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photo by Bruce Hemingway

NSF CAREER Award winners Yoshi Kohno, Magda Balazinska, and Luis Ceze

## Three CSE faculty receive NSF CAREER awards

Magda Balazinska, Luis Ceze, and Yoshi Kohno have each won NSF early career awards to support them in their research and teaching. Magda, Luis, and Yoshi make a total of twenty-seven current CSE faculty members who have won CAREER or NSF/Presidential Young Investigator Awards.

Magda, recipient of a three-year \$500,000 award, is developing new techniques for large-scale data management aimed at cloud-computing environments and scientific data analysis applications. These techniques hold the promise to make large-scale data analysis in cloud computing environments both interactive and collaborative.

For more information on Magda and her research, see:  
[www.cs.washington.edu/homes/magda/](http://www.cs.washington.edu/homes/magda/).

Luis has won a three-year \$450,000 award for his research that will make it easier to program multicore processors. He plans to devise efficient, general purpose, fully deterministic shared memory multiprocessor systems. His work will improve software reliability and lead to energy savings in computer systems.

For more information on Luis' research, see:  
[www.cs.washington.edu/homes/luisceze/](http://www.cs.washington.edu/homes/luisceze/).

## From where I sit...



Spring has (finally!) arrived in Seattle, the quarter is nearly over, and we're all looking forward to graduation. I always find CSE's graduation ceremony to be a special experience. It's gratifying to celebrate our students and their accomplishments, to meet their families who have supported them over many years, and to imagine the great opportunities that lie ahead for them. It's also sad to see them leave. Despite the difficult economic times, I'm confident that our students are incredibly well positioned for the future.

The last six months have been difficult for us at the University of Washington, in part because the state budget was not completed until very recently. The budget cut numbers being discussed in Olympia throughout the legislative process were horrific. In the end, the state agreed to permit a tuition increase that would help the university to survive the drastic cuts that were imposed. In CSE, we will see a budget cut of around \$1M per year — about 10% of our state budget line. As a result, we have had to abandon numerous new faculty positions that we received just a year ago through the state's high-demand enrollment initiative, and to forego the planned enrollment increase. In addition, we've reduced our staff size through attrition and abandoning open searches. We've taken lots of other cost-saving initiatives as well. But overall, CSE remains healthy, and we'll be able to weather the storm. In fact, we're trying to take advantage of the job market: we have made three faculty offers to outstanding junior candidates, who are returning for second visits as I write this letter. As a result, I'm hoping that our faculty will be even stronger a year from now, despite the difficult environment.

On a high note, our junior faculty have generated a lot of excitement in the last year. For example, we had three NSF

CAREER award winners this year: Mogda Balazinska, Luis Ceze, and Yoshi Kohno. The CAREER award is intended to bootstrap the research of the very best young faculty in the nation. We are extremely proud of our record: 27 of CSE's current faculty have won CAREER awards (or Presidential Young Investigator/ PYI Awards, as they were previously known). In addition, in January, James Lee won a prestigious Sloan Research Fellowship, becoming the 14th Sloan winner on our current faculty.

Looking toward next year, we've just concluded one of the best graduate student recruiting years ever in terms of both accept rate and quality. With the excellence of our new faculty and students, we are strongly positioned and remain highly optimistic for the future.

Thanks to all of you — we continue to be humbled by the support of our friends and the accomplishments of our students. I wish you all a wonderful summer!

Henry M. Levy  
Chairman and Wissner-Slivka Chair

## CSE student rocks at Putnam Competition

The Putnam Mathematical Competition, conducted each year by the Mathematical Association of America, began in 1938, and is open to undergraduate students in the United States and Canada. The six-hour test is administered on the first Saturday in December; roughly 4,000 students typically participate. Students must solve 12 difficult problems in six hours during the test of math wits.

In this year's competition, UW CSE junior Will Johnson finished sixth in the nation — an extraordinary performance. (The top five scorers were from Harvard, MIT, Stanford, and Caltech.) In a typical year, more than half of the competitors earn a grand total of zero points. Will scored 99 — the top score of any student at a public university.



Over the summer, Will plans to work with Richard Ladner's Mobile Accessibility Group and then attend the UW 2009 Study Abroad Exploration Seminar in Georgia, a short-term faculty-led global study opportunity.

## Sensing the water we use

Water will be one of the most pressing issues on the global agenda in the coming decades. According to US government estimates, 36 states will face serious water shortages in the next five years. Although a 15% reduction in water usage across US households would save an estimated 2.7 billion gallons per day and more than \$2 billion per year, most people have no mechanism to accurately measure their household water usage other than a monthly water bill.



CSE's Jon Froehlich presents at EIC in April 2009

Jon Froehlich, a fifth-year graduate student, and Professors Shwetak Patel, James Fogarty, and James Landay are working on advanced solutions for measuring and feeding back information about water usage in real time. They are joined by colleagues in the Information School; Community, Environment, & Planning; and Mechanical Engineering. Research on domestic energy usage has shown that providing explicit feedback about energy consumption to residents can stimulate energy savings ranging from 5-20%, depending on the frequency, duration, specificity, and type of feedback. Froehlich and his colleagues believe that providing analogous feedback on water usage will lead to similar improvements.

Their first project in this area, called HydroSense, is a novel, practical, low-cost, sensing solution for tracking water usage in the home. Unlike traditional home water meters, HydroSense is not a mechanical device and therefore does not require inline pipe installation. Instead, HydroSense simply screws onto a single water bib or faucet and uses the analysis of acoustic, vibration, and pressure differential signatures of water to provide flow volume statistics for each fixture (e.g., toilet, shower, dishwasher) in a home.

In April 2009, HydroSense beat out fifteen other teams to win the \$10,000 grand prize at the University of Washington's inaugural Environmental Innovation Challenge, a competition focused on developing solutions to problems of environmental significance.

And on May 21<sup>st</sup>, HydroSense finished third out of 90 entrants in the UW Business Plan Competition and received the "Best Clean-Tech Idea" award. (Fogarty even purchased a suit for the awards dinner at which the ordering of the five finalists was announced, surely jinxing the outcome.)

This summer, the HydroSense team expects to deploy its water usage feedback visualizations in Seattle-area homes.



An early HydroSense sensor prototype



HydroSense is easy to install. If you can screw on a hose, you can install HydroSense.

## Bigham and WebAnywhere recognized

CSE's 2009 Ph.D. alumnus Jeff Bigham's team is one of five teams awarded the 2009 "Technology in the Works" award from the National Center for Technology Innovation. They won for their project to make web browsing made accessible for blind students: "Enabling More Effective Use of the Web Anywhere with WebAnywhere and TrailBlazer." The National Center for Technology Innovation assists researchers, developers, and entrepreneurs in creating innovative learning tools for all students. NCTI sponsors this annual competition to foster the development of learning and assistive technologies that can improve educational results for all students, particularly those with disabilities.



Jeff was also recognized as the 2009 UW College of Engineering "Student Innovator: Research" in the Community of Innovators award competition for his research related to WebAnywhere, a screen reader for the web. WebAnywhere requires no special software to be installed on the client machine and, therefore, enables the blind to access the web from any computer that has a sound card.

For more information on Jeff and his research, please see: [www.cs.washington.edu/homes/jbigham/](http://www.cs.washington.edu/homes/jbigham/).

## Ladner receives 2009 UW Outstanding Public Service Award



Richard Ladner, Boeing Professor in Computer Science & Engineering, received the 2009 University of Washington Outstanding Public Service Award, which is presented to a faculty or staff member to honor extensive local, national, or international service. Ladner was recognized for his decades-long efforts focused on under-

represented groups, particularly the deaf-blind community. He is the second UW CSE faculty member to receive this award, following Ed Lazowska, who was honored in 1998.

To read more about Ladner's work, please see: [www.cs.washington.edu/homes/ladner/](http://www.cs.washington.edu/homes/ladner/).

## James Lee wins Sloan Research Fellowship

CSE faculty member James Lee has received a 2009 Sloan Research Fellowship, one of the most prestigious awards available to younger faculty in the sciences. James is CSE's 14<sup>th</sup> Sloan Research Fellowship recipient. (For a complete list of department recipients, please see: [www.cs.washington.edu/general/sloan-winners.html](http://www.cs.washington.edu/general/sloan-winners.html).)

James studies the mathematical structures underlying difficult computational problems in order to design and analyze better algorithms to solve them. His work exploits the connections between computer science and pure mathematics to understand the inherent complexity of various computational tasks. James earned his doctorate at UC Berkeley and joined the department in September 2006.



For more information on James and his research, see: [www.cs.washington.edu/homes/jrl/](http://www.cs.washington.edu/homes/jrl/).

## Eggers wins ACM's Athena Lecturer Award and is named UC Berkeley Distinguished Alum

Susan Eggers, Microsoft Professor in Computer Science & Engineering, received the 2009-10 Athena Lecturer Award, which is given by the ACM Committee on Women in Computing (ACM-W) to recognize women researchers who have made fundamental contributions to computer science. Eggers was also honored at the UC Berkeley commencement on May 24<sup>th</sup> as the 2009 Distinguished Alumnus of the Berkeley Computer Science Division.



Eggers' work on computer architecture and experimental performance analysis led to the development of Simultaneous Multithreading (SMT), the first commercially viable multithreaded architecture. This technique improves the overall efficiency of certain processors known as superscalar and has been adopted by Intel, IBM, Sun, and others. Since SMT processors can execute more than one instruction during a clock cycle, the result is significantly higher program speedups on workloads common to commercial databases, web servers, and scientific applications. Eggers is a Fellow of ACM, IEEE, and AAAS, and a Member of the National Academy of Engineering.

For more on Susan and her work, please see: [www.cs.washington.edu/homes/eggers/](http://www.cs.washington.edu/homes/eggers/).

## CSE faculty receive NSF CAREER Awards

*(Continued from first page)*

Yoshi won a three-year \$450,000 award for his work to create a principled framework for protecting the privacy of data against accidental or malicious disclosure. This framework consists of both underlying technical mechanisms and prototype applications which enhance the security and privacy of broad classes of individuals, ranging from home users wishing to enhance the privacy of their email communications to voting machine manufacturers wishing to improve the privacy of electronic voting audit logs.

For more information on Yoshi and his research, see: [www.cs.washington.edu/homes/yoshi/](http://www.cs.washington.edu/homes/yoshi/).

## Datagrams

### **Kudos to new National Academy of Engineering Members**

Matthew O'Donnell, UW Dean of Engineering, was elected to the NAE for his contributions to biomedical ultrasonics and real-time ultrasound imaging technologies. His research ranges over ultrafast optics, in-vivo microscopy, catheter imaging of coronary arteries, optoacoustic arrays, and elasticity and molecular imaging. O'Donnell holds some 55 patents and is associate editor of *Ultrasonic Imaging*. Also elected to the NAE class of 2009 was CSE Ph.D. alumnus Jeff Dean. (See page 6 for article.) Election to the National Academy of Engineering is among the highest honors accorded to an engineer. CSE faculty members Susan Eggers and Ed Lazowska are NAE Members.



### **Dan Halperin wins Intel Fellowship**

CSE Ph.D. candidate Dan Halperin has been awarded an Intel Fellowship. Dan's research interests lie in the areas of wireless networking and computer security and privacy. There were three Intel Fellowships at UW this year: one each in CSE, EE, and MSE.

### **Saleema Amershi wins Google Anita Borg Scholarship**



CSE Ph.D. candidate Saleema Amershi was awarded a 2009 Google Anita Borg Memorial Scholarship, awarded each year to female computer science students selected on the basis of academic excellence and leadership. The scholarships celebrate the life's work of the late Anita Borg. Saleema works in the areas of HCI and machine

learning. CSE Ph.D. candidate Kristi Morton and undergraduate Julia Schwarz were finalists.

### **Raphael Hoffmann recognized in Yahoo!'s "Key Scientific Challenges" program**

CSE Ph.D. candidate Raphael Hoffman is one of 20 students nationwide who have been recognized in Yahoo!'s "Key Scientific Challenges" program, which provides unrestricted research funds and the opportunity to interact with Yahoo! scientists. Raphael, who is working with CSE Professors Dan Weld and James Fogarty, is attempting to make computers easier to use by combining ideas from information extraction, machine learning, and human computer interaction.

### **Mark Squillante, Rick Szeliski named ACM Fellows**

CSE Ph.D. alumnus Mark Squillante (who has spent his career at IBM Research) and CSE Affiliate Professor Rick Szeliski

(Microsoft Research) were among 44 leading computer scientists named to the 2008 class of Fellows of the Association for Computing Machinery. Squillante, a student of Ed Lazowska's, was recognized "for contributions to the theory and practice of stochastic modeling." Szeliski was recognized "for contributions to computational photography." Thirteen CSE faculty members are Fellows of the ACM.

## CSE students awarded Google Fellowships

Roxana Geambasu and Michael Piatek are among 13 exemplary Ph.D. students from across the nation who have been named recipients of the inaugural Google Fellowships. The Google Fellowship Program was started to find the best and brightest Ph.D. students and award them a unique fellowship that highlights their contributions to research and supports them in their graduate studies. Leading graduate programs in computer science and related fields were invited to nominate students in 20 different technical areas.

Roxana received the 2009 Google Fellowship in Cloud Computing. Her research focuses on the challenges, as well as the untapped opportunities, created by today's rapid move to cloud computing. In one of her most recent projects, Roxana seeks to ensure automatic destruction of deleted data that has been stored at multiple cloud locations.



Mike received the 2009 Google Fellowship in Computer Networking. His research spans problems involving networks, distributed systems, and peer-to-peer systems. His interests are in building trustworthy, reliable services from untrusted, unreliable components.

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MSB available online at [www.cs.washington.edu/msb](http://www.cs.washington.edu/msb)

## alumni spotlight

### *CSE Engages High School Teachers with Agnes Kwan's Hands-on Support*

*The more things change, the more they stay the same.*

Sometimes old proverbs do ring true. Agnes Kwan was among a handful of women to earn a masters in computer science at the UW in 1982. She thrived in her career as a software engineer and project manager at Intel in Portland. She's been on the front lines of the computer revolution, from writing complex programs for the VAX to improving manufacturing efficiency for the gazillions of processors and chipsets embedded in computers from servers driving the Internet to mobile devices, medical devices, and in cars.

And yet, despite amazing advances in an exceptionally dynamic field, she still finds herself on the front lines of an old problem — helping to attract more young women and other talented but underrepresented students into computer science and engineering.

"The field still has that negative 'geek' image," said Kwan, whose outgoing personality conveys just the opposite. "It's essential that young women have good role models and that we talk to them about computer science as a career path."

Several years ago Professors Ed Lazowska and David Notkin tapped into Kwan's enthusiasm by encouraging her participation in a new outreach program — CS4HS — an exploration of computer science for teachers of high school math and science. The mission is to give teachers the hands-

## Jeff Dean Elected to NAE

Jeff Dean, CSE Ph.D. 1996, has been elected to membership in the National Academy of Engineering. He is one of 65 individuals — 12 in the Computer Science & Engineering section — to be honored in the 2009 class.

Jeff began his career at DEC WRL, then moved to Google in 1999. At Google, Jeff and MIT EECS Ph.D. alumnus Sanjay Ghemawat — also elected to NAE this year — led the conception, design, and implementation of much of Google's revolutionary computing infrastructure. NAE recognized Jeff "for contributions to the science and engineering of large-scale distributed computer systems." The College of Engineering honored Jeff in 2006 with a Diamond Award for early career achievement.



CS4HS Workshop

Above: Agnes Kwan (right) participates in the Computing Careers Panel along with UW CSE BS alumna Crystal Hoyer

Top right: A teacher learns how to use the Squeak programming environment.

Right: Teachers work with the Lego Mindstorm Robots.



on knowledge and skills to spark student interest in computer science and its application in a wide range of fields. CS4HS is a collaboration with Carnegie Mellon, the UW, and UCLA.

The centerpiece of the UW program is a three-day summer workshop drawing 50 to 70 math and science teachers from across the Pacific Northwest. CSE faculty introduce basic computer science concepts, including programming, computational problem solving, and cryptography. Teachers learn to program a Mindstorm Lego robot and try hands-on demos for a wide range of cutting-edge technology. The experience also dispels the myth that computer scientists do nothing but write code all day. Kwan has participated in the Computing Careers Panel, at which CS professionals talk about their work. Teachers return to their classrooms with information and tools to get students excited about the diverse opportunities in the field. The third annual workshop is scheduled for this August.

"Along with Google, Agnes has provided funding for the CS4HS program," said Lazowska, "but equally important, she contributes enormously by participating and talking with the teachers. We'd love to see more alumni involved in outreach efforts and programs for CSE students."

Kwan, who also donated to the Allen Center campaign, likes to get involved in the causes she supports. Her own path into CS was circuitous. A native of Hong Kong, she studied nutrition at Cal State Los Angeles and only by happenstance found herself working in technology companies, intrigued by complex electronic networks and the computer science that ran them. "Now my passion is to help students get excited about the field long before they get to college," she said.

CSE welcomes alumni involvement in student-focused programs. For information, contact Crystal Eney, [ceney@cs.washington.edu](mailto:ceney@cs.washington.edu), or 206-685-7571.

## Vaswani is UW Junior Medalist



The University of Washington Freshman, Sophomore, and Junior Medals are presented each year to the top students in their respective classes — numbering between 5,500 and 7,000 students. This year's UW Junior Medalist, CSE's Pavan Vaswani, was also the Sophomore Medalist last year. Pavan is majoring in computer science, neurobiology, and

biochemistry. He is a Goldwater Scholar, a Mary Gates Scholar, and a Washington Scholar. He also has received the Research Fellowship for Advanced Undergraduates and is a Space Grant Scholar. He is currently working in a lab in the Department of Neurological Surgery, where he is developing a device to measure brain pressure non-invasively using ultrasound.

After completing his undergraduate degree, Vaswani plans to pursue an M.D. and a Ph.D. at The Johns Hopkins University. He was a finalist for the Rhodes and Marshall scholarships and is ultimately planning a career in medical research.

## Wei receives 2009 Engineering Dean's Medal



Kathy Wei, a dual major in CSE and Bioengineering, was selected as the 2009 College of Engineering Dean's Medalist from a highly competitive pool of applicants. The Dean's Medal is awarded to a graduating student in recognition of outstanding academic achievement, research activities, and campus and extra-curricular involvement.

Kathy has worked in Bioengineering with both Dr. Shohram Vaezy and Dr. Suzie Pun. In the fall, Kathy will pursue a Ph.D. in Bioengineering at Stanford University, where she will be working on RNA logic gates.

### We want to hear from you!

Do you have news you'd like to share with the CSE community?  
Comments or suggestions for future issues of MSB?

Let us know! Email the editors at: [msb@cs.washington.edu](mailto:msb@cs.washington.edu)  
and be sure to visit us online at: [www.cs.washington.edu](http://www.cs.washington.edu)

## Annual CSE Scholarship and Fellowship Luncheon



Rico Malvar (Microsoft Research) enjoys the conversation.

Students, faculty, alumni, and friends gathered in the Microsoft Atrium of the Paul G. Allen Center to celebrate students' achievements and the benefactors whose support helps make their CSE education possible. Over 90 individuals attended the April 21<sup>st</sup> annual CSE Scholarship and Fellowship Luncheon. Conversations around the tables allowed students and their supporters to become better acquainted, learn about exciting research, teaching, and careers, and acknowledge with personal thanks the giving that creates CSE scholarships and fellowships.



As the first in her family to have the opportunity for a college education, Leilani Battle shares the importance of her scholarship.

Hank Levy and Ed Lazowska enthusiastically greeted guests and welcomed student speakers Kristi Morton and Leilani Battle. Kristi shared her perspective as a graduate student and drummer in the CSE band! Her work is currently focused on databases and programming languages, and she will pursue a career in research unless she gets a recording contract (a prospect that honesty compels us to assess as unlikely). Leilani, a computer engineering senior, shared the passion she developed for math and science in high school in Bremerton. Her drive for success has helped her succeed in CSE and also find time to be a resident advisor in McCarty Hall. Kristi and Leilani did an excellent job of representing the many scholarship and fellowship recipients.



Kristi Morton, first year Ph.D. student, tells how her fellowship support allows her to focus on the research area of her choice.

The Scholarship and Fellowship Luncheon gives CSE faculty and students an opportunity each year to thank the alumni and friends whose gifts have created over 45 scholarships and fellowships that support hundreds of CSE students.

## CSE annual ski day 2009



Taking advantage of the late snow, the fourth annual CSE ski day was held on April 3<sup>rd</sup> at Stevens Pass. The group — approximately 30 grad students, faculty, and staff — enjoyed the spring-like conditions. Photos from the day may be viewed at:

<http://norfolk.cs.washington.edu/gallery/skiday2009>.

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## most significant bits

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