduate, graduate students and alumni are invited to attend the SCI Job Fair for the opportunity to meet top employers looking to hire SCI students for jobs and internships. For more information, including listing of companies attending the event, visit <http://sci.asu.edu/jobfair>.

Save the Date

Spring 2009 Job Fair: February 20, 2009

Fall 2009 Job Fair: September 11, 2009

Spring 2010 Job Fair: February 26, 2010

Memorial Union, ASU

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