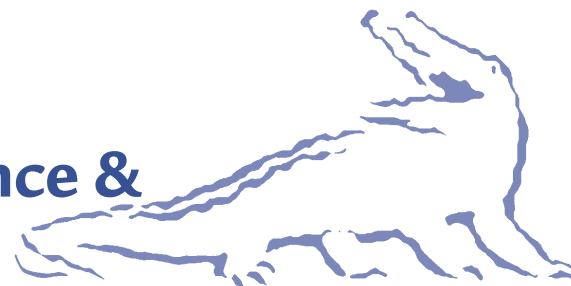


# Computer & Information Science & Engineering



<http://www.cise.ufl.edu>

Fall 2004

## A Letter from Sartaj Sahni, CISE Chair

The Computer & Information Science & Engineering (CISE) department has grown considerably since its inception in 1972. (See accompanying article by our first chair, Dr. Robert Ramey.) We added an 'E' to our name, going from CIS to CISE. This name change better reflects the department's emphasis on both science and engineering. Today we have 36 tenure-track faculty, seven lecturers, over 900 undergraduate majors, approximately 130 MS students and over 160 PhD students. In 2003-2004, we granted more than 200 bachelor's, more than 100 master's degrees and, awarded eight PhD degrees.

This fall we are very fortunate to have five outstanding new faculty members join us: Jeffrey Ho, Tamer Kahveci, Prabhat Mishra, Alper Ungor and Tuba Yavuz. A brief introduction to these faculty members appears in the new faculty section of this newsletter. Sumi Helal was promoted to full professor in 2004 and Gerald Haskins was promoted to senior lecturer. With these new faculty and promotions, CISE now has two distinguished professors, nine full professors, nine associate professors, 16 assistant professors, two senior lecturers and five lecturers.

In 2004, assistant professors Chris Jermaine and Markus Schneider received prestigious NSF CAREER awards to support their research. The research of many of our other faculty is supported by grants from federal agencies as well as corporations. CISE externally-funded research in 2003-2004 exceeded \$3 million. National and international awards and recognition for our faculty include

four IEEE Fellows; one each ACM Fellow, AAAS Fellow, SCS Fellow, and SPIE Fellow; two members of the European Academy of Sciences; one IEEE Computer Society Taylor Booth Education Award; one IEEE Computer Society Wallace McDowell Award; and one ACM Karl Karlstrom Education Award.



CISE has significant research strength in computer graphics, modeling and art; computer systems; computer vision and intelligent systems; database and information systems; and high-performance computing and applied algorithms. Our research centers and laboratories include the Center for Vision, Graphics and Medical Imaging; Database Systems Research and Development Center; Harris Networking and Communications Lab; The Rehabilitation Engineering Research Center on Technology for Successful Aging; Laboratory for High-Performance Computing; Bioinformatics Group Laboratory for IT Enterprises; Laboratory for Landmine Detection; and Software Engineering Research Center. This newsletter highlights some of our research in bioinformatics, database and information systems, digital arts and science, and land mine detection. Subsequent issues will cover other aspects of our research.

continue on page 2

G A T O R  
Engineering®



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In recent years there have been fewer CISE undergraduate majors. Although this decline is in keeping with national trends, the 44 percent increase in the number of CISE freshman in fall 2004 over that in fall 2003 may indicate a reversal. With the able counseling provided by the staff of the CISE Student Services Center and the tutoring provided by the CISE Academic Tutoring Center, it is expected that the retention and graduation rates for undergraduates will continue to increase.

At the graduate level, enrollment has been relatively stable at around 300 for the past five years. However, a recent significant shift in the composition of the graduate-student body has occurred. We have gone from about 240 MS and 50 PhD students five years ago to about 130 MS and 170 PhD students today. Despite the decline in the number of MS students, the number of MS degrees awarded has risen from about 70/year to about 100/year. This increase is largely due to the reduction in time the average MS student takes to graduate. The dramatic increase in the number of PhD students portends a correspondingly dramatic increase in CISE's research productivity. With the addition of new courses and the streamlining of others, our undergraduate and graduate students continue to receive the highest-quality education possible. Their education is enhanced by the activities of student organizations including a Student Chapter of the ACM (Association for Computing Machinery) and ADAM (Association of Digital Arts and Media), as well as by the partial support CISE is able to provide students to participate in conferences.

In this academic year, we shall strive to further improve the overall educational experience of our students. I look forward to another year of increased research productivity on the part of our faculty and students.



## The CISE Department: How It All Started

by Robert Ramey

*(Editors note: Robert (Bob) Ramey was the founding CIS department chair at UF. A professor in the College of Engineering when he accepted the position, he served during its critical formative years of 1972-74.)*

The University of Florida was not the earliest participant in the field of computer and information sciences. But by 1969, faculty members in many of UF's colleges were striking out individually into this new and important field, making their presence known. UF graduates were also making their mark. This included a 1925 graduate, John Atanasoff, who is credited with inventing the first electronic digital computer.

All this was not lost on UF Academic Vice President Bob Bryan. He (with the active participation of UF Deans VanderWerf, Lanzillotti, Jones, Uhrig, and Chen) decided to explore how UF should organize an effort to provide students with the best opportunities in this emerging field. He appointed interested faculty members from each of the potentially affected colleges as a steering committee and asked us to formulate a plan.

Charles Bridges (College of Education), Alfred Clubock (Political Science), Allen Durling (Electrical Engineering), Harry Hollien (Liberal Arts & Sciences), Frank Martin (IFAS), Warren Menke (Business Administration), Ralph Selfridge (Computing Center), Frank Vickers (Industrial & Systems Engineering), Alexander Wallace (Mathematics), and I as chairman were given a very simple mandate: the entire university must benefit from the plan.

The first order of business was to research existing computer science programs at other US universities. Visits and interviews were arranged to allow study of most of the good programs. Thorough reports were generated and

discussed by the steering committee, but none of the existing models seemed to fulfill Dr. Bryan's goal. The most glaring problem with most of the early programs was that just one department or discipline controlled all the resources while the needs of others were not particularly well served.

In the end, the steering committee recommended that CIS be an interdisciplinary organization collaborating with a number of departments in several colleges. Degree programs were established in three colleges: Engineering, Liberal Arts and Sciences, and Business. It was recommended that CIS report to the Vice President of Academic Affairs until a department could be established to fulfill its unique role. This plan was submitted to the Board of Regents and approved.

The College of Engineering donated some rather cramped space on the 5th floor of Weil Hall and operations began in 1972 (yes, space was an issue then, too!). The first courses were taught by faculty from the participating colleges. Frank Vickers, in particular, did an outstanding job of patching together useful course offerings with the diverse faculty resources comprising the initial CIS department.

Today there is an imposing building in the middle of campus dedicated to the activities of CISE's almost 2,000 students. There is a vigorous and still growing research/graduate program and a distinguished faculty under the brilliant leadership of Distinguished Professor and Chair Sartaj Sahni.

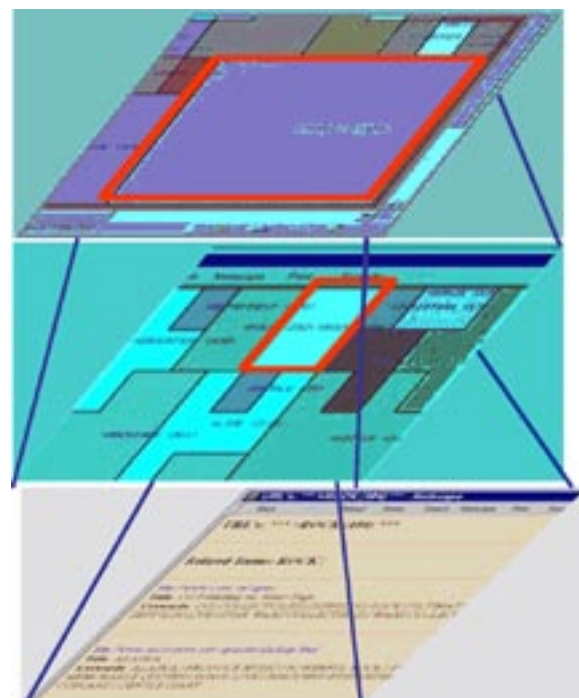
# Bioinformatics Group Laboratory for IT Enterprises

by Professor Su-Shing Chen  
<http://www.cise.ufl.edu/~suchen>

Bioinformatics has many aspects and dimensions, and involves multiple disciplines in the life sciences. Three major projects are being undertaken in the CISE Bioinformatics Group Laboratory for IT Enterprises: 1) Smart Navigation of Large Medical Digital Libraries – MEDLINE and PUBMED; 2) Data Mining of Biomarkers for Traumatic Brain Injury; and 3) Designing siRNA Target Sites for the Inhibition of Recurrences of Genital Herpes Infections.

## Smart Navigation of MEDLINE and PUBMED

With the explosion of biomedical data (currently more than 12 million documents and 6,000 journals and increasing daily), information overload and users' inability to express their information needs may become more serious. To solve those problems, we have developed a text data mining method that uses both text categorization and text clustering for building concept hierarchies for MEDLINE citations. There is a three-step data mining process for organizing the MEDLINE database: 1) categorizations according to MeSH terms, MeSH major topics, and the co-occurrence of MeSH descriptors; 2) clustering using the results of MeSH term categorization; and 3) visualization of categories and hierarchical clusters. The hierarchies automatically generated may be used to construct multiple viewpoints of a collection. Providing multiple viewpoints of a document collection and allowing users to search among these viewpoints will enable both inexperienced and experienced researchers to more fully exploit the information contained in a document collection.



Data Mining Biomarkers

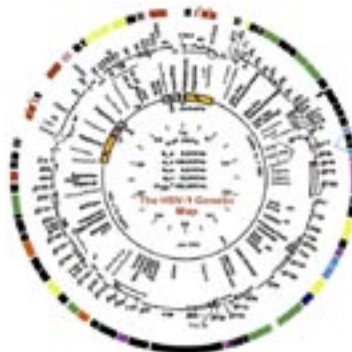
Neuroproteomic studies are important because they will help elucidate the poorly understood biochemical mechanisms or pathways underlying various psychiatric, neurological, and neurodegenerative diseases. The McKnight Brain Institute, with whom we are working, is a national leader in traumatic brain injury (TBI) research. We are developing data mining strategies for proteomic analysis in traumatic brain injury research so that the diagnosis and treatment can be developed. While brain imaging provides only coarse resolutions, proteomic analysis yields much finer resolutions in brain research. Our data mining approach is not only at the data analysis level, but an integrated scheme of animal modeling, instrumentation, and information architecture development. The proteomic data are various biomarkers, which are short peptide sequences:

## Tryptic Peptides Observed in the 1<sup>st</sup>- ranked protein (Synaptojanin) in Gel Slice 22: Injured-Cy3 (I) HC



## Designing siRNA Target Sites for the Inhibition of Recurrences of Genital Herpes Infections

Herpes simplex virus type1 (HSV1) and type2 (HSV2) are the causative agents of labial and genital herpes. The virus is known to cause a life-long infection in the host, becoming latent in the sensory nerve ganglia. The available viral agents are effective for reducing the duration of outbreaks and recurrences but they cannot cure the infection. Short interfering RNAs (siRNA) suppress gene expression through a highly regulated enzyme mediated process called RNA interference (RNAi). siRNA have proven to be effective at specifically silencing gene expression without causing any interferon response. Several criteria have been identified to find the siRNA target sites for HSV1 and HSV2 genes. The current process used by biologists for finding siRNA target sites for the HSV1 and HSV2 genes is time consuming and error prone. Our siRNA Designer is a Web-based application developed to automate the process of finding all the possible siRNA target sites in both HSV-1 and HSV-2.





## NSF CAREER Award Winners Research Databases

### New Technologies for Online Aggregation

**Assistant Professor  
Christopher Jermaine**

The information age is characterized by the sheer amount of electronic data that has been collected. However, the ability to use that data in a meaningful way has not kept pace with the capacity to collect and store it.

This project will develop new methodologies to allow people to explore and analyze massive data repositories. The project is centered around developing and refining the technologies necessary to support “online aggregation,” where the idea is to give a user a quick and dirty guess in answer to a question about the data, which is then refined over time. This paradigm has the potential to save a huge amount of human and computer time during the exploration and analysis of large databases by allowing a user to interact in real time with the database software. Online aggregation allows users to ask more intuitive and daring questions when exploring large data sets because it minimizes the time wasted in computing answers that turn out to be uninteresting or useless. If the initial results show that the user is on the wrong path, the process of refining the answer can immediately be terminated and the user can ask a different question.

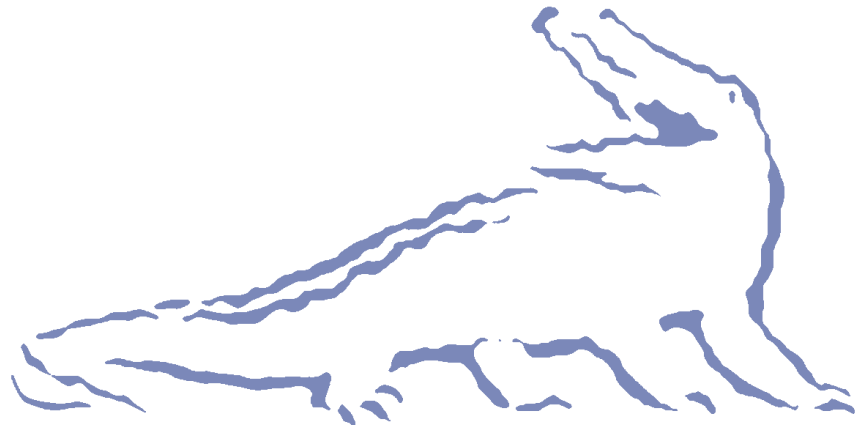


### Database Integration of Space, Time and Uncertainty as a Foundation for Geographical Information Systems

**Assistant Professor  
Markus Schneider**

The project focuses on the database integration of space, time, and uncertainty (STU) as a foundation for the next generation of geographical information systems (GIS). The combination will greatly increase the expressive power of GIS and broaden the possible spectrum of future GIS applications. Advanced space management is needed because many GIS applications require a three-dimensional representation and treatment of data. Two-dimensional spatial data handling has shortcomings with respect to the treatment of complex spatial objects and the topological relationships between them. Integrated time management is needed because many spatial phenomena show dynamic behavior over time. They may change location, alter their extent, or modify their shape. Examples are cars, cell phone users, planes, air-pollution areas, and temperature zones. Integrated uncertainty management is needed because many natural spatial phenomena like soil strata, polluted areas, temperature zones, oceans, and biotopes cannot be exactly defined or delineated.

The solution will be the design, implementation, and database integration of new, computational, formal type systems (algebras, data models); query languages; application programming interfaces; and software tools for handling space, space-time, space-uncertainty, and space-time-uncertainty objects. The goal is to create universal, application-neutral, and versatile tools for GIS applications. The tools will be implemented as software extension packages and embedded into extensible database management systems.



## Next Generation Computer Science

by Professor Paul Fishwick

The genesis of the Digital Arts and Sciences (DAS) curricula at the University of Florida (UF) is steeped in myth and adventure. The story begins like this – the president of the University was on a plane with an expert from the special effects industry. After some critical across-the-aisle chit-chat, it was decided that UF should invest in bridging at least some of the gaps between Fine Art and Computer Science in an effort to nurture students who have both sides of their brain fully functioning: the left brain for logical thinking and the right brain for aesthetics and the arts.

This story not only sounds good, but it has more than a ring of truth to it. In any event, six years later, we have established a unique set of curricula and strong ties between Fine Art and Computer Science, with potential to go much further. In a nutshell, we have Baccalaureate and Masters programs that belong to both Fine Arts and Engineering, where our Computer and Information Science and Engineering (CISE) Department is housed. Fine Art produces students with a BA or MA, and we (CISE) produce BS and MS students. I will spend most of this article on the CISE side<sup>1</sup>, with forays into interdisciplinary collaborations toward the end. There are different ways in which Art and Computer Science can explore the synergy of two disciplines. We are taking a view that the synergy improves and extends computer science as a discipline. This represents a somewhat different approach than, say, designing an entirely new type of discipline or specialized digital media-focused curricula.

Through DAS, we are producing the next generation computer scientist. Let me try to justify this statement with some recent computing history. There may be no better place to look, initially, than at this column which propounds the amazing possibilities inherent in inexpensive graphics hardware. One could go even further to suggest that we are on a rollercoaster that is driven by

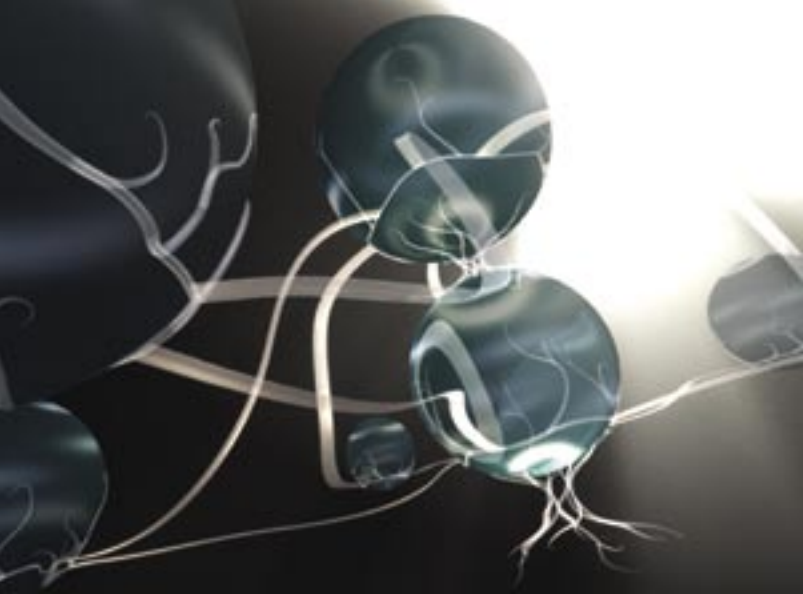
improving the scope of HCI (human-computer interaction) from graphics and audio to sensors and actuators. In graphics, the GPU wars are ongoing and fierce, producing ever-faster consumer-targetted graphics rendering rates for games and simulations. All of this leads to a very basic question: How will all of this high-sensation technology change Computer Science as a discipline? It is one thing to imagine the future state of computer graphics, vision, and sound as their own ultimate ends, but a more important question revolves around how this trend in fast hardware and immersive environments will transform foundational computer science, which consists of things like program and data structures, software engineering, machine organization, database methodology, and discrete mathematical structures. The change we are experiencing is a fundamental branching of computer science into areas that more closely examine the relationship of the human to the computing hardware. While HCI has always focused in these areas, we now have a plethora of areas: ubiquitous, tangible, pervasive, and human-centered computing to add to virtual and augmented reality. Even though it is speed that ultimately got us to where we are today, we are finding that computing needs to be as focused on quality and sensation as it is on quantity and speed. We need to pay closer attention to experiential effects in our discipline.

You do not have to look too far to see that a human-centered focus on experience, presence, interaction, and representation forms the core of the arts. Perhaps the arts can lead us in new directions? This notion leads us to a view that a set of programs that builds upon a solid mathematical and rigorous core of Computer Science, but with an outer shell of intense arts-based practice and knowledge, can generate future Leonardos—the next generation computer scientists. Digital Arts and Sciences attempts to build such a set of programs. The undergraduate BS-DAS

degree<sup>2</sup> is saturated with the typical fare for CS programs: core science (i.e., chemistry, two-phase physics sequence) and mathematics (i.e., three calculus courses, differential equations, numerical analysis). The core BS-DAS and BS-CS courses, from the science, general education, and computer science courses, are identical. BS-DAS differs from BS-CS in that BS-DAS students are required to take arts classes, including Drawing, Sculpture, Digital Montage and Time-Based Media. This shell is somewhat broader than Fine Arts classes in that students are encouraged to choose from an interdisciplinary list of DAS-related areas including theatre, architecture, new media, electro-acoustic music, and hypermedia narrative composition.

The MS-DAS program<sup>3</sup> has a different goal than the undergraduate BS-DAS, since it is assumed that MS-DAS students may come with an academic history that may not be true-blue CS. An undergraduate core-CS equivalency (“postbacc” prerequisites) is required, however. The MS-DAS core consists of modeling for geometry (graphics) and dynamics (simulation) and includes both disciplinary electives (vision, AI, visual modeling, aesthetic computing, virtual environments) as well as interdisciplinary electives like those found for BS-DAS. Students can choose between a Master’s Thesis and a Project/Performance.

Aside from gluing existing courses together across colleges and curricula, we have found that the most interesting part of DAS is the opportunity for new types of courses. Two years ago, I created a course in Aesthetic Computing<sup>4,5</sup> with funding from the National Science Foundation and with colleagues Tim Davis and Jane Douglas, which allows students to create virtual and physical models of formal structures found in mathematics and computing, with the idea that perhaps by combining artistic aesthetics with CISE modeling and representation, we can explore new interface modalities for ways in which



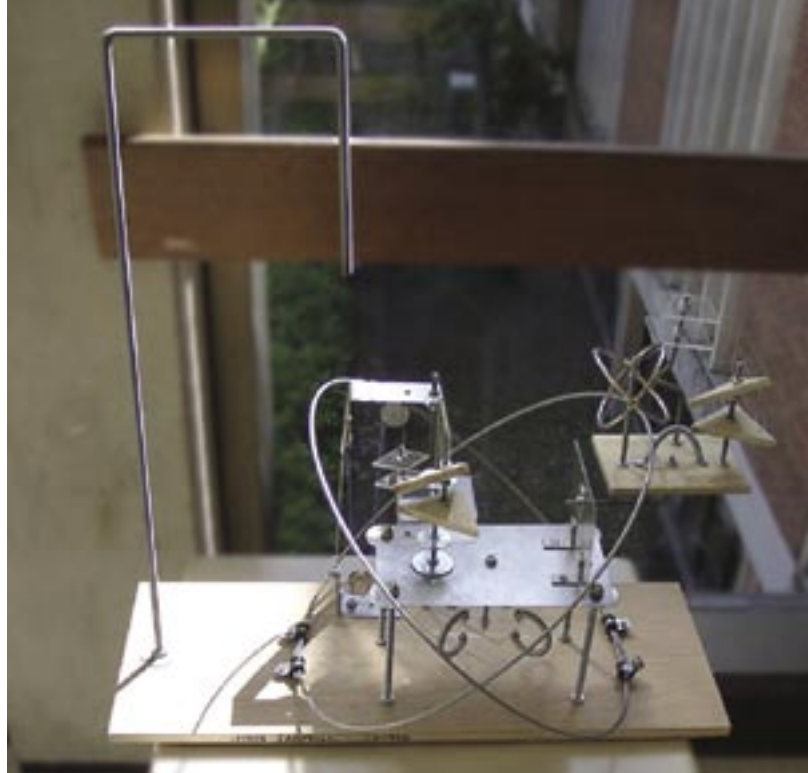
**Figure 1: A network of nodes, with feedback, for modeling a banded waveguide physical model for sound.**

to model and program. Figures 1 and 2 display two sample results from these classes. Figure 1 shows a banded waveguide physical model, a data flow network, created by a graduate art student (Joella Walz), along with my collaboration with a computational sound faculty colleague (Georg Essl). The structure replaces rectangles and arrows with organic spheres and connectors in an engaging and immersive scenario, and the scene may be simulated to produce a variety of sounds from strings to bells.

Figure 1 represents a virtual model, whereas the model in Figure 2 captures the topology inherent within the Taylor series, using a custom physical model notation developed by the computer science student (John Campbell). His model was part of an open-house gallery display, in which all Aesthetic Computing students participate mid-semester.

Aesthetic Computing takes what is normally hidden in the text or diagrammatic languages of mathematics and computing, allows it to be customized, and places it in an immersive and engaging environment.

Fine Art has its own substantial program in Digital Arts and Sciences<sup>6</sup>. Their students meet with ours in several of the “DAS core” classes, in team projects that they create within non-core Art and CISE classes, and in the two-



**Figure 2: A metal, plexiglass and wood representation of the Taylor Series expansion**

semester Senior Year project. Moreover, there is a Digital Worlds (DW) Institute<sup>7</sup> that provides infrastructural equipment, space, and facilities for DAS students and faculty. We have recently created several new classes to explicitly support the Fine Art side of DAS. We have a two-semester Interactive Modeling and Animation sequence where students learn the elements of 2D and 3D modeling and animation. A new discrete math class with explicit artistic products and elements is underway, and we have created a few “package” courses to assist students in learning complex software programs like Blender, Maya, and 3D Studio Max.

What have we done, what have we learned, and where are we going with DAS? We’ve accumulated six years of experience of working with Fine Art and related areas such as architectural design and new media, and we have already released our first set of BS-DAS degree recipients into the workplace. DAS students have found that they are well-prepared for human-centered computer science, with jobs from entertainment technology, special effects,

and digital media to pervasive computing, augmented/virtual reality, simulation, computer graphics, and visualization. We’ve learned a lot of hard lessons about how to collaborate and connect across different cultures, and about how to create bridges from CISE to Fine Art that are lasting and meaningful. We plan to continue the DAS curriculum at the PhD level. Technically speaking, the existing CISE PhD can be used to accommodate DAS-related dissertation topics; however, we need to perform research to see whether fine-tuning is required for a PhD-DAS program structure.

<sup>1</sup> CISE Home: <http://www.cise.ufl.edu/>

<sup>2</sup> CISE BS-DAS: [http://www.cise.ufl.edu/student\\_services/undergrad/das/](http://www.cise.ufl.edu/student_services/undergrad/das/)

<sup>3</sup> CISE MS-DAS: [http://www.cise.ufl.edu/student\\_services/grad/das/](http://www.cise.ufl.edu/student_services/grad/das/)

<sup>4</sup> Aesthetic Computing: <http://www.cise.ufl.edu/~fishwick/aescomputing>

<sup>5</sup> Dagstuhl Seminar: <http://www.dagstuhl.de/02291>

<sup>6</sup> FA-DAS Curriculum: <http://www.arts.ufl.edu/ART/DAS/index.htm>

<sup>7</sup> Digital Worlds Institute <http://www.digitalworlds.ufl.edu>



# CISE Landmine Detection Research

by Professor Paul Gader

Landmines pose a significant risk to millions of people around the world. It is estimated that at least 50 million active landmines are buried worldwide, and that someone is killed or maimed by a landmine every 20 minutes. Traditionally mines could be found using metal detectors. However, many modern landmines are made from plastic and contain very little metal. Plastic landmines are very difficult to detect and new solutions are required to effectively remove these threats.

CISE researchers are investigating innovative algorithms for processing data from state-of-the-art sensors for landmine detection. Close to 100 gigabytes of data from ground penetrating radars (GPR),

hyper-spectral imagers, acoustic/seismic systems, and advanced metal detectors are the focus of intense analysis here at UF. These systems can be hand-held, tele-operated, airborne or robotic ground vehicles.

Researchers are actively engaged in designed multi-sensor approaches that require complex computer algorithms for analyzing data from multiple sensors. Ground penetrating radars can “see” plastic mines under the ground but also see many other things, such as pockets of water, changes in soil type and density, rocks, pieces of wood, etc. Metal detectors can be used to reject false alarms that have no metal but do have a high GPR response. Acoustic systems cause the ground to vibrate by projecting sound into the ground and can help to find mines that have low electromagnetic signature but that have a strong vibration signature. Radar, metal, and acoustic images are actually multi-dimensional signals that do not look like visible images and are very difficult to analyze.

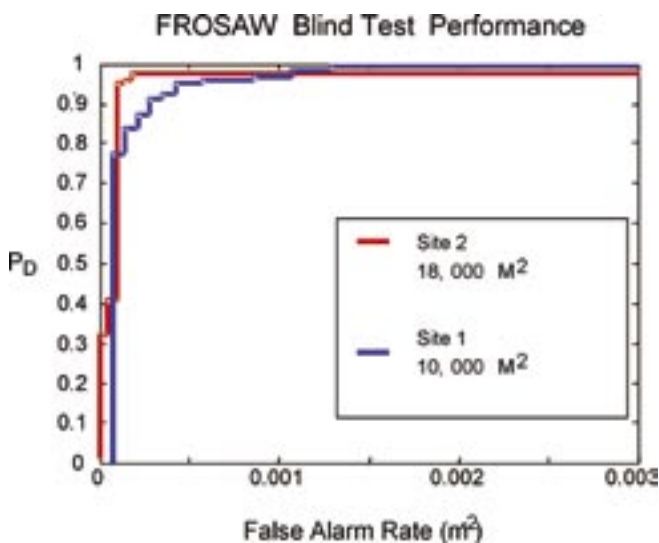
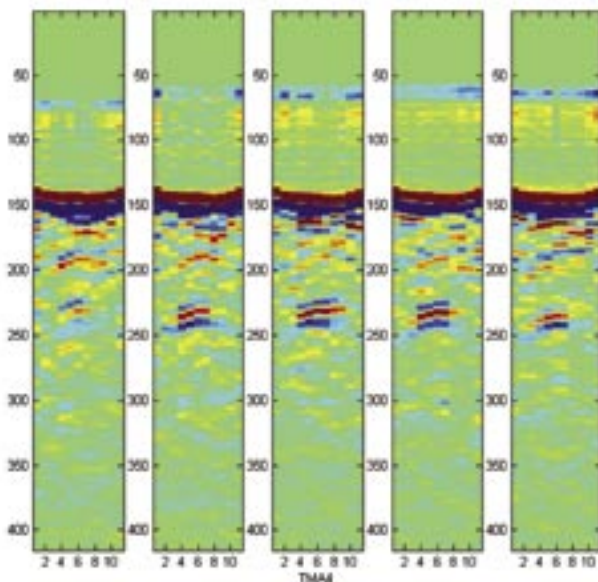
UF researchers not only work hard in the computer lab analyzing data, they do field testing as well. In the past two and a half years, CISE

researchers have done outdoor field testing of five different sensor systems at three different geographical locations. In every case, the detection results were among the highest achieved and demonstrated clear advantages over past performance.

CISE researchers are actively involved in outdoor field testing of their algorithmic concepts. Here is where the rubber meets the road. Scoring is performed by independent agencies and all aspects of the system must be functioning at high levels of efficiency.

Professor Paul Gader is currently the principal investigator of the project. He is joined by faculty colleagues Joseph Wilson, Gerhard Ritter and Mark Schmalz. In addition, one post-doctoral fellow and 12 graduate research assistants are involved in the research.

Advanced image and signal analysis techniques using machine learning, statistical pattern recognition, nonlinear integration, artificial neural networks, fuzzy set theory, and mathematical morphology are all under investigation to help reduce the landmine problem. This exciting research involves state-of-the-art computational concepts and is making a real difference with a difficult, real-world problem.

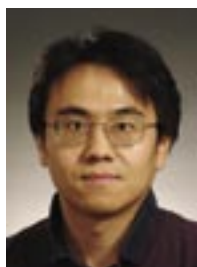


## New Faculty Join CISE



**Robert Cubert**, senior lecturer, received a BS in electrical engineering from MIT and a BS in zoology and an MS in computer science from the University of Oklahoma. He received a PhD in computer engineering from UF in the area of modeling and simulation. After several years in industry, he joined the Computer & Information Science faculty of California State University, Sacramento,

where he taught for three years. He also served for two years as chair of the Sacramento Valley section of the Institute of Electrical and Electronics Engineers Computer Society. He started Realtime Control Systems, a software development business which provided software for process-control and communications for ready mix concrete producers and related sectors of the paving industry. For two years he was involved in a prototype paperless-office project created by the IBM Research Division (Almaden), and shares a patent with several others related to image libraries. He briefly served as a QA consultant to the state of California in a large software development effort.



**Jeffrey Ho**, assistant professor, received a PhD in mathematics in 1999 and an MS in computer science in 2000 from the University of Illinois at Urbana-Champaign. Since 2000, he has been a post-doctoral research associate first with the Beckman Institute at the University of Illinois and then with the University of California at San Diego. His two-year appointment at the Beckman

Institute was supported by an NSF post-doctoral research fellowship. His main research interests are computer vision and computer graphics. In particular, he is interested in developing algorithms and techniques to allow computers to comprehend and appreciate the wonderful visual world we live in. His work has covered several areas of computer vision and graphics, including visual tracking, unsupervised and supervised learning, image clustering, face recognition, mesh compression, and texture synthesis. In 2002 he was a member of the technical team for the ASIMO humanoid robot program at Honda Corporation of America. He has been a member of the IEEE since 2001.



**Tamer Kahveci**, assistant professor, received a BS in computer engineering and information science from Bilkent University, Turkey, in 1997 and a PhD in computer science from the University of California at Santa Barbara in 2004. His main research interests are bioinformatics and databases. He has worked on indexing sequence databases, sequence alignment, shotgun sequence assembly,

multiple alignment, and indexing of protein structure databases.



**Tuba Yavuz-Kahveci**, lecturer, received a PhD in computer science from the University of California, Santa Barbara, in 2004. Her research interests are software engineering, model checking, static analysis, and specification of concurrent software systems. For her dissertation, "Specification and Automated Verification of Concurrent Software Systems," she adapted symbolic

model checking techniques to the automated verification of concurrent software systems. She built a symbolic manipulator tool, the Composite Symbolic Library, and an infinite-state symbolic model checker, the Action Language Verifier. She applied these tools to a specification, verification, and code synthesis case study of an airport ground traffic control system. She has also developed several techniques for automated verification of concurrent linked list implementations.



**Prabhat Mishra**, assistant professor, was born in West Bengal, India, in 1973. He received a BE in computer science an engineering from Jadavpur University, India, in 1994. In 1996, he received a MTech in computer and information technology from the Indian Institute of Technology, Kharagpur. From 1996 to 1999, he worked in various VLSI/EDA companies including Texas Instruments

and Synopsys. He received a PhD in computer science from the University of California, Irvine in 2004. Mishra's research interests are in the design and validation of embedded systems, VLSI CAD, and computer architecture. He received a best paper award in the IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis in 2003. He is a member of the IEEE and ACM SIGDA.



**Alper Ungor**, Assistant Professor, obtained a PhD in computer science from the University of Illinois at Urbana-Champaign in 2002. He received a BS in computer engineering and an MBA from the Middle East Technical University in Ankara, Turkey. He also received an MS in computer science from Rensselaer Polytechnic Institute in New York. Before

joining the UF, Ungor was a post-doctoral research associate in computer science at Duke University. Ungor's research interests are in the design and analysis of algorithms, computational geometry, mesh generation, and computational biology. There are many application domains in which geometric structures and algorithms play a fundamental role, including computer graphics, computer aided design, computer vision, robotics, scientific computing, structural biology, and geographic information systems. His research goals are to understand the mathematical structure of problems in these application domains and to develop efficient algorithms with performance bounds to solve these problems. Ungor received the David J. Kuck Best PhD Thesis Award, the C.L. Dave and Jane Liu Award, and the Excellence in Teaching Award at the University of Illinois.



## CISE Student Services Center

The Computer & Information Science & Engineering department's Student Services Center (SSC) is in room 405 of the CSE building. Its main purpose is to assist undergraduate and graduate students who are computer engineering, computer science, digital arts and sciences, or computer and information science majors with their academic advising needs.

To better assist our students, the CISE Student Services Center has combined the undergraduate level and graduate level advising resources in a single location. Students can find needed forms for such things as declaring a minor, setting up their graduate committees, or registering for independent study classes inside the SSC. They can also find curriculum sheets, course schedules, and information on our undergraduate and graduate programs in the SSC.

A student who needs to see an advisor comes to the main office in room 405, signs in, and takes a seat in the lobby. An instant message system is used to communicate between the receptionist and advisors. The student's ID number and reason for the visit is sent to the appropriate office so the advisor can review the student's record before the meeting. When the advisor is available and ready to see the waiting student, the advisor uses the instant message system to let the receptionist know to send the student to the appropriate office.

The SSC also monitors the number and type of students who come in; keeps records of graduate application files that arrive and are forwarded to the admissions committee; maintains files of currently enrolled graduate and undergraduate students; and posts useful information, such as the Dean's List, class room changes, and course cancellations.

The SSC has succeeded in its mission to provide personalized help in a timely manner, and has done much to provide a more organized way to help all the students who visit the department. We hope in the future to acquire a space large enough to incorporate a student lounge to encourage students to visit more frequently.

### Student Services Center Staff

Denise Atteberry, Coordinator  
Taryn Stoffs, Receptionist

### Undergraduate Advisors

Kevin P. Austin, Academic Advisor  
Timothy P. Heffernan III,  
Academic Advisor  
Amy Ladendorf, Academic Advisor

### Graduate Program Information

John J. Bowers, Graduate Secretary  
Nathan Williams, Senior Clerk

### Staff Profile: John Bowers, CISE Graduate Secretary

John Bowers has been with CISE in his current position since 1992. As the department's graduate secretary, John is involved in nearly every aspect of our graduate program, from initial contact for admissions to degree certification. For the past 12 years, no CISE employee has been more in tune with our graduate students than John. The fact that John is well-liked and respected by our graduate students is reflected by the numerous gifts that decorate his office and the number of free lunches he receives at graduation time.

Over 800 graduate students have matriculated in the 12 years that John has been guiding students through the CISE graduate program. Since John joined CISE, three chairs have led the department; three graduate coordinators have directed the graduate program; and

several curriculum changes have been made, including the creation of a new digital arts and sciences degree. In this time, graduate enrollment has doubled.

John has worked for the University of Florida since 1978. In all, 22 of his 26 years of service have involved working directly with students. He lives in Gainesville and is a proud UF Gator alum, having received a BA in political science in 1990. His hobbies include gardening, cooking and reading. He enjoys good movies and good times with his friends. John will retire from UF in 2013. Until then, we sincerely hope that he will call CISE home for the benefit of the department and our graduate students.



# Students

## CISE Academic Tutoring Center a Resounding Success

The CISE department opened its Academic Tutoring Center (ATC) in spring 2003. The ATC is centered on peer tutoring in the CISE major undergraduate courses and all programming languages taught by CISE. Peer tutoring benefits both tutors and students seeking help. The challenge of explaining complex ideas to a fellow student reinforces the tutor's knowledge of a subject, while the comfortable peer relationship creates a relaxed learning opportunity for students who are having difficulties.

Although CISE also supports graduate teaching assistants (TAs), there are three distinct differences between TAs and the ATC tutors:

ATC operating hours extend well beyond the office hours required of a TA. A TA may only be required to have six office hours; the ATC operates up to 60 hours a week, including Sunday. ATC's extended operating hours allow for one-on-one tutoring. A typical TA could have a dozen students waiting which makes one-on-one tutoring difficult. The ATC provides a comfortable environment to facilitate the sharing of knowledge between the tutor and student. With no pressure from people waiting, the tutor



can establish a relationship with the student, allowing for a better learning environment.

The foundation of the ATC is peer tutoring. This can only be accomplished by hiring undergraduate students as tutors. Tutors often have taken the courses they help with, possibly with the same professor. TAs are graduate students, on the other hand, and are likely to have graduated from another academic institution where teaching styles may be different.

The ATC philosophy is that a tutoring relationship is best characterized by the student's decreasing dependency on the tutor. While improving the student's grades in a specific computer science or

programming course may be the short term goal, the greater goal is to empower students as active, independent learners and to foster shared academic inquiry.

The ATC is currently looking into offering tutoring services via e-mail. Students who have one or two minor questions could e-mail tutors during ATC operating hours, allowing for a quicker response time and increased accessibility.

The ATC is located in CSE E468. For more information or to view the current semester tutoring schedule, please visit [www.cise.ufl.edu/student\\_services/academic\\_tutor\\_center](http://www.cise.ufl.edu/student_services/academic_tutor_center).

## Association for Computing Machinery (ACM) Student Chapter

The student ACM chapter at the UF is a campus organization for students in computing sciences and engineering as well as a service organization for the Computer & Information Science & Engineering department. This year, its 20th, the ACM is focusing on increasing undergraduate participation and has elected talented new officers who aim to improve membership, visibility, and impact of the ACM at UF.

**President:** Mario Veneziano  
**Vice-President:** Patrick Wheeler

**Treasurer:** Scott Slomback  
**Secretary:** Anthony Huereca  
**BEC Representative:** Maynak Jain  
**Social Coordinator:** Kelly Haiber

The ACM serves to connect UF students with other students in computing, industry contacts, and possibilities for projects and research.

The first meeting for 2004-2005 took place August 31 and was a huge success. Over 60 people attended – many for more than just the free pizza – including

many freshmen and first year graduate students. Some topics discussed included the UF programming team for the ACM International Collegiate Programming Competition, the High School Programming Competition, and the need for various positions within ACM. At the end, everyone introduced themselves and shared their interests. Our goal is to average over 100 participants per meeting, so if you are interested, please come on out.

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## CISE's Technology Workshop for Young Women

by Rory De Simone

From July 14 -16, CISE hosted its first Technology Workshop for Young Women. The attendees, all from Gainesville, were 8th to 12th grade students.

The object of the workshop was to increase the awareness of career opportunities and options available to women in computer technology fields while broadening their perspective on technical education. The aim was to introduce these young women to technological innovations and advancements through investigating the different courses, majors, and degrees of our department, and to preview the diversified career choices available to them as graduates.

Workshop events included creative labs, interesting projects, brainteasers, tours, demos, and speakers from industry and CISE. The attendees learned basic programming skills, built and designed Web pages, experimented with VRML, created spreadsheets and graphs, and performed advance data searches on the Web.

The computer science field, in both academia and industry, is most anxious



Girls from grades 8th to 12th explored the career opportunities and new technology emerging in the computer science field July 14-16 at a workshop sponsored by CISE.

and disposed to receive and welcome talented young women into its ranks. We at CISE intend to be a gateway to that opportunity. We want to encourage and inspire young women to be among the innovators of their generation and to enlighten them to the fact that there is a compelling need for their presence, ideas, influence, and perspectives within this industry.

We are already in the process of planning next year's workshop. It is destined to be fun-filled, challenging, stimulating, and exciting. For more information, please e-mail Rory De Simone at [rjd@cise.ufl.edu](mailto:rjd@cise.ufl.edu).

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Each year UF sends several programming teams to the ACM International Collegiate Programming Contest. The Southeast USA Regional Contest will take place October 23, 2004, at the Florida Institute of Technology in Melbourne. The purpose of the competition is to promote teamwork, problem solving, and programming skills, and is a qualifier for the national and international level competitions. Each team has five hours to develop program solutions to approximately ten problems. Anyone interested in going to this year's contest should visit the ACM Web site at <http://www.acm.cise.ufl.edu> for more details. This is a great opportunity for people to learn and practice their programming skills.

Our major service event each year is the ACM High School Programming Competition held in late February or early March. It is open to high schools throughout Florida, with teams traveling to Gainesville to participate in the event. ACM members help with the setup, judging, and coordination of this great community event. The competition has hosted schools from as far away as Miami and Florida's Panhandle.

ACM is not just about programming and competition, however. We are establishing a system of special interest groups (SIGs) so that people with like interests can get together and work on interesting projects - anything from a

video game engine to a Web application for rating computer hardware. The ACM also has weekly volleyball games, and plans are in the works for at least two major social events a semester, including bowling and barbeques. The ACM Web page has the latest information.

The ACM is open to anyone, regardless of major or interests. We have many new faces this year and hope to see many more. Meetings are every two weeks (alternating Mondays and Tuesdays) with pizza at every meeting and a guest academic or industry speaker. Come and meet others who share your interests in computing!





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