All science is computer science.
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Greetings from the Chair! It has been an incredibly busy year for the department, establishing a new Lanh and Oanh Nguyen Endowed Chair in Software Engineering, opening the Norm Farrington Innovation Center in Atanasoff Hall, and sending a group of outstanding undergraduate students to the World Finals of the ACM Intercollegiate Programming Contest in Stockholm, Sweden. I hope you enjoy reading about all of these exciting events in this edition of Atanasoff Today. As always, anytime you are in the Ames area, we encourage you to stop by the department and say hello. We enjoy hearing from and visiting with our graduates.

This year we celebrate National Computer Science Week from December 7-11. Thanks to the ACM and partners Microsoft, Google, Inc., Intel, the Computer Science Teachers Association, the National Center for Women & Information Technology, and the Computing Research Association, the U.S. House of Representatives passed H. RES. 558 establishing this special week to draw attention to the critical need for educators and policymakers to improve computer science learning at all educational levels, and to motivate increased participation in computer science.

Despite severe budget cuts within the university that are felt by all departments, Computer Science, Software Engineering, and Computational Biology continue to attract students, mainly because information technology is a sector of the economy with projected job increases in the near future. We have stepped up our efforts to recruit and retain students this year. All of our current students are working hard inside the classroom as well as outside in industry internships. Some of those students are featured in the profiles section of the department website. Check out the homepage and see what they are up to!

Another reason why Computer Science continues to do well is due to the creativity and dedication of our faculty. Research funding in academic year 2008-09 demonstrates the high level of research activity by faculty in the department, complementing the outstanding teaching they do in the classroom. This funding also supports some of the best graduate students found within any university. Undergraduate research opportunities are also on the rise in the department. We have many undergraduate students in Computer Science and Software Engineering participating in a variety of research opportunities both within the department and in interdepartmental centers and institutes.

I would like to thank all of our industry and alumni sponsors for their support over the past year for our endeavors outside of direct research. Contributions from industry and alumni are critical for our department to maintain support for scholarship and program development. Cerner Corporation and Maverick Software helped to send our undergraduate team to the ACM Finals in April. Thanks also to the many companies that donate their time to visit with our Computer Science Club each week about industry opportunities for students. We deeply appreciate the level of scholarship support given by industry partners including the Boeing Corporation, Caterpillar Corporation, Cerner Corporation, Hewlett-Packard, John Deere, Inc., Lockheed Martin, Principal Financial, Thomson-Reuters, and individual partners, the John Vincent Atanasoff Fund, the Lawrence P. Beninga Trust, Arthur Collins, and Dr. Robert Stewart.

Carl K. Chang

Call for contributions:
The Department of Computer Science is seeking contributions to the upcoming Atanasoff Computing History Museum for exhibits on computational history. If you have items of interest related to computing history, computers, storage/media, networking devices, etc. that you would like to donate to the museum, please contact Carl K. Chang at chang@iastate.edu.
AWARDS

Three Faculty Awarded Tenure in Spring 09

Samik Basu (right), Ying Cai (left), and Lu Ruan (center) were granted tenure and promoted to Associate Professor in spring 2009. Dr. Basu has taken on the role of Director of Graduate Education for the Computer Science Department. Dr. Cai continues his research while serving as Program Chair of Mobilware 2010, an international conference on mobile computing. Dr. Ruan advances her work that began with her CAREER Award for Distributed Computing and Networks, and is serving as the Colloquia Chair for the department. Congratulations to our newly tenured faculty!

Hridesh Rajan awarded NSF CAREER Grant

Hridesh Rajan, Assistant Professor, is the recipient of a 2009 NSF Faculty Early Career Development (CAREER) Award for his proposed research and educational project “On Mutualism of Modularity and Concurrency Goals.” The $425,000 project will run from April 2009 to March 2014. Rajan develops programming language designs that enable improved modularity for complex software systems to reduce defects and to improve software quality. This project, in particular, focuses on the relationship between modularity and concurrency in the design and implementation of software systems. He directs the laboratory for software design at ISU, which conducts research in programming languages and software engineering.

Carl Chang Receives 3rd IBM Faculty Award

Carl K. Chang, Professor and Chair of Computer Science, has been awarded his third IBM Faculty Award in Summer 2009. The IBM Faculty Awards is a competitive worldwide program intended to foster collaboration between researchers at leading universities worldwide and those in IBM research, development and services organizations, and to promote courseware and curriculum innovation to stimulate growth in disciplines and geographies that are strategic to IBM. Candidates must be nominated by an IBM employee with common interests who will serve as a liaison for the collaboration. Dr. Chang, whose research in services computing is augmented by his expertise in software engineering, was recognized by IBM as an influential scholar in improving industrial practice.

Susan Chang Named 2009 LAS Master Teacher

Senior Lecturer and Director of Distance Education Susan Chang has been awarded a 2009 LAS Master Teacher Award, given to teachers who have a reputation for using unique methods to enhance student learning. She has used innovative technologies, employing emerging pedagogies such as on-demand and active learning, and devised effective teaching methodologies to make these courses successful on campus. The technologies and methodologies facilitate student learning, student-to-instructor interaction, and student-to-student interaction by creating small communities where students share their experiences.
NSF Grant Supports Interdisciplinary SmartHome Project

Carl K. Chang (Com Sci), Johnny Wong (Com Sci), Peter Martin (Gerontology), Mack C. Shelley (Stat), and Simanta Mitra (Com Sci) have received a two-year NSF grant for $300,000 for “CPATH-1: Experimenting with an Open Platform for the New Interdisciplinary Study on Gerontechnology,” an interdisciplinary project with the SmartHome Lab in the Computer Science department. This grant will serve as a pilot study curriculum initiative to inject computational thinking capability into computer science and gerontology disciplines with a plan to conduct, assess, and analyze the outcomes to guide future nationwide efforts.

The USDA Funds Research on Elucidating Gene Networks Involved in Immune Response to Viral Infections

Dr. Honavar is part of a multi-institutional team of investigators supported by a $749,975 three-year research grant from the United States Department of Agriculture aimed at elucidating the gene networks involved in the immune response to viral infections using a combination of experimental and computational approaches in functional genomics and systems biology. The interdisciplinary team consisting of Dr. Joan Lunney (USDA-ARS, Beltsville, Maryland), Dr. Vasant Honavar (Iowa State University) Dr. Roman Pogranichnyi (Purdue University), Dr. Juan Steibel (Michigan State University), Dr. Chris Tuggle (Iowa State University), and Dr. Zhihua Jiang (Washington State University) will focus on genetic pathways that are involved in resistance and response to the porcine reproductive and respiratory syndrome virus (PRRSV) infections.

NSF/SFS Award to Train Students in Information Assurance

Johnny Wong and his colleagues at ISU received a 2-year NSF award of $1,368,867 to expand the capacity of the Iowa State University (ISU) SFS Cyber Corps program. This NSF/SFS project is led by Professor Douglas Jacobson, University Professor of the ECE department and Director of the Information Assurance Center. Professor Clifford Bergman of the Mathematics department, Johnny Wong of the Computer Science department, Barbara Licklider and Janice Wiersema of the Educational Leadership and Policy Studies department are the co-PIs of this award.

Robyn Lutz Awarded NSF Grant for Software Engineering Research

Robyn Lutz recently won an NSF-ARRA award to create techniques that improve the reliability of software product lines. A software product line is a family of software systems that share certain common features and differ according to a set of specified variations. Use of software product lines has grown rapidly in industry because such reuse reduces the cost of building new systems. Reliability is important to product-line developers since many product lines, such as mobile phones, industrial robots, and surgical imaging systems, require reliable operation.

Yan-Bin Jia Receives NSF Grant to Investigate Robot Grasping of Deformable Objects

Yan-Bin Jia has received from the US National Science Foundation a 3-year, $369,795 grant for designing algorithms that would enable the robot hand to grasp deformable objects. Deformable objects are ubiquitous in our daily life. The ability to manipulate them is an important measure of the robot’s intelligence and dexterity.

Wallapak Tavanapong and Johnny Wong - 3 year Grant from the National Institute of Diabetes and Digestive and Kidney Diseases of the NIH

Dr. Wallapak Tavanapong and Dr. Johnny Wong received a 3-year grant of $238,105 from the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health. This grant is in collaboration with colleagues at Mayo Clinic Rochester, Indiana University, and the University of North Texas. The grant provides additional funding to their ongoing project “Improving Colonoscopy Quality Through Automated Monitoring” funded by the Agency for Healthcare Research and Quality.

Wallapak Tavanapong and Johnny Wong Receive 3-Year Grant for Improving Quality of Colonoscopy Procedures

Dr. Wallapak Tavanapong and Dr. Johnny Wong received a 3-year grant of $899,354 from the Agency for Healthcare Research and Quality of the US Department of Health and Human Services, for Improving Colonoscopy Quality through Automated Monitoring. This grant is a partnership with Mayo Clinic Rochester, Indiana University, and the University of North Texas. The grant provides additional funding to their ongoing project “Improving Colonoscopy Quality Through Automated Monitoring” funded by the Agency for Healthcare Research and Quality.

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The Computer Science department is hosting several visiting researchers. Fred Cheng, visiting from Silicon Valley, California, has worked in the semiconductor and data security industries for more than 30 years. Fred is here to conduct research in OTP and User Authentication. Dong Li comes from Beijing, China, where he is employed by FISCAN, a leading manufacturer of security inspection equipment for large scale transportation hubs. At ISU he is investigating software product line engineering and software industry standards. Katsunori Oyama visits ISU from Nihon University in Japan, and has joined Carl K. Chang's Software Engineering Laboratory. Katsunori is researching intention driven software evolution and software systems. Hen-I Yang has joined the Smart Home Lab research group as a postdoc, following his work at the Gator Smart House at the University of Florida. In addition to collaborating with other researchers here on issues in pervasive computing, Hen-I is also helping to coordinate seminars for undergraduates and graduates in smart home technology.

In partnership with the university and the college, the CS department continues to build relationships with industry. This group of ISU advisors and faculty were invited for a first-hand look at the IT department at General Mills. Front row (left to right): Kathy Wieland, ISU Business College Career Services; Laurie Ayers, GM; Rob Borcherding, GM and 2004 ISU CS grad; Matt Olson, GM; Second row (left to right): Carl Carlson, GM; Steve Kravinski, LAS Career Services; Gloria Cain, CS Undergraduate Advisor; Johnny Wong, CS Professor and Associate Chair; Third row (left to right): Patrick Trainor, GM and 2008 ISU CS grad; Lance Hoskins, GM; Quing Hu, ISU Chair of Logistics, Operations and MIS; Patrick Mooney, GM; and Martha Gschneider, GM and 1982 ISU CS grad.

Computer Science Welcomes New SSG Staff: Barry Britt

The department is pleased to welcome new SSG staff member Barry Britt. Barry comes from the Innovative Computing Laboratory at the University of Tennessee, Knoxville, where he was a systems administrator. “I love working for the Computer Science Department, because I love academics. We get the chance to help faculty and students do their research, and we get the opportunity to try new and innovative technologies before they hit the mainstream. This forces you to sometimes be creative in how you approach a problem. So, there’s never really a dull moment in academia.”
Yuly Suvorov, Pasha Kazatsker, and Michael Siebert (left to right, above) placed 49th in the world, and 6th among the 21 participating U.S. teams, in the 33rd annual 2009 ACM International Collegiate Programming Contest World Finals in Stockholm, Sweden on April 20. This year’s world finals was hosted by the Royal Institute of Technology, a leading technological university in Europe. The team of three undergrad students, along with their advisor, Dr. Simanta Mitra (Computer Science), has been preparing for the world finals since placing 2nd in the regional ICPC competition in Lincoln, Nebraska last November. This is the second year in a row this team has made it to the world finals. Funding for the students’ trip to Stockholm was provided by Cerner Corporation (Kansas City, KS) and Maverick Software (Ames, IA).

The ACM International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for ACM, industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence.

The “Battle of the Brains,” as this contest has been named, has grown to be the largest and most prestigious computer competition of its kind. Since IBM began sponsoring the Contest in 1997, participation has grown from 1,100 to 7,100 teams. “This contest is about fostering the next generation of industry leaders in information technology and promoting strong foundations in both technology and business,” said Doug Heintzman, director of strategy, IBM Software Group and sponsorship executive. “IBM understands the importance of investing in the bright young minds for the future of our industry and our world. In a global economy, talent needs to be able to respond to complex business challenges.”

Congratulations to Yuly, Pasha, and Michael.
David Weiss says he has liked every job he has ever had, especially his positions as Director of the Software Production Research Department at Lucent Technology Bell Labs, as Senior Analyst on Technology for the Strategic Defense Initiative at the Congressional Office of Technology Assessment (OTA), and most recently as Director of the Software Technology Research Department at Avaya Labs. He has also held positions at the Software Productivity Consortium and the Naval Research Laboratory.

In the early part of his career he worked as a mathematician and programmer. We also anticipate that he will enjoy his latest career move as the Lanh and Oanh Nguyen Endowed Chair in Software Engineering at Iowa State University.

Weiss will bring his expertise as a world-class researcher and his global network of industry contacts to expand the SE program at ISU, most notably through the development of new courses in software product line engineering and distributed software development, taking students beyond the confines of the classroom or their own software labs to international collaborations with researchers at other universities around the world. “I would like to express my appreciation to receive this prestigious position made possible by the generous gift of Dr. Long Nguyen.”

According to Weiss, “One of the most important new industry trends is the move to distributed software development, where software centers around the world must collaborate successfully with each other, despite different cultures, languages, and time zones. A big issue for companies today is how to negotiate those collaborative challenges. Most companies do distributed development, but few do it well, and there are few places that provide training for them.”

Exploring ways to meet those challenges is one thing that Weiss hopes to bring to ISU. Recently, in addition to developing software systems in a global collaborative environment for Avaya, Weiss proposed the development of a course with the goal for students to produce a software system across geographical, language, cultural, and time-zone boundaries.

“We need to create a pool of universities all over the world qualified to partner in a project where students from different universities, different continents, can enroll in the same course at the same time and learn how to work together,” he said. “It is interesting that long-standing software design and documentation principles, such as information hiding, become more important in globally distributed development.”

Another trend in industry that is critical to developing better programs in academia is learning how to use modern development environments, both collaborative and individual. “Development practices have evolved to the use of powerful, complex environments,” Weiss said. “Software engineers need to understand the basics of building software and also the environments used to develop software.

“Tools such as Eclipse or Ruby on Rails make it easier for us to design, code, integrate, and test, but we need to learn how to use those tools in addition to the basics of development.”
In October, David Weiss received the Lanh and Oanh Nguyen Endowed Chair in Software Engineering medal from President Geoffroy.

There are also interesting research issues in understanding how to make those tools easy to learn and use in distributed environments. "

Different environments in software development is leading to new products that change our lives. Weiss points to things like the smart phone, that can help you navigate and find people and places of interest in an unfamiliar city.

"That is something you couldn’t do 10 years ago," Weiss comments. “Cell phones are becoming your computer in your pocket. And, there are major changes coming in the future for humanity that will require reliable software development practices. Cars are increasingly controlled by software, and we will soon see autopilots for cars just as we have for airplanes. We are getting better and better at communicating with computers by speech. Combine that with connectivity, and who knows what the limits might be."

Weiss connects some of the current political disturbances in the world to the ways that people access information. “People who are unable to connect will be at a disadvantage, able to see only a limited view of the world.”

While he agrees that there are many problems in the world that are more important than connectivity, Weiss believes that connectivity can be a problem solving strategy for providing all people access to information, economic development, and critical social and political issues.

“Connectivity” is a meaningful term for Weiss, as he sees himself as a connector of sorts. “I try to learn from different areas. What can we learn about SE from other fields?”

While serving as Advisor on Technology at the Office of Technology Assessment advising Congress on different aspects of technology for SDI, his next door office neighbor was a Russian Studies specialist. “OTA brought in people for short term assignments, one or two years, and it was interesting to learn from them and think about how to apply different types of knowledge to what I do.”

In addition to software development, Weiss has experimented with creative writing and video travel documentaries in his spare time and on the many trips he has taken around the world. Here at Iowa State, we hope to see Weiss continue to build connections between different types of knowledge, between industry and academia, and between professors and students.

“I have some radical ideas about how software engineering can be done…and I hope to develop some of those ideas further at Iowa State,” Weiss stated. “Right now software development is hierarchically organized, with developers at the bottom of the hierarchy. One thing we could try is to change that structure, start with a solid modular architecture, and allow software developers to bid on producing modules.”

“In such a system, developers will be able to work on projects they want to work on in teams of their choosing…things they are passionate about, that will lead to enhanced creativity in software development as well as quality products. Teams of software developers can work together on modules. Much like open source software, “open market development” is an intriguing thought. In general, I have found that young people are very attracted to this idea, so ISU is an ideal place to explore those possibilities.”
Hridesh Rajan joined the CS faculty in 2005, after earning his PhD from the University of Virginia. He researches modularization techniques that help decompose large software systems into modules.

The overarching goal of his research is to improve the reliability, maintainability, and evolvability of software systems and the efficiency of software development processes. In this context, he investigates several synergistic issues in collaboration with undergraduate and graduate students in his laboratory of software design.

A 2009 NSF CAREER award is supporting his Panini project whose goals are to reconcile modularity and concurrency in software design. According to Rajan, “Writing correct and efficient concurrent software remains really hard. The widespread adoption of multi-core processors is driving the development of increasingly concurrent software, which in turn is pushing the demands for concurrent software development skills at the workplace. Furthermore, slim job opportunities and the fear of job security due to economic conditions are likely to drive individual software developers to quickly, and perhaps haphazardly evolve their concurrent software development skills.”

Unless this problem is addressed relatively soon, Rajan fears that a distributed time-bomb of software bugs is in making due to: increasing number of concurrent software, increasing interleaving of threads in concurrent software, and increasing number of latent, inadvertent, and really hard to find concurrency errors due to under-prepared software developers writing concurrent code.

He comments, “We are addressing this problem via the design of the Panini language. Panini’s design encourages programmers to not worry about concurrency; rather they should focus on improving modularity in their software using Panini’s features. As a reward, the Panini compiler then exposes concurrency in such modular software in a disciplined manner. Programmers thus get the best of both worlds: more reliable, maintainable, and at the same time, faster software.” Graduate students Yuheng Long and Sean Mooney also contribute to the Panini project.

His Laboratory for Software Design has 9 students working on various projects. Along with Robert Dyer and Bashar Gharaibeh, he is developing a novel intermediate language model in the context of the Nu project.

Along with Mehdi Bagherzadeh, he is developing reasoning techniques for web-services that allow more expressive temporal assertions to be validated without sacrificing modularity. Along with Youssef Hanna and David Samuelson, he is investigating techniques for exploiting modular reasoning about a homogeneous process for automated verification of parameterized systems in the context of his NSF-funded project Slede.

Along with Tyler Sondag and Paul Murphy, he is developing techniques for effective utilization of multi-core processors. Rajan is in high demand among students, who like his approach to teaching and research.

“I think they like to work with me because I offer them significant academic freedom. If their interest isn’t directly in my core research area, we find intersection between our research interests so that we can collaborate effectively” he says.

This allows for a true collaboration between student and teacher, rather than a more traditional hierarchical approach. Many of Rajan’s students started working with him when they were undergraduates, and later chose to continue their work with him as graduate students.

“Junior and senior undergraduates learn the ropes from the graduate students, so they are able to make progress,” Rajan stated. He also mentors students in the Freshmen Honors Program. More information about Dr. Rajan and his research is available at http://www.cs.iastate.edu/~hridesh/
Ganesh Santhanam Considers User Preferences in Research

After three years work as a Senior Software Engineer at HCL Technologies, Ganesh Ram Santhanam is now a Ph.D. candidate working in Dr. Vasant Honavar’s Artificial Intelligence Laboratory. Santhanam’s research looks at developing complex systems based on the qualitative preferences of the user.

Typically, complex systems are made of multiple components, and there may be many choices for each of the components. The primary challenge in Santhanam’s research is to identify the choices for each of the components that will best satisfy the user according to his/her preferences.

“Preference networks are a well known example of how to capture these user preferences,” Santhanam remarks. “We are looking at some alternative ways of processing user preferences, by looking at the big picture. How much does a user prefer a complex system, given its composition? How do we compare them? And what are users willing to compromise on?”

Santhanam hopes to expand the concepts and solutions developed to address these questions to other domains. He remarks, “think of the health care bill being debated right now…is there a way we can develop a system to compose a bill that satisfies the requirements of the majority?”

That might be a development for the future, but for now, Santhanam is developing a theory and related algorithms utilizing techniques from Artificial Intelligence, Mathematical Logic and Software Engineering in order to support the development of composite systems through the use of qualitative preferences expressed by users. These techniques, he notes, can be used to process complex user preferences in highly useful ways. Santhanam expects to graduate in December 2010.


Science Fiction Made Real? Laboratory for Nanoscale Self-Assembly

In what sounds like science fiction made real, one of the newest ISU research groups studies “molecular computing,” a field that combines nanotechnology, biology and computer science. The Laboratory for Nanoscale Self-Assembly (LNSA), headed by computer science professor Jack H. Lutz, includes faculty from biology and biochemistry, along with six Ph.D. students in computer science.

Founded in 2007, the LNSA has already produced 17 refereed publications and several additional technical reports, and Computer Science graduate students have achieved international recognition for their work in this new field.

Matt Patitz presented an invited talk at the Foundations of Nanotechnology conference in February, and Aaron Sterling won the best student paper award in June at the International Conference on DNA Computing and Molecular Programming. Dave Doty, who defended his Ph.D. in September, is the first computer science student to graduate from the LNSA; he is now a postdoctoral researcher with the chief administrator of biological computing programs for Canada. Pictured here is Aaron Sterling (left) and Brian Patterson, Ph.D. candidates working at the LNSA.
The Center for Computational Intelligence, Learning, and Discovery (CCILD) pursues fundamental research and research-based advanced training in algorithmic models of intelligence, learning, and discovery and the development of software infrastructure for data-intensive, distributed, collaborative, integrative e-science, to meet the needs of scientific, economic, and technological problems of major societal importance in virtually every area of human endeavor. Core support for CCILD is provided by the ISU Office of the Vice President for Research and Economic Development and the College of Liberal Arts and Sciences. These funds are used to support students participating in exploratory collaborative research that can serve as a basis for more ambitious extramural grants.

CCILD core faculty have significant breadth and depth of expertise in artificial intelligence (machine learning, data mining, and statistical inference, knowledge representation, semantic technologies, vision, robotics), theoretical foundations (design and analysis of algorithms, algorithmic complexity, self-assembly), software systems (architecture, languages, formal methods, requirements, service-oriented computing, safety critical systems), information systems (databases, knowledge bases, information integration, multi-media, privacy, security), networks and distributed systems (sensor networks, adaptive networks, distributed computing, performance modeling) and in applied informatics. CCILD has a strong portfolio of productive basic and applied research collaborations (funded by NSF, NIH and USDA). They are engaged in transformative research in collaboration with their colleagues within and outside Iowa State University who bring domain expertise in specific application areas. These collaborations are already leading to fundamental advances in plant and animal genomics (e.g., genome annotation, characterization of macromolecular sequence-structure-function relationships, discovery and modeling of genetic interactions in development, aging, and disease), through established collaborations in Bioinformatics; and in critical infrastructure (e.g., power systems) monitoring and protection, through established collaborations in Energy Informatics. Several cyber-enabled discovery projects are underway in Health Informatics (analysis of electronic medical records to improve the quality and reduce the cost of healthcare), Security Informatics, Medical Informatics (digital colonoscopy), and Materials Informatics; Agricultural Informatics, Social Informatics, and Climate Informatics as part of CCILD's e-science initiative.

CCILD offers research-based training opportunities in cyber-enabled discovery to a diverse cadre of graduate and undergraduate students. CCILD faculty are developing, in collaboration with several academic departments and centers, innovative graduate and undergraduate curricula that integrate computational thinking as an integral component of scientific training e.g., as part of the nationally renowned, NSF IGERT supported Ph.D. program in bioinformatics and computational biology. CCILD also engages in technology transfer in close collaboration with industrial partners.
21 Computer Science students went to the 2010 ACM ICPC Regional Programming Contest in October 2009. Thanks to sponsors Kingland Systems, Cerner Corporation, and Maverick Software for contributing to the travel expenses for our contest participants!

In December 2008, Professor Johnny Wong introduces Distinguished Lecturer Lixia Zhang of UCLA. Dr. Zhang gave a talk about a new routing architecture for the future internet.

The 18 students pictured here were the 2009-10 scholarship and award winners for the department. Congratulations to all student winners!

Dr. Elisa Bertino was the 2009 Robert Stewart Distinguished Lecturer. In her lecture, Dr. Bertino discussed digital identity management and protection.

The department had tables in the LAS central campus tent at VEISHEA, in addition to activities held in Atanasoff Hall. Here, Dr. Chang is pictured with student volunteers Katie Githens and Eddie Stage, who talked to the crowds about opportunities in Computer Science.

In fall 2009, Computer Science Club hosted a Sushi Night for students and faculty to meet and learn how to roll their own sushi.
Alumni Features

Arvi Krishnaswamy: Building an International Career

Aravind (“Arvi”) Krishnaswamy is a graduate of the M.S. program in Computer Science at ISU, now an entrepreneur and technology executive, who currently serves as the Co-founder and Director of Levitum, a fast growing smartphone startup that is building apps for the iPhone and Android handhelds. Levitum strives to become the premier offshore destination for high end smartphone and tablet development. Levitum also provides consulting and custom development services for enterprises that need to migrate apps to the iPhone or corporates looking to establish a mobile brand. Arvi is a co-inventor for a novel compiler technique, for which he has a software patent, and has various publications in journals and the media.

When asked about the most important things he learned while at ISU, Arvi commented, “I came to the US from India in 1997 with an Iowa State scholarship and little else. My experiences at ISU were fantastic! A great research based graduate education providing broad and deep exposure to a wide range of topics, excellent faculty and advisors and a vibrant student community gave me a rock solid foundation to build my career on. Looking back now, ten years after I graduated, some of my key success factors have been strong analytical and problem solving skills, ability to work in a culturally diverse workplace and at international locations with a global perspective, and be part of building strong and sustainable organizations. I owe all of that to ISU.”

His advice to current students, whether they are undergraduate or graduate students, is to challenge the unknown. “The whole landscape today is completely changing, and traditional enterprise companies that survived the dot com bust are having to reinvent themselves to find ways of demonstrating value. Virtualization, Software as a Service, and the proliferation of numerous powerful mobile devices is changing the way software is built, managed, delivered, and used. I would urge students to challenge the known, while still approaching the unknown with an open mind. Look for ways to build work ready skills through internships, involvement in online open source communities, and industry outreach programs. Finally, differentiate your unique skills and abilities, and position your overall experience in context with the challenges a prospective employer may be facing.”
Brian McKinley had been farming for 11 years, throughout the hard years of the 1980’s farm crisis in Iowa, when he finally realized that he could not see a long-term future in working the land. He decided it was time to return to ISU to seek the skills needed for a long-term career. He chose Computer Science.

“My wife and I had two girls in elementary school, but with financial resources we had saved on the farm we were able to make it through without my needing to work full time, and we had a lot of support from family.”

Despite the challenges of being a nontraditional student, Brian saw advantages in his situation that other students didn’t have. “I had focus. I knew exactly what I was there for, and I worked towards that steadily. I didn’t have to worry about who I would ask out on Friday night. I didn’t need to think about my social life. I had that already set. Also, farming is a career where you put in a lot of hours and have to be able to concentrate on your work. Those skills helped a lot when I was a student. My experience was a great advantage.”

Following graduation in 1993, Brian was recruited by another ISU alum to work as a Software Engineer for Hewlett Packard in Boise, Idaho. Software requirements have changed a lot since then.

“In the old days, printers were connected to computers or to a mainframe. Control of the printer was tightly held by the IT department.

“Today, we have software on an intranet that means any computer can work with any printer within that network. I design and build the software programs for businesses that might have 1,000 printers in a network. Software has to be designed so that it can talk to all of the printers. Problems with printers are usually detected before the user even recognizes that there is a problem.”

As a software engineer for HP, Brian does both research and production. “The most rewarding, though, is when we deliver a product successfully. It is the same with farming, you know... both are production-oriented environments, and that is the aspect of software engineering that I really like.”
Making a Difference

Severe budget cuts within the State of Iowa means that donations from alumni and industry partners are more critical than ever to sustain departmental programs. We are committed to providing outstanding opportunities for the university community. In order to have the resources necessary to continue building world class programs, support for the department is essential. Funding is required to aid the program in developing new opportunities in technology, continuing and advancing outreach activities, maintaining and expanding current educational opportunities, and supporting students and faculty. These services are crucial as the Department of Computer Science strives to keep up with the student demand for these experiences.

To help make a difference, simply fill out the form, drop it in the mail (ISU Foundation, 2505 University Blvd, Ames, Iowa 50010-8644) and check our next newsletter.

For more information about making a gift to the Department of Computer Science or including ISU in your estate plans, please contact the College of Liberal Arts and Sciences Development Office at 515-294-3607 or Erin Steinkamp at estein@iastate.edu.

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