

COMPUTER SCIENCE and SOFTWARE ENGINEERING

SAMUEL GINN COLLEGE OF ENGINEERING

Message from the department chair



Chang

It is hard to believe that the Department of Computer Science and Software Engineering (CSSE) moved into Shelby Center almost three years ago. I am pleased to say that the move is helping CSSE leap forward in performance metrics. Our faculty research funding has exceeded \$3 million for the first time and, within the College of Engineering, the department ranks fifth in total research funding. While we are proud of these achievements,

we still have a long way to go, and our faculty continues to work diligently to secure additional funds to improve this ranking. In addition to increased research funding, our undergraduate enrollment continues to grow (story on page 7). We have 463 undergraduate students enrolled in our programs, compared to the 326 students enrolled in 2006. Our facilities are a big draw for prospective students and their parents.

To help attract the best and brightest students, our Industrial Advisory Board (IAB) set up an endowment for freshman scholarships in the fall of '06. For it to be fully funded, we must reach the \$25,000 endowment requirement within five years. While we have not yet reached that goal, I am confident we will soon. Though this scholarship offers only \$500 to each recipient, the majority of students that received scholarship awards from the IAB endowment have accepted our offers. This is proof that scholarship money—no matter the amount—does make a difference.

Our students continue to achieve many outstanding accomplishments. Brian Agaloff, a sophomore in computer science, recently won IMMUNITY, a game prototyping contest sponsored by Muse Games that carries a \$10,000 prize. At the graduate level, Ziliang Zong, a 2008 graduate who is currently an assistant professor of computer science at Dakota State University, was recently awarded an Auburn University Graduate School Distinguished Dissertation Award.

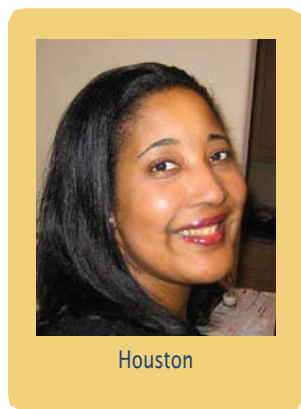
Many of our faculty members have also been recognized for their achievements. Drew Hamilton was awarded the prestigious Alumni professorship for a five-year appointment. This honor is offered to only five faculty members campus-wide each year. Levent Yilmaz was chosen as the winner of the Auburn University 2009–2010 External Consulting Award, given to one faculty member each year. In addition, Xiao Qin was promoted to associate professor and is the recipient of the 2010 College of Engineering junior faculty research award.

All three CSSE undergraduate programs—computer science, software engineering and wireless software engineering—were recently evaluated by two accreditation teams from the Accreditation Board for Engineering and Technology. All of these programs are currently accredited, and the results of this recent visit will be announced next summer.

War Eagle!
Kai Chang

Alumni Highlights

Philip Fraher, computer engineering '88, was recently named chief financial officer of FuelQuest, the leading on-demand software and services company for the global-downstream energy industry. In addition to his bachelor's degree from Auburn, Fraher holds a master's degree in finance from the University of Rochester. He serves on the department's Industrial Advisory Board and is a member of the Auburn Alumni Engineering Council.



Mave Houston, computer science and software engineering '05, is the director of user experience and process interaction at PricewaterhouseCoopers in Washington, D.C. Her team is part of a large business process management effort within the organization and is responsible for ensuring the usability of the software business process management solution. The process interaction team consists of user experience re-

searchers, interaction designers and firm practitioners who work together with subject matter experts and firm knowledge workers to enhance and guide the user experience. Houston was previously the user experience research manager for the center for advanced research at PricewaterhouseCoopers in San Jose, Calif., ensuring project development adhered to a user-centered design process. Committed to serving the community, she visits colleges and universities to speak about her research and to encourage students—particularly minority students—to consider graduate school.

Jhilmil Jain, computer science '06, is a user experience strategist in the speech@microsoft group at Microsoft in Mountain View, Calif., leading user speech experience research for products such as Bing, Xbox and Windows. She



works on defining the role of speech in the future of natural user interfaces to provide a seamless user experience. Before joining Microsoft, Jain worked for HP Labs and conducted research on personal information management systems, privacy and personalization in consumer applications and multichannel-experience integration. She led the user experience design of inHand, a color-matching technology that assists users in buying products that require color coordination, such as cosmetics. The technology was initially aimed at helping women find the right shade of makeup to suit their skin tones based on their photographs. It was featured in *Oprah Magazine*.

Award winners

During the spring 2010 College of Engineering Awards Ceremony, the following CSSE members were recognized for outstanding achievement:

Fred H. Pumphrey Outstanding Pre-Engineering Student Awards (4.0 GPA)

Michael J. Knowles – Software Engineering

Justin D. Baldwin – Wireless Software Engineering

Kanesha R. Belyeu – Wireless Software Engineering

Outstanding Student Awards

Patrick T. Carpenter – Computer Science

Brennan Sweeney – Software Engineering

Outstanding Faculty Awards

David A. Umphress

Faculty Research Awards for Excellence

Xiao Qin – Junior Award

Outstanding Alumni Awards

Glenn S. Phillips – President of Forté Incorporated

Levent Yilmaz was selected for the Auburn University 2009–2010 External Consulting Award. This competitive honor carries a \$2,500 award. Yilmaz was recognized at an awards ceremony held on campus Sept. 30.





From left, spring engineering awards recipients Brennan Sweeney, Glenn Phillips, Xiao Qin and Phil Fraher

Nominations were solicited from Auburn's 12 colleges and schools in two categories, social sciences and mathematics and physical sciences and engineering. Award winners received an honorarium of \$500 and a certificate at the Graduate School's annual awards ceremony.

Mining on the moon

A team of mechanical engineering, electrical and computer engineering and computer science and software engineering undergraduate students recently competed in the NASA Lunabotics Mining Competition at Kennedy Space Center. The objective of the competition was to dig as much lunar soil simulant as possible in 15 minutes using a telerobotic excavator of their own design and construction. Twenty-nine university teams

entered the competition, with 23 competing in the digging event. The Auburn team dug the second largest amount, winning them \$2,500. In addition, they won the systems engineering paper competition, earning another award of \$500. The team includes computer science student **William Woodall**, mechanical engineering students **Jameson Colbert**, **Dionel Sylvester** and **Mark Keske** and electrical engineering students **Michael Payne** and **Eddie Thomas**.

Freshman wins \$10,000 for video game contest

CSSE freshman **Brian Agalsoff**, native of Madison, Ala., and one of three 2009–2010 IAB scholarship recipients, was recently awarded \$10,000 by Muse Games. Agalsoff developed a computer game called Dream Trip, formerly named Ballin'. With a focus on delivering 3D, multi-player games directly to web browsers, Muse created the Indie Development Challenge and invited contestants to enter their simple, no-art-necessary prototypes of games created with Unity software. The company admired how Agalsoff combined familiar concepts in inventive ways, provided simple core mechanics for easy use and displayed graphics dramatically with striking effects, noting that he, "really personifies the indie developer", Agalsoff will work with Muse developers to complete and release Dream Trip to the public. Be on the lookout for Agalsoff's finished game coming soon.



Agalsoff

Winners for first CSSE video design contest

CSSE hosted its first video design contest this past spring. Contestants were asked to design a video showcasing the department for prospective students and describing the experience of a computer science, software or wireless engineering student in today's digital world. **Rose-Gaëlle Belinga**, CSSE graduate student, was awarded \$400 for first place. **Joe Shanahan**, senior in wireless engineering, received \$200 for second place. Submissions were evaluated by the CSSE Industrial Advisory Board at its spring meeting.

Graduate earns Distinguished Dissertation award

Ziliang Zong, '08, assistant professor of computer science at Dakota State University, was recently awarded one of Auburn University's Graduate School Distinguished Dissertation Awards.

Undergrad chosen for research fellowship

Patrick Carpenter, senior in computer science, is concluding a year-long undergraduate research fellowship project under the guidance of faculty member **Weikuan Yu**. The project focuses

on the performance of the Parallel Ocean Program on the Ranger computing system. Their research will be presented at the local and national levels and will be the focus of Carpenter's senior honors thesis. The fellowship program also provided funding for travel to Super Computing 2009 and the National Conference on Undergraduate Research 2010.

Research Highlights

Faculty members earn computing education grant

CSSE faculty members **Hari Narayanan** and **Dean Hendrix** received an \$800,000 grant from the National Science Foundation to lead a consortium of three universities in implementing a studio-based learning (SBL) approach to undergraduate instruction. Their approach encourages students to learn collaboratively while solving complex design problems. Throughout the next two years, the research team will oversee implementation and evaluation of SBL at 16 institutions in eight states. The project began with a faculty development workshop organized by Auburn faculty in conjunction with the Association for Computing Machinery Technical Symposium on Computer Science Education, the premier international conference on computing education. More information about this project can be found at www.studiobasedlearning.org.



Students practice the small group, studio-based learning approach

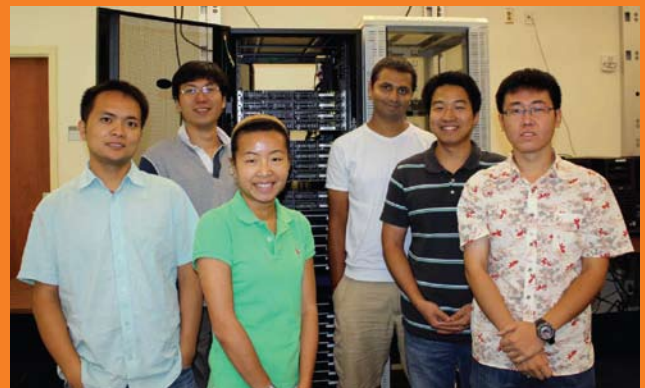
NSF grant to focus on mobile environments

CSSE faculty member **Wei-Shinn Ku** was recently awarded a National Science Foundation (NSF) grant of more than \$160,000 for his project, "An Infrastructure for Scalable Data Dissemination and Query Evaluation in Mobile Environments," which focuses on building a scalable mobile computing emulation infrastructure named ScalableSQ. Designed in response to an increasing need for mobile users to access data and process queries universally through their devices, the objective of the research is to develop a scalable-data dissemination and query-evaluation infrastructure for indexing and routing datasets to support new mobile applications. Ku's team includes CSSE faculty members **Xiao Qin** and **Alvin Lim**, as well as **Shiwen Mao** of electrical and computer engineering.

The project will provide undergraduate and graduate students with hands-on learning experience in mobile computing through the ScalableSQ infrastructure. The investigators plan to organize workshops at Tuskegee University and collaborate with industry partners to broadcast new discoveries. Research results will be circulated and freely available as online tools. More information on the project can be found at www.eng.auburn.edu/~weishinn/ScalableSQ.html

Researchers study high-performance systems

Since joining the department in 2009, faculty member **Weikuan Yu** has worked to form a research group that includes one visiting professor, Bomgen Gu, and six graduate students. The group is focused on high-performance computer systems and architecture, programming models, parallel input and output file systems and storage and computational biology. Their current research is supported by grants and equipment donations from sponsors such as Oak Ridge National Laboratory and Mellanox Technologies, as well as computer time awards from the U.S. Department of Energy and the National Science Foundation. The group's primary objective is to create scalable-software systems and elements that enable next-generation parallel computer systems for upcoming exascale scientific simulations, visualization and analytics.



From left, Yu's graduate students Bin Wang, Yandong Wang, Yuan Tian, Adarsh Jain, Xinyu Que and Cong Xu

CSSE receives \$600,000 for scholarships

Sanjeev Baskiyar, associate professor in the department, recently received nearly \$600,000 from the National Science Foundation for his proposal, "Educating Talented Scholars in Computer Science and Software Engineering." The funds will be used to award more than 55 scholarships over four years to outstanding undergraduate students studying computer science and software engineering, as well as graduate students studying computer systems and embedded computing. Baskiyar's team includes department chair **Kai Chang** and faculty member **Cheryl Seals**, who are co-principal investigators on the project, as well as **Sean Forbes**, faculty member in Auburn's Department of Educational Foundations, Leadership and Technology.

"We are honored to receive this award, particularly because the competition was so intense," said Baskiyar, who is the principal investigator on the project. "These funds will help to provide a better learning environment and an opportunity for the department to recruit the best and brightest students." For more information on the scholarships, visit www.eng.auburn.edu/comp/s-stem

Extension Highlights

Black Belt students attend KEMET Academy

Led by faculty member **Cheryl Seals**, the 2010 Knowledge and Excellence in Mathematics, Equilibrium and Technology (KEMET) Knowledge Bus Environmental Classroom provided 32 high school students from Alabama's Black Belt region the opportunity to explore, collect primary data and complete related assignments on historic landmarks. The event, held at Auburn in July, served as part of the Alabama High School Graduation Exam's social studies component.

KEMET Academy courses include computer science, engineering, math, geography, geographical information systems and science. The program is sponsored by the department, Auburn's Office of the Vice President for Outreach, state Sen. Hank Sanders, the Lowndes County Board of Education, Sisters of the Academy, a network of black women in higher education, and Auburn University-Montgomery's Department of Sociology.

Robo Camp wins big at digital film fest

Students from Auburn University's Robo Camp took home seven awards in the elementary, middle and high school categories at the recent digital film festival held at the University of Alabama-Birmingham. The festival provides an opportunity for Alabama K-12 students to earn awards in individual and project categories for video games and animated movies created using Alice or Scratch software. More than \$3,000 in prizes was awarded, including scholarships ranging from \$50 to \$400, iPods and video game hardware and software.

Drake Middle School student Asher Anderson and Richland Elementary School student Grady Hall won first place in the individual category, while Robby Hall, an Auburn Junior High School student, and Katie Holmes, who is homeschooled, received second place awards in the event. Daniel Holmes, who is homeschooled, placed third in the individual category. Robby Hall and Grady Hall won third place in the high school team category, while Daniel Holmes, Katie Holmes and Hutchison Heberer, a home school student, won third place in the middle school team category. Auburn Junior High School's Noah Williams received an honorary mention.

Robo Camp is led by faculty member **Daniela Marghitu** and Auburn Engineering graduate students **Taha Ben Brahim**, **Joseph Shanahan**, **Santosh Kulkarni**, **Yasmeen Rawajfih** and **John Weaver**. Each semester, K-12 students participate in camp to increase their computer literacy, build a platform for problem- or project-based learning and integrate knowledge from many disciplines, including math, science, social studies, English and arts. Camp instructors introduce students to advanced computer concepts and help them with hands-on applications of computer programming and robotics. Learn more about RoboCamp at www.eng.auburn.edu/outreach/k-12/robo-camp/



Participants and instructors from Auburn's 2010 Robo Team

Meet CSSEs Industrial Advisory Board

CSSE's Industrial Advisory Board (IAB) is a group of industry representatives that provides vital services to the department, such as reviewing curriculum, mentoring students and connecting faculty members with various industries. In the past, the department's IAB has been cited by our accreditation agency, ABET, as a strong component of our programs. Current board members are:

Richard Blanchard	President, Blueteam Software, Inc.
David Brooks	Senior Capability Director (BI and Dynamics) Avanade, Inc., South Region
Sam Coursen	VP and CIO, Freescale Semiconductor
Chris Easterwood	Director and VP IT Operations and Technical Services Southwire Company
Philip G. Fraher	CFO, FuelQuest
Gene Fuller	President, Remtech, Inc.
Allen Greathouse	Director, Engineering IT Harris Corporation
Keith Hagler	UIT Planning Analyst ExxonMobil GSC Information Technology
Archie Jordan	Manager, Software Engineering Lockheed Martin Missile and Space
C. Chris McGraw	President and CEO Optimization Technology, Inc.
Jason Ramsey	Senior Manager, CTS, Inc.
Glenn Phillips	CEO, Forté Incorporated
Mark Spencer, chair	CTO, Digium, Inc.

Contributions needed for IAB scholarship

In fall 2006, CSSE's IAB established a scholarship endowment aimed at attracting top freshmen to computer science and software engineering programs. At the time, CSSE was the college's newest department and the only one that did not offer freshmen scholarships. Nonetheless, the IAB decided it was important for CSSE to have its own freshmen scholarship endowment.

In order to be endowed, the scholarship must reach \$25,000 within five years of its establishment. When the endowment is

fully funded, the department will be able to award two \$500 scholarships annually. In the meantime, the IAB is making annual contributions so that two to three scholarships are awarded annually.

The three recipients of the 2010 scholarships are:

Dillion Clary – Wireless software engineering, Laurel Hill High School, Laurel Hill, Fla.

Caleb Davenport – Software engineering, Spain Park High School, Hoover, Ala.

Heather Neely – Computer science, Bob Jones High School, Madison, Ala.

It is the department's goal to fully fund the scholarship endowment in order to provide ongoing support for our freshman scholarships. If you want to invest in the endowment—and our students—please make your check payable to Auburn University with a designation for the **CSSE IAB Scholarship Endowment** and send it to:

Gloria Bailey
Computer Science and Software Engineering
3101 Shelby Center
Auburn University
Auburn, AL 36849-543

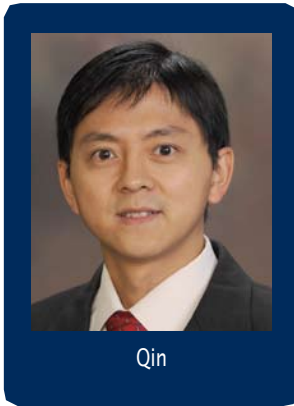
Faculty Highlights

Drew Hamilton was awarded one of five Alumni professorships by the Auburn Alumni Association this past spring. This five-year professorship is awarded to accomplished senior faculty members who have achieved national and international recognition in their respective fields. Department chair **Kai Chang** is a past recipient of this honor.



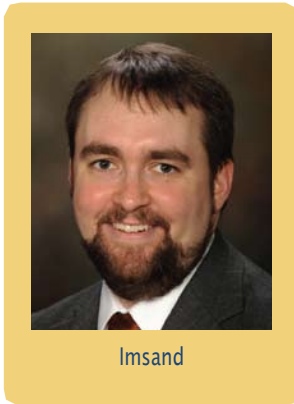
Hamilton

Xiao Qin was recently promoted to associate professor. He came to Auburn in fall 2007 and has displayed excellence in research, publications and graduate student supervision. Qin received the 2010 Junior Faculty Research Award from the College of Engineering. He is one of three of the department's National Science Foundation CAREER award winners. Faculty members **Richard Chapman** and **Alvin Lim** have also received CAREER awards.



Qin

Eric Imsand joined the CSSE faculty in October 2009 as an assistant research professor. After earning his doctorate from Auburn in 2008, he worked in industry and as a faculty member at the University of Memphis. His research interests include biometric authentication and identification, computer and network security, end-user security training and simulation security. He is currently serving as the chair of the 2011 SCS Spring Simulation Multiconference.



Imsand

Jackie Hundley was hired as an instructor in the department in January 2010. Her primary responsibility is to teach service courses such as Matlab. Hundley has a master's degree from Auburn and many years of teaching experience. She is currently working towards earning her doctoral degree.

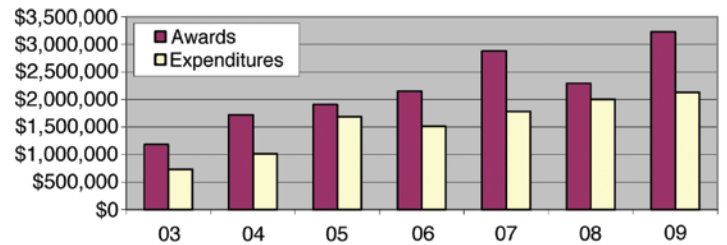


Hundley

Yan Gu, who joined CSSE in January 2009, has rejoined her family in the San Francisco Bay area.

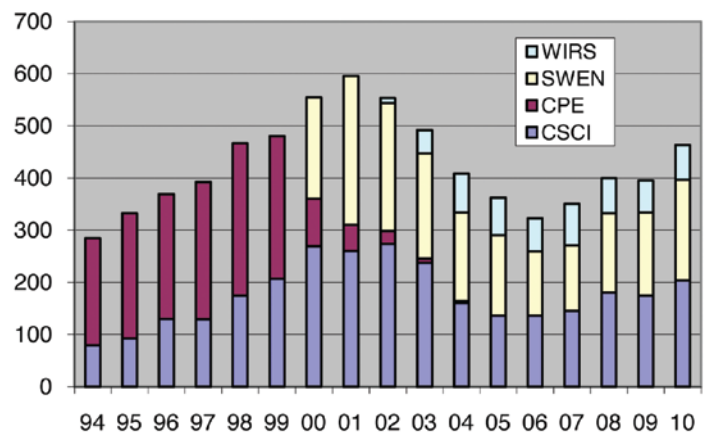
CSSE Stats

Research Awards and Expenditures



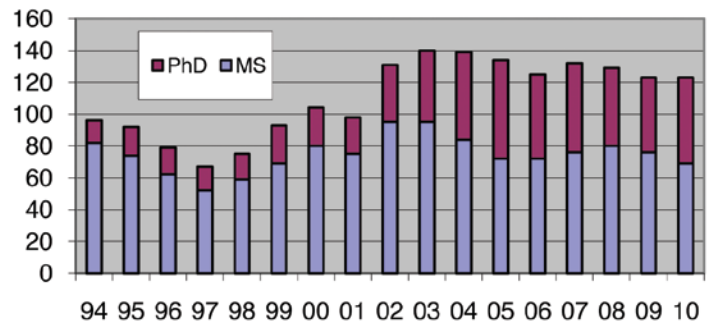
CSSE research awards and expenditures history: Research awards indicate the dollar amounts posted to CSSE, while expenditures indicate dollar amounts expended

Undergraduate Enrollment



CSSE undergraduate enrollment has seen a steady increase

Graduate Enrollment



CSSE graduate enrollment has been steady for the past few years

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NSF REU team



The department's 2010 NSF Research Experience for Undergraduates team, a summer program that pairs students with faculty mentors to conduct research projects and develop lab skills



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