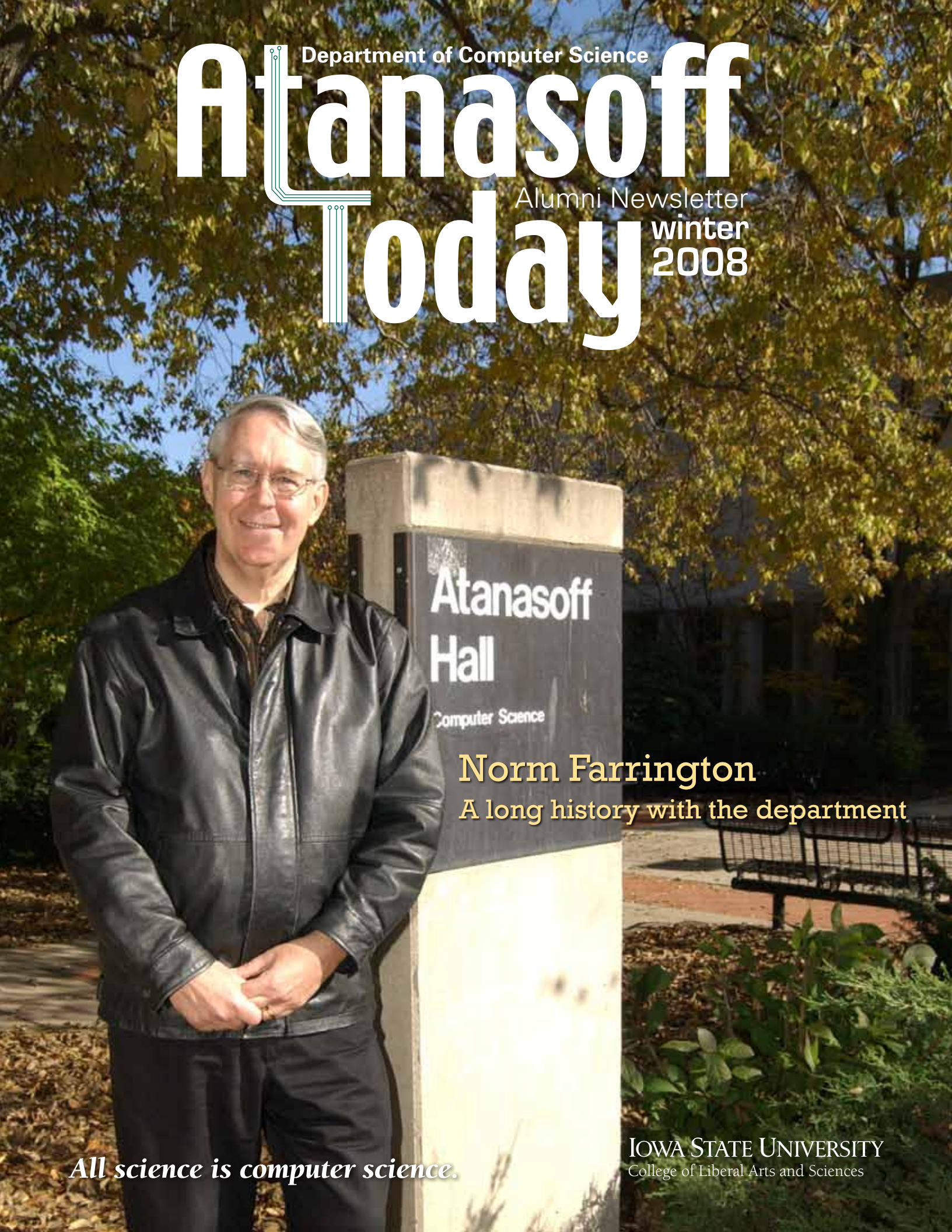
Department of Computer Science

Atanasoff Today

Alumni Newsletter

winter 2008



Norm Farrington

A long history with the department

All science is computer science.

IOWA STATE UNIVERSITY
College of Liberal Arts and Sciences

Atanasoff Today

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Atanasoff Today is published annually for the alumni, friends, students and faculty of the Department of Computer Science at Iowa State University, an academic department in the College of Liberal Arts and Sciences.

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On the cover

Norm Farrington was one of the earliest Computer Science graduates, and he remains a strong department supporter.
Photo by Steve Jones

Features

Greetings!

Once again, the snow is flying outside, changing the scenery on campus to one that featured bright and colorful leaves on the trees just a few weeks ago, to a sparkling white today. No matter the season, the ISU campus is always beautiful. If you haven't visited us lately, there is no time like the present!

Inside this year's newsletter you'll find updates on past stories as well as some new developments within the department. You'll see that our undergraduate students have been very busy outside of the classroom. Freshmen are visiting companies to have a firsthand look at what computer science looks like in action at the industry level. For the first time, several of our freshmen participated at the regional level of the ACM International Collegiate Programming Contest at the University of Nebraska in November. In past years, only upperclassmen participated. All of our teams, 30 students in all, did very well. And once again, teammates Pavel Kazatsker, Michael Siebert, and Yuly Suvorov will be representing ISU Computer Science at the ACM world finals in Sweden this spring. All of us in the Computer Science department and in the College of Liberal Arts and Sciences are incredibly proud of all of our students.

Through interdisciplinary collaborations with researchers and faculty in many different areas across campus and in industry, our faculty continues to conduct world-class research in computer science, software engineering, bioinformatics, and human-computer interaction.

While a lot of activity happens outside of the classroom, we have been busy inside the classroom as well, particularly in settling into the new curriculum programs in Bioinformatics and Computational Biology (BCBio), and Software Engineering. We look forward to our first graduates from those programs in Spring 2010. Our new Norm Farrington Innovation Center (Thanks to Norm!!!) is ready to open in Atanasoff Hall, and we are in the middle of conducting the search for our first Endowed Chair in Software Engineering, sponsored by our distinguished alum Dr. Long Nguyen (PhD, 1975).

Through interdisciplinary collaborations with researchers and faculty in many different areas across campus and in industry, our faculty continues to conduct world-class research in computer science, software engineering, bioinformatics, and human-computer interaction. We are currently participating in active research grants totalling over $21 million. (http://www.cs.iastate.edu/research/grants.jsp)

Thanks to all of you who attended our 40th Anniversary celebration this past spring. We always enjoy visits from our alumni, and I encourage all of you to reconnect with us if you have not been able to in the past. It is always in our minds to build and develop strong relationships with our alumni, with the industries that employ our graduates, and the professional organizations within which we all work and grow. Thank you to all who have supported the continued growth and development of the Computer Science department through financial contributions. These contributions help us to improve our infrastructure, develop curriculum initiatives, assist our faculty in teaching and cutting-edge research, and most of all help our students to succeed. We truly appreciate your support!

Carl Chang, Chair

PhD Candidate Kofi Whitney Receives the 2008 Iowa African American Hall of Fame 'Future is Now' Award and Scholarship

Mr. Kofi Whitney, a PhD candidate in Human Computer Interaction, was the recipient for this year's Iowa African American Hall of Fame, "Future is Now" Award and $1,000 scholarship. This award is presented to students who display exemplary leadership skills, dedication and interest in science, and excellence in research and technology, which will make a better society and a brighter future.

The award was presented at the 13th Annual Iowa African American Hall of Fame (IAAHF) Banquet and Induction Ceremony, held on August 15 in Des Moines. This event celebrated and recognized the outstanding achievements of African Americans with respect to enhancing the quality of life for all Iowans.

Ting Zhang joined the faculty this fall as Assistant Professor. This fall he has been teaching Computer Science 342, Principles of Programming Languages. Zang comments, "Iowa State University is one of the leading land-grant institutions in the states, with a national reputation for agriculture and engineering. The Department of Computer Science provides a collegiate and friendly atmosphere both for students and for faculty conducting learning and research. The department's staff are very nice, supportive of the faculty and responsive to their needs."

His research interests are in automated reasoning and its applications to program analysis and verification. Before joining Iowa State, he was a researcher at Microsoft Research Asia. Dr. Zhang received his PhD in Computer Science from Stanford University in 2006.

Com Sci Freshmen Make First Trip to Cargill in Minnesota

Back row L-R: Jody DePenning, Harsh Goel, Steve Bromley, Stephen Mueller, Nathan Sandrock, Stephan Jossie **Middle row** L-R: Melissa Clark, Kayla Knight, Jacob Freemyer, Josh McCall, Brian Nordland, Ben Regan (CS Alumnus), Katie Kaul (CS Alumnus) **Seated in front** L-R: Nandita Agarwal (CS Alumna), Hannah Hunt, Donorica Harris, Greg Hocamp (CS Alumnus)

Twelve freshmen undergraduate students spent the entire day at the Cargill office in Minnetonka, Minnesota, job shadowing Computer Science alumni who now work for the company as IT professionals. This trip provided ISU Computer Science freshmen a unique opportunity to witness first-hand the variety of activities IT employees are engaged in on a day-to-day basis. Concern over the high percentage of students that change majors led to the partnership between the department and Cargill. Dr. Simanta Mitra, ISU Computer Science Club advisor and one of the organizers of the event, believes "this trip showed our students that they will not be working in cubicles, but with teams of other people on dynamic projects. Almost a year later, none of the students who took this trip have changed majors." Cargill is looking forward to expanding the freshmen trip program to include students from MIS and Computer Engineering in future years.

Tyler Sondag Selected as Honorable Mention for 2008 NSF Graduate Research Fellowship

Graduate student Tyler N. Sondag was selected for Honorable Mention in the National Science Foundation Graduate Research Fellowship Program (GRFP) for 2008. NSF's GRFP recognizes graduate students nationwide who show outstanding research potential. According to the NSF GRFP solicitation, "the NSF accords Honorable Mention to meritorious applicants who do not receive fellowship awards. This is considered a significant academic achievement nationwide and provides access to cyberinfrastructure resources through the TeraGrid for a period of one year following notification of the Honorable Mention."

Tyler is a member of the Laboratory for Software Design, where he works with his research advisor, Hridesh Rajan. As a graduate researcher, Tyler has made significant contributions to the ongoing project Sapha. The Sapha project is developing techniques for effective utilization of multicore processors. More information about Tyler's research activities is available at http://www.cs.iastate.edu/~sapha/.

Four Computer Science Faculty Receive the College of Liberal Arts and Sciences Research and Teaching Awards

Lecturer **Susan Chang** received the College of Liberal Arts and Sciences Award for Excellence in Undergraduate Introductory Teaching in recognition of her outstanding performance in teaching entry-level undergraduate courses. Chang successfully took the large Computer Science 103 course from a traditional large-class lecture course to an entirely online class while preserving student satisfaction and success. In 2008, Chang also won the Blackboard Greenhouse Exemplary Course Program Award for her work with Computer Science 103.

Professor **Vasant Honavar** received the College of Liberal Arts and Sciences Award for Outstanding Career Achievement in Research in recognition of his international reputation for contributions in research, and the influence he has had on the research activities of students. Honavar is an authority in the area of machine learning and especially its applications in data mining, bioinformatics and semantic web research. He has authored or co-authored more than 200 papers in scholarly journals and at conferences. He has served as the principal or co-principal investigator on competitive research grants totalling more than $12 million.

Professor **Gurpur Prabhu** received the College of Liberal Arts and Sciences Award for Outstanding Teaching, in recognition of his outstanding teaching performance over an extended period of time in undergraduate education. With a reputation for being a top instructor, Prabhu teaches introductory courses all the way to advanced graduate courses. Read more about Prabhu's teaching methods on page 12.

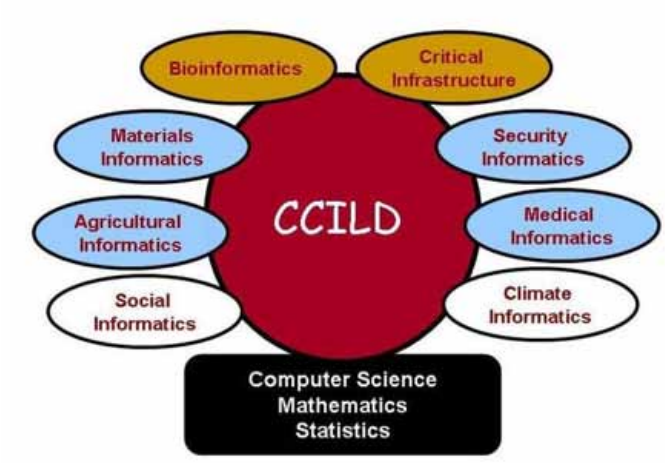
Associate Professor **Wallapak Tavanapong** received the College of Liberal Arts and Sciences Award for Early Achievement in Research in recognition of her accomplishments in research early in her professional career. Tavanapong and her collaborators created the world's first Video Database Management System for colonscopic and endoscopic procedures.

Faculty Searches Under Way

Two faculty positions are open in the Computer Science Department this fall. The search is underway for the Lanh and Oanh Nguyen Endowed Chair in Software Engineering. The endowed chair will provide leadership in research and education in software engineering at ISU. This position was established through the generous gift of ISU alum Long V. Nguyen and his wife Kimmy, in honor of Nguyen's mother and father.

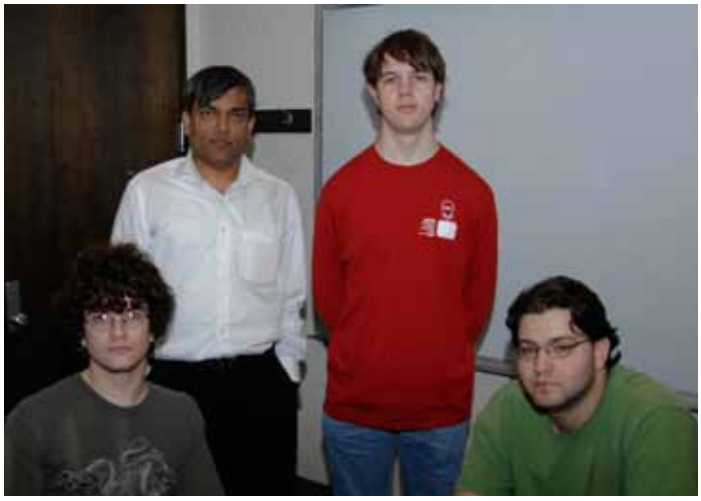
Computer Science is also seeking a tenure-track Assistant Professor in Computer Science or Software Engineering. Job postings for the department can be viewed at http://www.cs.iastate.edu/employment/faculty.shtml.

e-Science Initiative



Computers and software artifacts have become indispensable tools for the pursuit of pretty much every scientific discipline. E-Science is essentially the integration of computationally intensive science into other branches of scientific research. Since its inception, digital computing has been transforming how scientific research is undertaken, increasing the efficiency of experimentation, allowing the expansion of scientific study through areas such as data mining and collection, high-speed communications, and the creation of increasingly complex scientific instruments and equipment. Here at Iowa State, e-Science is one of the critical goals of the Center for Computational Intelligence, Learning and Discovery (http://www.cild.iastate.edu/), directed by Professor Vasant Honavar. CILD engages in research with several other departments on campus, including Mathematics and Statistics, Biomedical Sciences and Health and Human Performance, Psychology, Materials Science and Engineering, Economics, Animal Science, and MIS.

ISU Student Computer Programming Team Qualifies for Collegiate World Finals in Sweden in Spring



Left to right: Yuly Suvorov (seated), Dr. Simanta Mitra, Michael Siebert, Pasha Kazatsker

A team of three Iowa State University computer science students placed second among 202 teams in a regional collegiate programming competition, qualifying them for the world competition in Sweden in 2009.

The team of senior Yuly Suvorov and third-year students Pasha Kazatsker and Michael Siebert finished second in the ACM (Association for Computing Machinery) International Collegiate Programming North Central North America Regional competition on Nov. 15 in Lincoln, Neb. A total of 202 teams competed at several sites within the region, and the ISU squad of Suvorov, Kazatsker and Siebert was the runner-up in the entire region behind the University of Nebraska-Lincoln.

The competition challenges students to solve real-world computer programming problems under a five-hour deadline. Each team has a single computer as the teammates collaborate to rank the difficulty of the problems, deduce the requirements, design test beds and create software systems that solve the problems.

Last year Kazatsker and Siebert, both graduates of Johnston High School, were on an ISU team that finished third overall in the North Central region. They and Suvorov, a West Des Moines Valley High School grad, will have to get past some tough Russian teams at the world finals to vie for the title. But that may provide some motivation for Kazatsker and Suvorov, who were born in St. Petersburg and Moscow, Russia, respectively.

Eleven ISU student teams of men and women in computer science, software engineering and computer engineering competed in the regional competition in Nebraska. Three of the other ISU teams finished in the top 10 at the Lincoln site. The team of Connor Schenck, Adrian Jagdeo and Michael Fulker was fifth, Chris Coudron, Tyson Williams and Mike Drob were ninth, and Meibek Safianov, Zhandos Ashivaryev and Megan Brandt placed 10th.

"The Department of Computer Science and our department chair, Dr. Carl Chang, are very supportive of our teams," Mitra said.

2008 Faculty Research Grants

Computer Science faculty continue to build research initiatives at ISU and attract funding from federal agencies and various industries. Currently, the department has active research grants totaling over $21 million. For a complete list of current grants, visit http://www.cs.iastate.edu/research/grants.jsp.

- Vasant Honavar is part of a team of ISU researchers who have been awarded a three year grant ($1,000,000) from the USDA to identify genes and immune networks that control host response to Salmonella infection. Dr. Honavar's primary focus on the project will be on integrative analysis of the gene expression data and construction of computational models of gene networks.
- David Fernandez-Baca and Oliver Eulenstein were awarded a three year grant ($800,000) from the NSF to investigate the construction of phylogenetic trees for comparative biology. The ultimate impact of their research lies outside of the phylogenetics research community. Users of phylogenetic trees span most areas of modern biology, including epidemiology, genomics, conservation biology and community ecology, to name just a few.
- Pavan Aduri received a research grant ($103,209) from the NSF to investigate computational complexity theory. This project focuses on average-case complexity and unambiguous computations.
- Wensheng Zhang and his sensor-network research team will develop a new energy replenishment protocols for wireless sensor networks with the help of a three year grant ($344,510) from the NSF.
- Wensheng Zhang was also awarded a 2 year grant ($110,000) from the NSF to investigate the issues in integrating wireless sensor networks and vehicular ad hoc networks for improved driving safety.
- Vasant Honavar is part of a 3 year project funded by the USDA ($1,000,000) to develop bioinformatics tools for integrative and comparative annotation, analysis, and visualization of quantitative trait loci data across multiple animal species.

The Center for Information Protection, an Industry-University Cooperative Research Center supported by the NSF, awarded four grants ($25,000 each) to ISU Computer Science faculty:

- Samik Basu and Johnny Wong. Modeling Paradigms for Security and Dependability in Policy-Based Systems. Industry mentors: Rockwell Collins and The Boeing Company.
- Vasant Honavar, Jie Bao, and Giora Slutzki. Privacy-Preserving Reasoning with Hidden Knowledge. Industry mentors: Raytheon and Principal Financial Group.
- Robyn Lutz, Samik Basu, and Vasant Honavar. Modeling Secure Web Services with AADL. Industry mentors: Cargill and The Boeing Company.
- Johnny Wong and Samik Basu. Formal Approach for Intrusion Detection and Response Systems. Industry mentors: The Boeing Company and Raytheon.

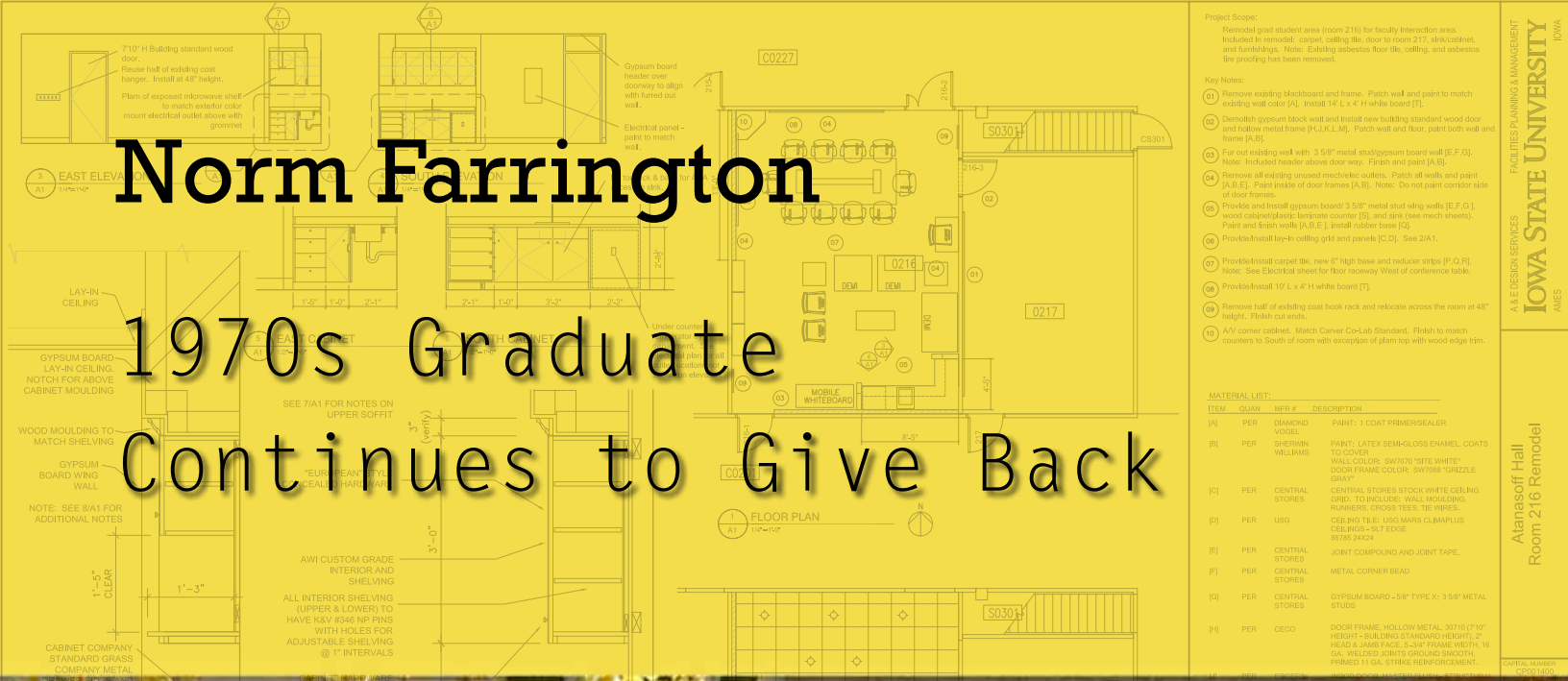
Faculty are working with graduate students on these projects, with input from industrial partners throughout the year. These projects collectively cover a broad range of topics in security informatics, drawing on expertise in artificial intelligence, networks and distributed systems, and formal methods and software engineering, theoretical foundations and algorithms, all areas of significant research strengths within the Department of Computer Science.

Re-connect with Gloria Cain

Gloria Cain has been around the department longer than most faculty. "I didn't realize how fast time had flown by," she says, "until during my Comp Sci 101 class I told students that I had been with the department since 1989. One raised his hand and said, 'why, that's longer than I've been alive!' … But I am not truly old until I have the son or daughter of one of my former advisees walk in my door as a freshmen or transfer student!" Cain also says that while her job advising future computer scientists is rewarding, her least favorite aspect of the job is when students graduate. "I feel like I have gotten to know them, and then they leave!" Gloria loves to hear from alumni. Send her an email at gcain@cs.iastate.edu and let her know what you're up to.

Norm Farrington

1970s Graduate Continues to Give Back



"Iowa State was the only college I applied to. What caught my fancy was that it was a land-grant school and it had a beautiful campus. I could walk everywhere."

In the mid 1960s, high school student Norm Farrington of LaCrosse, Wis., seriously looked at only one college. It was Iowa State University.

When he entered ISU in 1966, it began a more than four-decade relationship between Iowa State and a man who has generously supported his alma mater.

"Iowa State was the only college I applied to," said the Vice President of Information Technology and Chief Information Officer of Gordmans, an Omaha-based retail chain of 65 stores in 16 states. "What caught my fancy was that it was a land-grant school and it had a beautiful campus. I could walk everywhere."

Farrington earned a BS in 1970 and an MS two years later, both in computer science. He started studying computer science before the department existed.

Norm Farrington came to Iowa State as a physics major; however, during his first year, he started learning a computer programming language called Fortran. "I said to myself, 'This Fortran is pretty interesting,'" Farrington recalled. So he changed his studies to a non-existent major, computer science. The department wasn't formed until 1968, and the departments of Statistics, Mathematics and Electrical Engineering ran the curriculum.

Early graduate

Farrington's B.S. in 1970 made him one of the earliest graduates of the program. Eschewing several job offers, he opted for a master's degree on campus, working under Dale Grosvenor. Shortly before earning the graduate degree, he and two other students joined the entrepreneurial world by forming a computer consulting company.

About the same time, Farrington also started work on a PhD, working under Claire Maple. However, the rapidly growing business, COMPAS (short for Computer Application Service) required too much of his time, and he dedicated himself to the business world. COMPAS really took off, getting in on the massive microprocessor growth at the time.

The Ames company added a Microsystems division, and its Business Systems division became an authorized DEC distributor.

"The business was very successful," Farrington explained. "We had tremendous growth. By 1979 we were growing about 60 percent per year."

The growth curve was steep enough that the company had trouble raising enough cash to sustain the growth. They enlisted the help of Iowa entrepreneur John Pappajohn, who invested in the company. "He became part of the board and looked for venture capital for us to continue our growth. He knew all the right people," Farrington recalled.

A couple venture capitalists took interest in COMPAS and a couple of deals were informally proposed. "We thought about them," Farrington said. "Then we got cold feet before we got very far along in the discussions. We didn't want to give up control of the company or drastically change the successful business model with which we had built the business."

COMPAS changes

The business continued, and as one of the only two authorized DEC distributors in central Iowa, COMPAS was selling "quite a few computers." COMPAS' sales volume didn't go unnoticed by its Des Moines rival. By 1980 a deal was closed, and COMPAS was sold. After working the requisite year for the new parent company, Farrington returned to the Iowa State Computer Science Department. He taught and began work on his dissertation.

It looked like Farrington might be headed towards an academic career. He enjoyed teaching and took pride in creating and lecturing the huge computer literacy class for non-computer majors, which enrolled hundreds of students each semester; however, by 1984 he yearned for something outside academia.

Farrington learned of an opening in Omaha at Richman Gordman Department Stores and the ½ Price Stores (now Gordmans). The retail chain wanted someone to start an information center and "get computing out to various parts of the company." After 18 years in Ames, Farrington moved to Council Bluffs.

Although he was no longer in education, he basically started in his new position as a teacher, spending the first few months instructing Gordmans associates on fourth generation programming languages. It laid a foundation for a quarter-century career with the company. For nine more years he also taught a few evening and weekend courses each year as an adjunct faculty member of Buena Vista College at their satellite campus in Council Bluffs. He now oversees an IT department of 37 people at Gordmans.

Gifts to Iowa State

"There is a great culture at Gordmans," Farrington said. "We've had some IT associates here for more than 35 years. There's very little turnover in our department." Gordmans, Inc. employs almost 5,000 people chain-wide.

Although he has been away from campus for 25 years, Norm Farrington has done anything but forget Iowa State. He has been a strong supporter of the university, and particularly computer science. In 1981 he established and still supports an award now called the COMPAS Junior Faculty Award. Six years later he funded the Norm Farrington Endowment for the Computation Center.

His most recent philanthropy is a major gift for the new Norm Farrington Innovation Center. This area in Atanasoff Hall will provide students and faculty a location "removed from the hustle and bustle of class times," Farrington said. "It's a quiet, comfortable place to connect with others to brainstorm or to just relax and think."

The Innovation Center, which will be ready in the spring 2009 semester, also will feature multimedia equipment, a comfortable lounge area and a kitchenette.

Away from Atanasoff Hall, Farrington also provided a significant gift to Iowa State's new Alumni Center for the Farrington Executive Reception Area.

For years Norm Farrington gave to his university, but didn't want the credit. "I wanted to be the guy behind the scenes," he said. Now, he says, he's comfortable with the recognition he richly deserves. **sj**

Technology Researchers, Healthcare Practitioners, and Consumers Collaborate on Gerontechnology at the 6th Annual ICOST Conference

"Gerontechnology," the use of technology to enhance the quality of life of older adults in rural areas, was the theme of the 6th annual ICOST Conference, which took place in Ames at the end of June. This year was the first year the conference was held in the United States. Carl Chang, Professor and Chair of the Computer Science department and general chair of the conference, was instrumental in bringing technology researchers from 12 different countries to collaborate with gerontologists and behavioral scientists, as well as users of smart-home technologies. He says, "the thing about smart home technology is that the Baby Boomers are now turning gray—and there are 79 million of them—so there are going to be tremendous needs for such technologies." In addition to this being the first year the conference was held in the United States, it was also the first year the conference brought together such a wide range of interested groups. The local organization team, in addition to faculty and students in Computer Science, was also composed of several faculty members from the College of Human Sciences, including Mary Yearns, Professor of Human Development and Family Studies, ISU Extension Housing Specialist and Director of the Universal Design Lab; and Peter Martin, Professor of Gerontology; and Jennifer Margrett, Assistant Professor of Gerontology. Johnny Wong, Professor of Computer Science, served as program chair with Sumi Helal, Professor of Computer and Information Science and Engineering at the University of Florida.

Iowa State Computer Science grad student Ruchita Sirkanungo explains a smart home demo to participants at ICOST 2008.

One highlight of the conference was the closing panel, which involved some of the top researchers in the world in smart home technology along with users of smart home technology, such as Kirk Garrett, Jr., a 26 year old web designer with cerebral palsy. In the past, Garrett has used nonverbal communication, primarily with the use of gestures and hand signals. Due to the Eye Response ERICA System, a communication device/ tablet PC system mounted on his wheelchair, most of his communication barriers have been eliminated. Also participating in the closing panel was Pam Kirkhart, a retired secretary from ISU Extension, who is also a user of smart-home technology. Researchers were able to connect directly with the people who are using the technologies they develop, which broadened and deepened their perspectives. "It was exciting to be close to the beneficiaries of a conference—those whose lives are directly affected by the research we do," stated Simanta Mitra, lecturer in the ISU Computer Science department and Publication Chair for ICOST. "This also gave our undergraduate students and graduate students exposure to research in smart-home technology that is taking place all across the globe. This is how we find out what is going on in our research areas, which helps us to stay on top of our game" he said.

Jose Reyes Alamo, native of Puerto Rico and graduate student in Computer Science, thought it was interesting to meet all of the people whose papers he had read as part of organizing the conference. He remarked, "the experience of the conference also helped to direct my research a bit. Things I had been thinking about pursuing, at the conference I discovered they had already been undertaken by researchers in France. It was interesting to talk with them and find out how they approached these issues, so the discussion with other researchers was interesting and encouraging."

It was exciting to be close to the beneficiaries of a conference—those whose lives are directly affected by the research we do. –Simanta Mitra

Topics covered in the conference included: assistive technology to improve quality of life for older adults and their caregivers; context awareness and autonomous computing; devices and systems for sensory and communication impairments; home health monitoring and intervention; human machine interface and ambient intelligence; the modeling of physical and conceptual information in intelligent environments, real world deployments and experiences in smart homes and other smart environments; and, a variety of issues related to security and privacy in a smart home environment.

ICOST 2008 was sponsored by the ISU Vice President for Research and Economic Development; ISU College of Liberal Arts and Sciences; ISU College of Human Sciences and the ISU Gerontology Program; ISU Extension to Families; ISU Department of Computer Science; State of Iowa Dept. of Public Health, Office of Disability and Health; and the Institut TELECOM/Telecom and Management, France. ICOST 2009 will take place in Paris, France. **It**

Iowa State Computer Science grad student Fuchao (Alan) Zhou discusses the role of robotics in smart home technology with Dr. Jit Biswas of the Institute for Infocomm Research, Singapore, at ICOST 2008.

Smart Home Technology in Development at ISU

The department's Smart Home Lab has been developing smart technology since 2005. Dr. Chang and Dr. Wong visited the Gator Smart House at the University of Florida in 2004. Impressed with the opportunity for technological development in the field of systems software development and recognizing the need for this kind of technology in Iowa—a state with the 2nd oldest population in the country—they brought the concept home and went to work. Dr. Chang notes, "This research is also brought about out of our own personal passions. My own parents and many others like them can benefit from smart technology, as well as people that we and our students know, like Pam Kirkhart, who is a retired employee of Iowa State University. It makes research exciting to see how real people are affected in a positive way by the work that we do in the department."

"This lab is a place where students in Computer Science courses that range from Software Development Practices, Computer Networking, Database Systems, and senior capstone projects are able to link theory and concept in the classroom to development and implementation in the laboratory," says Dr. Wong. The ICOST conference also allowed graduate students to showcase some of their research in poster presentations. More information about the Smart Home Lab at ISU can be found at http://rs.cs.iastate.edu/smarthome.

There for the Students

Gurpur Prabhu works to engage his students in computer science courses.

As a college student in his native India, Gurpur Prabhu found he had the ability to explain concepts so that others could easily understand them. It's a valuable trait for someone who takes pride in his teaching abilities.

The associate professor of computer science says teaching both undergraduate and graduate courses "is one of the responsibilities I enjoy the most." That's one of the reasons he received a College of Liberal Arts and Sciences Outstanding Teaching Award in 2008.

Prabhu's teaching style is student-centric with a focus on student understanding and retention, according to his colleagues. He also teaches through a hands-on approach. He credits his teaching style to his late mentor, Charles Wright, University Professor of electrical and computer engineering.

"I learned from Charlie that students learn differently," Prabhu said. "As an instructor, it's not just teaching theories and proofs. You must engage the students. You must learn how they learn."

Overseeing the computer science undergraduate curriculum since 1994, Prabhu still prefers low-tech overheads for teaching instead of the more high-tech PowerPoint presentation. It allows him to better adjust his teaching to the needs of the class.

"I can engage them and ask them questions," he said. "I don't believe in pre-canned lectures."

He also insists on another traditional teaching tool: the blackboard. "I use up the entire board when I teach and the blackboard is easier to erase than a whiteboard."

Prabhu graduated from Indian Institute of Technology in Madras in electrical engineering and worked a year in the world of transistors and circuits. He became interested in a new-fangled area called computer science. It was so new that software programs were fed into the computer through punched paper tape. The now-antique punch cards were yet to come.

He read up on the subject and learned the basics on computer logic. His interest in computing turned into a passion, and he earned a master's in computer science from Indian Institute of Technology in Kanpur. Next was a PhD from Washington State University.

As a researcher, Prabhu has gravitated to the underlying framework of computing, including parallel processing and information retrieval and processing.

"While the Internet has connected islands of locally networked computer systems," according to Prabhu, "my focus is on logically bridging isolated islands of data to make data easy to access and process for scientific discovery."

Since coming to Iowa State, he has developed and taught 19 courses. That's par for the course in the ever-changing computer science field. "Every couple of years there is a significant change in computing," he noted. "We're constantly refurbishing courses."

The concept of cost constraints always changes, too, because the cost of computing is always going down. "Home memory has dropped so significantly that you can accomplish so many things not dreamed of before," Prabhu noted.

His interest in logic, in this case a slightly different deductive logic, carries over to one of his personal hobbies: duplicate bridge. The same bridge hand is used at all the tables, eliminating the luck factor and increasing the element of skill.

A veteran of national and international tournaments, his team sometimes competes against the rich and famous, including a successful game against billionaires Bill Gates and Warren Buffett.

"Tournament bridge teams consist of four players and up to a maximum of six," Prabhu noted. "Gates and Buffett usually play together as one pair, and our team beat their team at a regional bridge tournament in Omaha."

You won't see autograph seekers or cameras in the tournaments. "The bridge crowd is respectful of their privacy," he added.

Some of the bridge players did have a little fun in the presence of the ultra-rich pair. "If we averaged the incomes of everyone in the room, we figured our average income was over one million dollars a year," Prabhu chuckled. **sj**

The Invisible man

No lines, quick service at Disney means Bart Butler is doing his job right.

There are days when Bart Butler roams the Disney theme parks as a dad. With his wife and seven-year-old daughter in tow, he rides the thrill rides, attends the shows and takes in the parade. And he also stands in line for food or to purchase that have-to-have Disney souvenir.

Butler ('92 computer science) is one of the primary reasons why you're not standing in line for hours any more at attractions like the Tower of Terror or Space Mountain or for your food and souvenirs purchases.

"Our goal is to be invisible," Butler said. "If we're doing our job correctly then the guest doesn't even know we exist."

As Disney's general manager for technology, Butler oversees ticketing, point of sale purchases and fast pass for all theme parks and resorts at Walt Disney World in Florida and Disneyland in California. This includes the computer technology required for all food and merchandise sales at the happiest place in the world.

In Florida alone, that means four theme parks, two water parks, 21 resorts, Downtown Disney and Pleasure Island. Butler and his team of 75 work to make sure that the guest experience at Disney is special.

"Our goal is to be invisible," Butler said. "If we're doing our job correctly then the guest doesn't even know we exist."

The IT improvements Butler has been a part of in his nine years with Disney are numerous.

Fast passes have become the standard of the industry. Guests now have the opportunity to "reserve" a time when they can ride a favorite attraction.

Wireless "cash registers" are now available throughout the parks and resorts. "We do very little cash transactions these days," Butler says. "Almost all of what we do is tied into our guests' Disney packages or on their debit and credit cards." This includes the purchase of a funnel cake off of the Magic Kingdom's Main Street or a Goofy hat in the Animal Kingdom.

Access control of entry into the theme parks now ties each ticket purchased to the finger identification of the owner of the ticket. "That way no one can swap tickets," Bart says. "The procedure has also reduced our entry time for our guests (into the parks) from 16 seconds to right around nine seconds."

These improvements are all designed to improve guest relations.

Bart describes Disney as a "guest service company" as much as an entertainment company.

The company's goal is no lines – at least not at the food and merchandise locations, getting into the park or at the attractions and shows.

"It's not only a challenge but a culture here at Disney," Bart says. "Our job is to continue working on innovations that make our guest experience at the parks or resorts a good one."

One way Butler does that is by making periodic trips into the parks to see what the guests' experience truly is like. Even during this interview, his eyes aren't going to the World Showcase exhibits in Epcot, but rather the line at the fish and chips stand in the United Kingdom pavilion.

"I go into the park and observe all the time," he says. "My wife (another Disney cast member) and I bring our daughter to the parks on the weekends and I'm still looking to see how we're doing.

"I just want to make sure things are operating well. And if there is anything we can do to improve our guests' experience we do just that." **dg**

Choosing His Adventure

Free pizza was the first stop in what may be a long career journey for Alex Kharbush, senior in software engineering.

He took advantage of the free pizza at a meeting where he learned more about Camp Adventure, a program that allows American college students the opportunity to spend the summer months abroad working with the children of American military and foreign service employees.

With Camp Adventure, Kharbush was sent to Moscow where he was in charge of kids ages 10-13. The family of one of the boys soon took an interest in Kharbush.

"They would invite me to their home at the Embassy and I kept fixing their computer," the software engineering major said.

Based on what they saw in Kharbush, the family urged him to fill out an application for an internship with the U.S. State Department.

Working at the embassy

So the following summer, Kharbush traveled to Albania where, among other responsibilities, he redesigned the American Embassy's web site. He created a site "dynamic enough and secure enough" to fit the embassy's needs.

"Embassies typically don't have the staff to do this type of work," Kharbush said, "especially creating a database that gave them a little autonomy with the site."

The summer he spent in Albania with the embassy was enough for Kharbush to determine his career path.

"I really want to work in the Department of State," he said. "My plan is to first finish my degree at Iowa State, then become a foreign service 'specialist' before going to several different embassies."

And it doesn't matter where they send him.

"As long as they have the Internet and bottled water I'll be fine," he says.

Professional development

Kharbush took another step in realizing that goal. On the heels of his internship with the Albanian Embassy, he spent a semester as an intern with the U.S. Department of State in Washington, D.C.

In this internship, Kharbush worked on a variety of projects in an effort "to ensure the network security of the Department's enterprise."

And just as his internship was ending, he was given more responsibility, and a paid position, with the State Department. He then started working with embassies around the world with their IT problems.

"Just last Friday," he said in a recent interview, "I had questions from our embassies in Mexico, Greece and The Hauge. I deal with people from all over the world.

"The things I've seen here are amazing," he continued. "I've made a million contacts." **dg**

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