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# most significant bits

newsletter of uw computer science & engineering

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## Gaetano Borriello 1958 - 2015

Gaetano Borriello, our dear friend, colleague and teacher, passed away at home early on the morning of February 1, 2015, following a long and courageous fight with cancer. He was 56 years old.

Gaetano, who held the Jerre D. Noe Chair of Computer Science & Engineering, was dedicated to UW CSE and our students. He joined us in 1988, and we had the distinction of being the only department he applied to — an indication of just how much he wanted to be here. Throughout his career, Gaetano was an enthusiastic champion of CSE's student-centric approach and a vocal proponent of the power of computing to change people's lives. He exemplified why we are here: to provide an extraordinary educational experience for our students, in which they discover, pursue, and achieve their potential; to conduct leading-edge research, but in the context of education rather than purely for its own sake; and, ultimately, to make the world a better place through the impact of our teaching, mentoring and research.

Gaetano's career began in the areas of integrated circuits for networking, automatic synthesis of digital circuits, reconfigurable hardware, and embedded systems development tools. Before arriving at UW, he was a

*Continued on page 10*

## From where I sit...



The last year has been one of both sorrow and excitement. Only three months ago we suffered a huge loss when Gaetano Borriello passed away following a 6-year battle with cancer. Gaetano was a remarkable researcher, advisor, mentor, and department leader, whose work on the Open Data Kit continues to have global impact: ODK has been deployed to monitor elections in Afghanistan, track deforestation of the Amazon, measure crop yields in Haiti, and improve health care in the developing world — to name only a few ways in which Gaetano's work will leave a lasting legacy.

Gaetano was completely committed to CSE from the start; in fact, after graduating from UC Berkeley in 1988, he applied to only one academic department as an indication of how strongly he wanted to be here. We remember Gaetano and his legacy in this issue. Because he committed himself to supporting students and encouraging student-driven research, it is fitting that we also highlight our stellar student researchers, including eight (!) winners of NSF Graduate Fellowships this year. We continue to honor Gaetano's memory with these achievements.

I am also pleased to note that CSE recently accepted the inaugural NEXT Award for Excellence in Promoting Women in Undergraduate Computing from the National Center for Women & Information Technology (NCWIT). This is a tremendous honor that recognizes the great strides we have made in recruiting and retaining a more diverse student body. It also inspires us to do even better in the future.

We continue to add expertise in strategic areas of the field. In January, we welcomed Thomas Rothvoss to a joint faculty position with UW Mathematics, and Shayan Oveis Gharan arrived following a Stanford Ph.D. and Berkeley postdoc. Thomas and Shayan are outstanding young researchers in theoretical computer science. In addition, Noah Smith, currently Associate Professor at Carnegie Mellon and a world-class researcher in natural language processing, will start in CSE this summer.

We recently announced two remarkable senior hires from this year's recruiting season: Ras Bodik, currently Professor at UC Berkeley, is an expert in programming languages and computer architecture, and Sham Kakade, currently at Microsoft Research in Cambridge, Massachusetts, is an expert in theoretical and applied machine learning. Ras and Sham will both start in the fall, adding to our existing strengths in programming languages and big data. We hope to have more announcements over the next month.

Looking to the future, the UW Regents hired LMN Architects — who designed the Allen Center — as the architects for a second building that will significantly expand our space and our capabilities in both education and research. It's incredibly exciting to be working with LMN again, and we look forward to sharing more details of the project as they develop.

To all of our graduating students, we're very proud of you and have enjoyed having you as part of our program. Have a great summer and keep in touch!

Henry M. Levy  
Chairman and Wissner-Slivka Chair

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## UW CSE's efforts to engage women in computer science recognized with NCWIT grand prize

The National Center for Women & Information Technology (NCWIT) recognized UW CSE with its inaugural Excellence in Promoting Women in Undergraduate Computing Award — the grand prize of the NCWIT Extension Services Transformation (NEXT) Awards. The organization selected CSE for the honor based on our strong commitment and demonstrated success in engaging more women in computer science education and careers. NCWIT cited in particular CSE's strategic efforts aimed at engaging students in computer science as early as elementary school and helping middle school and high school teachers to integrate computer science into their classrooms.

"These programs serve all students interested in computing but are implemented and designed with girls and other underrepresented students in mind," NCWIT noted. Highlighting our effectiveness at retaining both male and female students in the major, NCWIT commended CSE for having developed "an inclusive, welcoming community that spans beyond the walls of the university and has demonstrably advanced women's meaningful participation in computing."

CSE's director of student services, Crystal Eney, oversees student advising and several K-12 outreach programs. Those programs have played a critical role in achieving that sense of community and inclusiveness.

"We made both an internal commitment and a public commitment to be a leader in addressing the gender imbalance in computer science," said Eney. "Everyone here understands why diversity of thought and perspectives is important, both to CSE's culture and to the computing field. We have seen an explosion of interest in our introductory courses, and the growing number of women who are inspired to pursue computer science as a major after taking an intro course suggests that our commitment is paying off."

That explosion of interest means total enrollment in CSE introductory courses is on track to hit 5,000 students this year — roughly one-third of them women.

The trend in introductory course enrollment bodes well for CSE's effort to increase the gender diversity of its student body. When CSE joined NCWIT's Pacesetters Program in 2009, we set a goal to increase the proportion of women in the undergraduate program from 24 percent to 30 percent. CSE met that goal within just a few years, during a period of expansion in which the number of women in the major nearly doubled in



UW CSE's Ed Lazowska, Crystal Eney, Allison Obourn and Ruth Anderson with the NCWIT NEXT Award trophy.

absolute terms. CSE is now working toward a new, more aggressive goal of 40 percent — a stepping stone toward realizing CSE's ultimate vision of an undergraduate student body in which half of the students are women.

Eney and faculty members Ruth Anderson, Allison Obourn (who coordinates CSE's K-12 outreach program, DawgBytes), and Ed Lazowska (a member of NCWIT's Executive Advisory Council and of the National Academies' Committee on Women in Science, Engineering, and Medicine) attended NCWIT's 2015 Summit on Women and IT in May and accepted the award, which includes a \$100,000 prize sponsored by Google.org, on behalf of all of CSE.

"This award recognizes the hard work and commitment of our student advising team, the DawgBytes team, and the entire CSE faculty — especially our introductory course instructors led by Stuart Reges," said Lazowska. "They have walked the talk when it comes to supporting gender diversity in our program and in our field."

"We still have a long way to go, but we're extremely proud of what we have accomplished so far and are grateful to NCWIT for the recognition and ongoing support of these important efforts to make our student body and our field more inclusive and reflective of the people it serves."

Read more about CSE's efforts, including interviews with several of our undergraduates, in the *New York Times* at <http://tinyurl.com/k5ssfyd> and in the *Seattle Times* at <http://tinyurl.com/kqo3dy7>. Read NCWIT's award commendation for CSE here: <http://tinyurl.com/mh4rphe>.

## UW CSE alum Yaw Anokwa honored with 2015 Diamond Award for Distinguished Service



Yaw Anokwa (Ph.D. '12) is an entrepreneur whose small company is having a massive impact by offering a powerful and transformative service within the global health community. In his mission to help those who provide health care to the underserved in some of the poorest regions on earth, he has traveled to more than 30 countries and worked with prominent clients such as the Bill & Melinda Gates Foundation and local affiliates of the World Health Organization.

Anokwa was one of the researchers who helped build the Open Data Kit (ODK) into a widely used data collection tool and the core technology of his company, Nafundi. For his commitment to applying technical expertise to global problems, Anokwa has been honored by the National Science Foundation, Ford Foundation, and Tides Foundation — and now by his alma mater through UW College of Engineering's Diamond Award for Distinguished Service.

"It's an honor to receive this award," Anokwa says. "I had a great experience at CSE, with the freedom to pursue my research goals with faculty and students who shared the same concerns and commitment, including Carl Hartung, my friend and co-founder."

Born in Ghana, Anokwa moved to the U.S. at the age of 10 when his father, a journalism professor, joined the faculty at Butler University. Anokwa earned simultaneous degrees in computer science at Butler University and electrical engineering at the Indiana University-Purdue University campus, both in Indianapolis. A brief stint with a big tech firm led to

the realization that the corporate sector was not his ideal career realm, so he headed to Seattle and UW CSE's graduate program. Among all the schools he considered, he felt most warmly welcomed here, especially by his future advisor, Professor Gaetano Borriello.

Anokwa's research at CSE explored applications for near-field communication (NFC) enabled phones. After completing his master's degree, he interrupted his studies to travel to rural Rwanda for six months to explore ways in which he could apply his technical expertise to global health problems such as HIV and tuberculosis. As a volunteer with Partners in Health, he followed health care workers and saw how paper-based record keeping trapped data and hindered efficient delivery of care. He also observed that smart phones and the Internet were available even in poor areas that lacked clean water and reliable electric power — giving him an idea for how to address the data clogs.

Returning to CSE to complete his Ph.D., Anokwa and his colleagues advanced the development of ODK, a free and open-source set of cloud-based tools that originated in Google's Seattle Office in 2008 as a sabbatical project directed by Borriello. ODK helps organizations create and manage solutions for mobile data collection that includes GPS locations and images. Simply put, it's a smart replacement for the ubiquitous paper form. Most of the tools are based on smart phones and tablets that use the Android operating system, and users can easily import and export data using common formats and interfaces.

Since their early years in the Ph.D. program, Anokwa and Carl Hartung (Ph.D. '12) had talked about forming their own company to make data collection products available to underserved communities in remote or poor areas around the world. In 2011 they founded Nafundi to fulfill their mission to deliver large-scale data collection and management services to major organizations in the global development sector. The company name is derived from the Swahili word *fundi*, meaning craftsman.

"We see ourselves as fundis," Anokwa says.

"Gaetano joked that Carl and I don't take direction well and don't work well in standard environments, so founding our own company allowed us the freedom to do things our way," Anokwa says. "Gaetano was driven

by the interests of his students, and he absolutely put them first. His passing is a huge loss to me, to the CSE program and the computer science field."

Rather than chasing Silicon Valley investment, the partners bootstrapped the company and set a goal to remain small, nimble, and in charge while taking on big, challenging projects that are a good fit for their expertise. They often hire UW CSE students as contractors, and they aim to maintain a healthy balance between work and quality of life with their families and friends. Hartung is based in the Seattle office while Anokwa is more nomadic, traveling the globe to oversee project launches in Africa, Central America, Southeast Asia and the Middle East.

"The most meaningful experience for me so far is a recent polio eradication project in partnership with the Gates Foundation in challenging environments in the Middle East. In areas where the Taliban routinely murders vaccinators, brave health care workers are using ODK to document vaccination coverage. With ODK, supervisors can see and react to the time-sensitive data in hours instead of weeks."

"It's rewarding to know they can efficiently identify areas needing vaccination coverage, and we can now show with accurate real-time data that we are close to eradicating polio," he says.

To his delight, Anokwa also discovered that a local unit of the World Health Organization in Jordan had built and deployed its own data system based on ODK — just as its developers had envisioned. For the immediate future, Anokwa hopes Nafundi can help find a way to support Borriello's goal for continuing research and development on ODK at CSE and in the community.

To learn more, visit: <http://nafundi.com>.



2015 Diamond Award honorees Alan Miller (Ph.D. '77 Materials Science & Engineering), Milt Zeuschel (B.S. '60 Electrical Engineering), Christophe Bisciglia (B.S. '03 CSE) and Yaw Anokwa (Ph.D. '12 CSE)

## UW CSE's James Lee wins Best Paper Award at ACM Symposium on Theory of Computing 2015

UW CSE professor James Lee captured the Best Paper Award at the 2015 ACM Symposium on Theory of Computing (STOC) with co-authors Prasad Raghavendra — a UW CSE Ph.D. alum now at UC Berkeley — and David Steurer of Cornell. The winning paper, "Lower Bounds on the Size of Semidefinite



Programming Relaxations," is the result of breakthrough research showing that one of the most powerful techniques currently available for designing polynomial-time algorithms does not work for fundamental NP-complete problems, including the Traveling Salesman Problem, the Maximum Independent Set Problem, and a number of other combinatorial problems.

Lee and his colleagues studied the efficacy of convex programming relaxations, specifically those expressed as semidefinite programs (SDPs). SDPs can be seen as combining the rich expressiveness of linear programs with the global geometric power of spectral methods. For many problems, SDP-based algorithms are widely viewed as the strongest tool in the algorithm designer's arsenal. The team's result is a rare example where computer scientists can show formally that a powerful computational model cannot efficiently solve NP-complete problems.

The paper draws on techniques and intuitions from many areas, including proof complexity, machine learning and quantum information theory. It is the latest example of Lee's research exploring the rich interplay between computation and geometry, probability and physics.

To learn more, visit: [homes.cs.washington.edu/~jrl/](http://homes.cs.washington.edu/~jrl/).

## Entrepreneurial alumni turn good food quest into startup success with Sansaire

Take two UW doctoral students, one in computer science & engineering and one in theoretical physics. Mix with desire to own a high-tech, unaffordable cooking tool. Build one and enter a high-pressure UW Business Plan competition. Rise close to the top. Turn up the heat by launching a bare bones startup. Weigh risks with a pinch of salt; plunge into the Kickstarter blender. Blow the lid off by raising \$823,000. Take the product to market. Win raves in the foodie universe and 4.5 stars in Amazon and Sur La Table reviews.

This is the recipe followed by Sansaire, a startup company that produces a sleek, sous vide (under vacuum) tool that holds a water bath at a precise temperature for a precise length of time. The sous vide method cooks food perfectly without exposing it to air — providing the inspiration for the company's name.

Widad Machmouchi (Ph.D. '13) and Lukas Svec (Ph.D. candidate, Physics), have launched one of the most unexpected startups to emerge from CSE. (Svec's advisors for his research on quantum computing included former CSE faculty members David Bacon, now at Google, and Aram Harrow, now at MIT.) Neither Machmouchi nor Svec had a business career in mind when they entered their UW programs.

Machmouchi, who was born and raised in Lebanon, earned her B.S. at the American University in Beirut. She envisioned becoming a professor and doing research in machine learning and software engineering.

Svec hails from the tiny hamlet of Chesaw, Washington (population 20), an old mining town in the Okanogan Valley. In the midst of his doctoral program, he realized the prospects for a quantum computer were still in a far off future. "Waiting 20 years is a long time to have an impact or to know whether your work is on the right track," he says.

Their interest in food and the science of cooking sparked in 2009 during a CSE Distinguished Lecture on molecular gastronomy by Nathan Myhrvold, CEO of Intellectual Ventures, astrophysicist by training, and dynamo advocate for cooking foods properly. "Someone talking about their passion was a curiosity, and I realized you can only spend so much time on theoretical work," Svec says, "so I started to do cooking projects on the side."

Deep into the science of food prep techniques, he coveted a sous vide cooker, which at the time cost around \$2,000 and was mostly found in high-end



Co-founders Widad Machmouchi and Lukas Svec with a Sansaire at the company's Georgetown headquarters.

restaurant kitchens. He stumbled across a blog with instructions for a build-it-yourself design, and *voila!* Svec and Machmouchi recognized the potential for developing an out of the box device priced for the home market. While working on a plan for the 2011 UW Business Plan competition, they teamed up with Scott Heimendinger, the DIY sous vide designer, information systems techie, former Microsoft employee, and food blogger (SeattleFoodGeek.com). They placed 17<sup>th</sup> among 1,000 teams in the competition, and the encouragement plus passion crystallized into a company.

Heimendinger stepped into an advisory role for Sansaire in 2012 when he became director of research at Myhrvold's Modernist Cuisine. Machmouchi and Svec spent about 18 months juggling graduate work with designing a prototype for the home market, sourcing components, and outsourcing production to a factory in Shenzhen, China.

"The first year just the two of us were doing everything, and we had lots of ups and downs," Machmouchi says. "We were funding it ourselves, and it took a while to become a legitimate company," Svec adds.

The big turning point came with a Kickstarter campaign that hit its goal of \$100,000 in just 13 hours and 4 minutes — at 6:04 pm on August 7, 2013 — as the three founders watched progress on a laptop at the Chocolati Café in Wallingford. A rapid succession of three new "stretch" goals raised more than \$823,000 in 30 days from 4,084 foodies around the world. A glowing product test review on SeriousEats.com, with a link to their Kickstarter site, plus other online reviews, galvanized

the campaign and revealed sous vide seekers hungry for their affordable product. Production ramped up in China, and they were on the market by January 2014.

Some high-end restaurants use the Sansaire and have posted comments on Instagram and Twitter. Plugs in publications as diverse as *Food and Wine* ("one of the brilliant Kickstarter success stories") and *Popular Science* ("handsome and highly usable") have also raised visibility.

Svec, now CEO for a staff of eight working from an office in Seattle's hip Georgetown neighborhood, disavows any food snob focus and says the company wants to stay small and humble. "Sales were good in 2014," he says. "Our main goal is to grow the market for home cooks, so in time the sous vide will be as common as a microwave or toaster."

Machmouchi, who serves on Sansaire's board in addition to her job as an applied researcher and data scientist in Microsoft's Bing unit, emphasizes the importance of educating people who have heard about their product and of winning their trust. She is especially happy about

her own results with chicken. "I always used to overcook it. Now it turns out great."

Cheers to these entrepreneurs and their success. More information about Sansaire may be viewed at:

<http://sansaire.com>.



Sketch in design notebook of Sansaire prototype

## UW CSE's Richard Ladner receives Richard A. Tapia Achievement Award

On February 20, 2015, UW CSE professor Richard Ladner received the Richard A. Tapia Achievement Award for Scientific Scholarship, Civic Science and Diversifying Computing from the Center for Minorities & People with Disabilities in Information Technology. He was honored "for his incredible commitment and contributions to the disability community in computing."



Richard Ladner holding the Tapia award with (left to right) Dr. Valerie Taylor (CMD-IT Executive Director), Dr. Richard Tapia and Dr. Charles Isbell (Tapia 2015 General Chair)

After devoting many years of research in theoretical computer science, Ladner turned his attention to accessibility technology research for people who are deaf, blind, deaf-blind and hard-of-hearing. A fellow of the ACM and IEEE, he has been recognized with numerous awards for his service, research and teaching, including the SIGCHI Social Impact Award, the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM), the Computing Research Association's A. Nico Habermann Award, the Purpose Prize, and the University of Washington's Outstanding Public Service Award and Undergraduate Research Mentor Award.

Ladner is a member of the Board of Trustees of Gallaudet University and a founder and secretary/treasurer of the CMD-IT Board of Directors. He serves on the editorial boards for *ACM Transactions on Accessible Computing* and *Communications of the ACM*.

Learn more about Ladner and his research at:

[www.cs.washington.edu/people/faculty/ladner](http://www.cs.washington.edu/people/faculty/ladner).

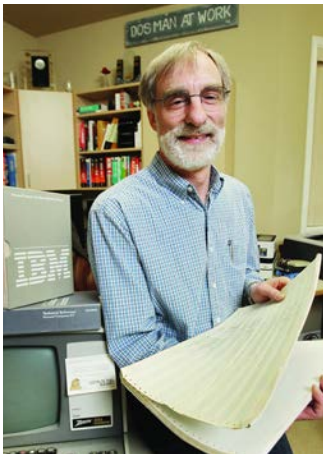
## UW CSE 2015 Alumni Achievement Awards

CSE honored two extraordinarily accomplished alumni — Tim Paterson and Kevin Jeffay — during its June 12<sup>th</sup> graduation ceremony. UW CSE's Alumni Achievement Awards have two purposes: to celebrate alums such as Tim and Kevin, and to affirm to new graduates that they are joining a community of UW CSE alums who have changed the world.

### Tim Paterson (B.S. '78)

*DOS Seals His Contribution to PC History*

Tim Paterson's email address neatly unites his past and present — dosman@patersonstech.com. It encapsulates his early claim to computer science fame and his current engineer's proclivity to tinker and design tools for his own everyday needs. If other people consider them useful and want to buy them, that adds to his gratification and mission to be of service.



Paterson was among the first UW computer science undergraduate alumni. His combination of programming and design talent, drive to fix problems, and luck to work for key organizations at the right time sealed his contribution to the explosive development of personal computers.

At the age of 24, as the only engineer at Seattle

Computer Products, he took on a rush project to create an operating system for the company's new 16-bit computer system that he designed. He gave it the internal name of QDOS, for "quick and dirty operating system." In fall 1980 it went on the market under the name 86-DOS, aimed at computer manufacturers and companies like Microsoft.

Microsoft soon came knocking on Seattle Computer's door to license 86-DOS, then purchased the rights for a total outlay of \$75,000. Paterson remained at his job, working on the underpinnings of the program. Ready for a bigger company, he joined Microsoft in May 1981 as employee #80. Only then did he learn the big secret — IBM was Microsoft's customer for 86-DOS. The PC was announced that August, and Paterson completed the DOS 1.0 and 1.1 upgrades. That helped seal the company's future as a software behemoth, and it

ensconced Paterson as the original author of the world's most widely used program for the next two decades.

Paterson's UW and engineering roots go deep. His father was a '35 UW EE graduate who kept all kinds of parts and gadgets around the house, which led to frequent father-son tinkering projects. They ordered Heath Kits, and Paterson built a radio receiver and an oscilloscope he still keeps in his basement "museum," along with other stray parts from early creations.

Paterson's talents won him admission to the College of Engineering, and then to the CS department once undergraduate students were admitted to the newly created program. In this era, only grad students had access to the Sieg Hall computer room and a Sigma with a 5-MB hard drive. "I got a peek of it on a tour but never saw it again. Undergrads had to hike over to the computer center near Mercer Hall," he says. "In junior year a buddy and I bought a dial-in modem and IMSAI-8080 so we could program in our dorm."

It's no surprise Paterson graduated *magna cum laude* with the right mix of skills, smarts and creativity to design the operating system behind the PC revolution. Paterson left Microsoft just short of a year after his hire, returned briefly in 1988, and again in 1990 for an eight-year run working on Visual Basic. When he left, the value of his stock options enabled him to retire in good humor and high energy at age 42. "Doing okay," he calls it.

With a sound grasp of the joys of life beyond work and no captain of industry desires, he established Paterson Technology as a hobby outlet for building "gizmos" — both for creative satisfaction and practical use around his own home. He posts photos of his inventions on his website and offers them for sale to others looking for outside-the-box items for their otherwise unmet tech needs.

In retirement Paterson poured abundant passion into fun and geeky hobbies. For about 20 years he reveled in pro rally racing on twisty logging roads. After winning several regional competitions in the late 1990s, he competed on the national circuit for a few years, placing third Open Class in the 2001 national championship. "Just luck," he says. Paterson also admits to "rolling cars more times than I can count," at least once when his wife was his co-driver. From about 2000 to 2005 he turned his attention to combat robots, even competing in several BattleBot tournaments, a TV reality series broadcast on the Comedy Central cable channel.

## Kevin Jeffay (Ph.D. '89)

*A Real-Time Researcher, Leader and Lauded Teacher*



Kevin Jeffay jokes that the digital clock has barely begun the countdown on his tenure as chair of computer science at the University of North Carolina, Chapel Hill. He has four years and five months to tick away, but as the new chair is focusing month by month on the challenges and opportunities. "It's an important service, someone has to do it, and after 26 years on the UNC faculty I'm deeply bonded to this university," he says.

UNC is proud of being the second university in the nation to establish a CS department and celebrated its 50<sup>th</sup> anniversary in May. "It's an exciting time in computer science, and our department has experienced phenomenal growth with classes bursting at the seams," Jeffay says. "But like many public institutions we are dealing with state budgets that do not keep pace with the growth we're experiencing, and hence we are treading water fast to keep our heads above the rising enrollment tide."

When he returns to the UW in June to accept the Alumni Achievement Award, he can look forward to chair shoptalk with Hank Levy and Ed Lazowska (famed for his countdown clock).

"This award is really truly an honor," Jeffay says. "Nothing in my life has felt more flattering. I owe everything to this department and never miss a chance to get back and connect with old friends."

Jeffay landed at UW via a jolting academic rupture and an opportune connection. After earning a mathematics degree at the University of Illinois, he headed to the University of Toronto for graduate work in computer science. "On my first day of classes I was surprised to see students wearing ties and sports coats with school

crests, and here I was, a loud-mouthed kid from the Illinois corn fields," Jeffay laughs.

By the end of his master's program, he was *persona non grata* with an influential faculty member, "going down in flames and being shown the door." Fortunately, another faculty member liked him, saw his talent, and suggested he apply to the UW doctoral program. A decade or so previously, that faculty member had advised both Ed Lazowska and John Zahorjan during their grad studies at Toronto. "When Ed heard why I was out the door, he immediately understood and said 'I'll take him,'" Jeffay says. "UW CSE was a far younger department and a great fit for me. Toronto did me the favor of my life."

At Toronto he did his master's research in real-time systems. The Washington Technology Center wanted to fund work in the area, and Professor Alan Shaw was interested, too. That became the focus of his doctoral research, with Shaw as his advisor. Along the way Jeffay also worked with David Notkin, who joined the faculty in 1984. Hank Levy became a good friend and skiing buddy, who Jeffay stopped from sliding over a cliff during one skiing adventure.

Jeffay's next transition, to a faculty position at UNC Chapel Hill, was another cross-continent leap of faith. There computer science was housed in the College of Arts and Sciences, while the engineering programs were located at NC State in Raleigh. "My first class at UNC had only three students," says Jeffay. "When one dropped, I had to beg the others to stay so I could keep my job."

He helped build the real-time systems program at UNC and, to attract students, established a multimedia group working on the then radical idea of processing audio-video in real time on a computer. Current high-profile research in the CS department includes a partnership with the physics department in developing the nanoManipulator, a virtual reality interface for scanned-probe microscopes. It can visualize an individual atom or clumps, and measures the mechanical forces required to bend a carbon nanotube. Another current project focuses on a free-space optical airborne communications network that would provide Internet service to homes across the U.S. through equipment installed on commercial aircraft.

Jeffay has held the Gillian T. Cell Distinguished Professorship in Computer Science since 2008 and is heavily engaged in service activities and leadership roles with professional organizations in his specialty fields. Students remain a high focus, too. Since 1994 he has coached the ACM International Undergraduate Programming Contest, taking teams to the World Finals in 2001 and 2006. Jeffay has won three outstanding computer science teaching awards and two favorite faculty awards, a big leap from his two-student start.



In addition to his own return to CSE in June, Jeffay also is responsible for the recent return of a famous photo, lost for 25 years, that had graced the grad student board in Sieg Hall. "CSE graduate student Monkey W. Duncan, ABD '89" now lives digitally on the CSE news blog:

[tinyurl.com/CSElostphoto](http://tinyurl.com/CSElostphoto).

*Continued from page 1*

## **Gaetano Borriello** (continued)

member of the research staff at the Xerox Palo Alto Research Center from 1980 to 1987. From 2001 to 2003, he was on leave from UW to found the Intel Research Laboratory in Seattle, which quickly became one of the centers for ubiquitous computing research.

In 2001, as director of Intel Research Seattle, Gaetano set in motion projects to enable sensor-rich homes and wearable devices that would make it possible for elders to stay in their own homes instead of losing their independence. He also made influential contributions in location-aware computing (the PlaceLab project) using Wi-Fi to enhance indoor location sensing that is now the dominant approach in use by Apple, Google, Microsoft, and many others.

From 2008 to 2009, he was on sabbatical at Google Seattle, where he began to focus his efforts on applying mobile technologies to the problems of public health and development in low-resource settings. He led the Open Data Kit (ODK) project, developing a suite of open source tools to support mobile data collection solutions. The tools were designed to be "easy to try, easy to use, easy to modify, and easy to scale." ODK tools are now used on six continents to support programs ranging from public health, to documentation of human rights violations, to environmental monitoring. In his closing keynote address at the 2014 Ubicomp conference, Gaetano shared the compelling story of ODK and its

impact. (A video of his presentation can be viewed at <https://vimeo.com/108272339>.)

Gaetano was a Fellow of the ACM and IEEE and a recipient of the UW CSE Undergraduate Teaching Award, the UW Distinguished Teaching Award and the UW Marsha L. Landolt Distinguished Graduate Mentor Award. He earned his Ph.D. in computer science from the University of California, Berkeley (1988), an M.S. in electrical engineering from Stanford University (1981) and a B.S. from the Polytechnic Institute of New York (1979).

Over the last six years, Gaetano fought the disease that would take him from us too soon with courage, grace, optimism, and humor, continuing to teach, advise, mentor, and lead throughout. Tributes to Gaetano and his work have poured in from around the globe, including The International Red Cross, wildlife conservationist Jane Goodall, the global health organization PATH, and the IEEE.

To honor Gaetano's memory, the department established the Gaetano Borriello Endowed Fellowship for Change. The Borriello Fellowship will support students whose work is focused on exploring how technology can improve the lives of under-served populations, building upon Gaetano's extraordinary contributions. We can think of no better way to keep Gaetano's legacy alive.



Faculty pie-ing "volunteer" at CSE's 2012 spring barbecue



Gaetano proudly wearing his UW Distinguished Teaching and Distinguished Graduate Mentor medals at CSE's 2014 graduation celebration



Gaetano speaking at CSE's Notkinfest in February 2013



Gaetano pictured with (left to right) Katherine Schlick Noe, Russ Noe and Margarete Noe, June 2006



Gaetano with members of the ODK team at ICTD 2009 in Qatar



VLSI group picnic, summer 1995



A shaded bench in Sylvan Grove, with a view of the Allen Center he loved so much, was dedicated on May 13, 2015 in remembrance of Gaetano



Gaetano ready to play his part in the faculty skit at CSE's holiday party, December 2011

## UW CSE's Christophe Bisciglia receives 2015 Diamond Early Career Award



"Big data" affects us all. How do we begin to harness it to solve problems large and small? How do we design applications for big data that are accessible to everyone? Christophe Bisciglia (B.S. '03) is seeking the answers to these questions. For his efforts, he recently returned to campus to collect the Diamond Early Career Award, one of UW College of Engineering's highest honors.

In a fast-paced first leg of his career, Bisciglia emerged as a visionary who transformed how businesses use big data by co-founding two startup companies, Cloudera in 2008 and WibiData in 2010. Cloudera, based in Palo Alto, has since grown into a leading provider of open-source, Apache Hadoop-based software and services run on banks of networked computers, with an impressive array of large corporate clients, 600 employees, and a corporate value of about \$4 billion.

Bisciglia left Cloudera in 2010 to launch San Francisco-based WibiData and get back to his application roots. He is now executive chairman of the company, which uses a variety of open-source big data tools to help clients — many of them Fortune 150 companies in retail and media — develop real-time, personalized applications across the web, mobile, and other channels.

His early successes and accolades have not gone to his head. "I feel humbled to be included among the award's previous honorees," Bisciglia says. "I look up to them and to so many other people who helped me create these tools and companies. It's an honor to be able to tell their stories."

He singled out 2006 Early Career honoree Jeff Dean (Ph.D. '96), Senior Fellow and long-time Google employee who co-designed Google's MapReduce technology and other systems for large-scale data storage and management. "Jeff is such a leader and innovator and a tremendous influence on my work," Bisciglia says. "Hadoop, the open-source version of MapReduce, allowed me to shepherd his work into systems for wide public use."

Even before launching his entrepreneurial ventures, Bisciglia brought his passion for the new concept of cloud computing back to the students at UW CSE. In 2007, as a software engineer at Google, he used his 20 percent independent project time to launch Google 101, a series of classes that used Hadoop to introduce students to programming at the scale of the cloud. Bisciglia worked with Professor Ed Lazowska and a team of students to plan and implement the course, which was a huge success.

Google 101 went national after Google and IBM teamed up to build an academic data center administered by the National Science Foundation. The course drew a flood of students to Google, and Bisciglia made the cover of *Business Week* as the company's "cloud guy." His work there and with Cloudera also won him recognition in a 2010 issue of *Fortune* as "Smartest Engineer" in the magazine's list of "The 50 Smartest People in Technology."

Bisciglia's work with students and efforts to encourage the professional development of young employees is his greatest source of satisfaction. "We invest a lot of time in training the brightest and most talented and in building a company where they learn, grow, and develop into leaders," Bisciglia says. "Many have become CTO's at other companies or have launched their own startups. I'm tickled to see where they go and to keep in touch."

"The goal all along has been to bring great people together to develop world-class data management systems that benefit companies and people everywhere."

Bisciglia — and fellow 2015 honoree Yaw Anokwa (page 4) — are the 12<sup>th</sup> and 13<sup>th</sup> CSE alums to receive a Diamond Award since the award's inception in 2006. Previous Diamond Award winners may be viewed at:

[www.cs.washington.edu/alumni/UW\\_recognition/](http://www.cs.washington.edu/alumni/UW_recognition/)

## Faculty recognition

### CSE's James Fogarty, Julie Kientz, Sean Munson, Shwetak Patel receive UW Innovation Award

The UW Innovation Research Award supports unusually creative early and mid-career faculty in engineering, health, and natural and social sciences. This February the Provost announced an award to a team of six investigators: Shwetak Patel and James Fogarty (CSE); Julie Kientz and Sean Munson (HCDE and CSE adjunct faculty); Jasmine Zia (UW Medicine's Division of Gastroenterology); and Roger Vilardaga (Psychiatry and Behavioral Sciences). They are building tools used on a mobile device that allow patients to easily enter data about habits and behaviors related to a particular health problem. These data will help extend the reach of health care beyond the clinic, making it easier for physicians to make diagnoses and treatment plans.



### CSE's James Fogarty recognized with CMU's Allen Newell Award for Research Excellence



CSE professor James Fogarty received the prestigious Allen Newell Award for Research Excellence from his Ph.D. alma mater, Carnegie Mellon University. He shares the award with his Ph.D. adviser, Scott Hudson; fellow CMU

alumni Daniel Avrahami, Chris Harrison and Johnny Lee; and current CMU student Robert Xiao. The group was honored for its impressive body of research into "innovative and practical physical interaction techniques" that produced more than 25 papers on subjects ranging from novel uses of sensors, to wearable displays, to 3-D printing. Read CMU's press release on the award at:

[hcii.cmu.edu/news/2015/scs-rewards-hcii-team-research-excellence](http://hcii.cmu.edu/news/2015/scs-rewards-hcii-team-research-excellence).

### CSE's Emily Fox, Shyam Gollakota, Thomas Rothvoss win Sloan Research Fellowships



Alfred P. Sloan Research Fellowships are among the nation's most prestigious awards for young scientists. CSE's Shyam Gollakota and Thomas Rothvoss and Emily Fox, Amazon Professor of Machine Learning in UW Statistics and adjunct professor in CSE, were named recipients of 2015 Sloan Research Fellowships. Gollakota is an expert in wireless technology. Rothvoss, jointly appointed with UW Mathematics, is a leader in approximation algorithms, linear and integer programming, combinatorics, network design, and scheduling. Fox is an emerging star in machine learning.

View the list of UW CSE's Sloan Research Fellowship recipients — an impressive 24 faculty members (plus 3 adjunct faculty members) that speaks to the extraordinary caliber of our faculty members — at:

[www.cs.washington.edu/people/faculty/awards#sloan-winners](http://www.cs.washington.edu/people/faculty/awards#sloan-winners).

### CSE's Shyam Gollakota receives NSF CAREER Award

CSE professor Shyam Gollakota received an NSF CAREER Award. He is the 28<sup>th</sup> current UW CSE faculty member to have been recognized through this program and its predecessors.



Gollakota leads UW CSE's Networks and Mobile Systems Lab, where he focuses on computer networks, human-computer interaction and mobile health. Recent projects include battery-free computing and communication, wireless gesture recognition, Wi-Fi imaging, and contactless diagnosis of sleep apnea using a smartphone. It has been an incredible few years for him: in addition to receiving an NSF CAREER Award, Gollakota has been recognized with an Alfred Sloan Research Fellowship, named one of *Forbes* "30 under 30" and *MIT Technology Review's* "Innovators Under 35," identified as a Next Generation Tech Influencer, and received the 2012 ACM Doctoral Dissertation Award.

Learn more about his research at:

[homes.cs.washington.edu/~gshyam/](http://homes.cs.washington.edu/~gshyam/).

## Alumni and friends share wisdom and war stories in CSE's Leadership Seminar Series

The Leadership Seminar Series brings alumni and friends to campus to share their knowledge about work and life after CSE with current undergraduates. The series offers CSE a way to keep in touch with members of our extended family and provides students with insights they can use as they plan the next step in their education or career. Each individual brings a unique perspective based on his or her career path, be it in industry, in academia, in government — or even in the public square.

### Brandon Ballinger: Tales from the trenches of Healthcare.gov



Brandon Ballinger (B.S. '06) is a former Google engineer and co-founder of fraud detection software company Sift Science alongside fellow UW CSE alum Jason Tan (B.S. '06). But he did not kick off his seminar by telling students about his experience of building an early version of the Android platform, or the

challenges he encountered while starting his own company.

Instead, Ballinger began with his recent experience as part of a small team of developers recruited by the federal government to help fix its beleaguered and much-maligned online health insurance marketplace, Healthcare.gov. One of the first lessons that emerged from the story is that technical expertise is not always enough.

"We thought we would come in, be ninjas, and everything would be fixed," he recalled.

Not so fast. Instead of a hard technical problem, what he found upon arriving in the other Washington was actually a people problem: more than 50 different contractors were responsible for different parts of Healthcare.gov, and they weren't effectively collaborating — or in some cases, even communicating — with each other.

Enter Ballinger and his colleagues, who brought not only technical expertise but also the experience of working in high-performing, solutions-oriented teams

in the private sector to help put the project back on track. One of the first things they did was to set up a "war room" to encourage people to work together. By teaching the people behind Healthcare.gov to triage, prioritize expertise over rank, and emphasize solutions to problems over the assignment of blame, the team helped turn Healthcare.gov into a more functional, reliable and user-friendly website.

After sharing what he learned from working in government, Ballinger touched upon his experience working in industry and how his education at UW CSE helped him along the way. As one of the developers working on Google's Android platform when it was still in its infancy, he found himself tapping into the full range of what he had learned as an undergraduate.

"The latest framework will change," he said, "but CS fundamentals will last your whole career."

Students asked Ballinger what areas of computer science and engineering he wished he had known more about before embarking upon his career. Perhaps not surprisingly, given his recent experience with Healthcare.gov, he answered by expressing admiration for some unsung heroes of the tech industry: site reliability engineers.

### Ben Hindman: The end of the "fail whale"

Ben Hindman (B.S. '07) exemplifies what can happen — in a good way — when one's path does not proceed according to plan after graduation.

While studying parallel computing and distributed systems as a Ph.D. student at the University of California, Berkeley, Hindman co-created a new way to run applications in data centers, now called Apache Mesos, as a course project. After the growing social networking site Twitter began using Mesos in 2010, he went on leave from graduate school to work for the company — starting down a new path that would eventually lead to startup success.



Hindman recalled how, in its early days, Twitter would display a graphic of a whale — dubbed the "fail whale" — whenever the site was over capacity. The appearance of the fail whale was dreaded by Twitter users and employees alike. Once it began using Mesos, the company was able to better manage its data center resources to prevent outages in cases of both planned maintenance and unplanned failures.

Mesos helped render the fail whale obsolete by the summer of 2013, and the kernel of a startup idea was formed. Hindman left Twitter to help build a new company called Mesosphere — and its data center operating system of the same name — in 2014. Mesosphere, which is backed by venture capital, recently hired its 50<sup>th</sup> employee.

Many of the lessons Hindman shared with students stemmed from his experience leading a growing startup. While a company's hiring strategy has to evolve from the first 10 employees to the next 10, he noted, "Culture is critical. Always keep a high bar."

He also had some candid advice on fundraising, suggesting to students that they choose their partners and investors wisely.

"You're basically entering into a marriage," he told them. "Money is the easy part."

Getting that money, however, requires a compelling story. Hindman emphasized that a company's story — where it came from, where it is today and where it's going — is the single most important aspect of an entrepreneur's pitch.

A project has to have value, he said, "but you have to be able to explain that value."

### **Mohamed El-Zohairy: From Tahrir Square, with love**

UW CSE alumni are often considered revolutionary in technology terms, but Mohamed El-Zohairy (B.S. '07) took it to a new level when he joined a different kind of revolution in his home nation.

The first piece of advice that El-Zohairy offered to students in his Leadership Seminar was, "live outside of your comfort zone." He has certainly walked the talk in his journey from young student in Egypt to UW CSE graduate, startup founder, and director of product engineering at New York-based News Corp — pausing to

participate in a political revolution in his home country along the way.



El-Zohairy decided he wanted to study computer science when he saw UW CSE's robotic dogs playing soccer. He found a scholarship that would enable him to come to the United States, but there was a problem: he couldn't speak English. Not to be deterred, he learned the language — passing the

required TOEFL in just three months — and arrived at UW CSE to follow his dream.

After graduation, El-Zohairy returned to Egypt before helping a couple of friends start companies. He was in graduate school at the University of British Columbia in early 2011 when the protests against the government of President Hosni Mubarak began. El-Zohairy took a leave of absence from his studies to join his compatriots in Tahrir Square — but not before reaching out to *TechCrunch* to alert the Western media about the Internet blackout instigated by Egypt's government in response to the protests.

After the revolution, El-Zohairy remained in Egypt, where he was joined by fellow UW CSE alums Allen Chen (B.S. '07) and Bobby Mathews (B.S. '08). Together, they built the content creation platform CloudPress at Flat6Labs, a regional startup incubator. After News Corp acquired the fledgling company — and with it, the team — he moved to New York to lead the development of News Corp's mobile publishing platform.

El-Zohairy had some practical advice for students to make the most of their time at CSE, from learning to procrastinate "the right way," to recognizing — and accepting — one's most productive time of day. He also advised them to build lasting relationships by seeking out people they will feel good about helping and who share their values.

"Don't just network," he said. "Build your tribe."

Drawing upon his experience as an entrepreneur, El-Zohairy urged the students to not be afraid to try new things and fail.

"Failing," he said, "doesn't make you a failure."

*Continued on page 19*

## Datagrams

### CSE's Sidhant Gupta wins WAGS/UMI Innovation in Technology Award



Sidhant Gupta (Ph.D. '14), now at Microsoft Research, was honored with this year's Innovation in Technology Award from the Western Association of Graduate Schools/University Microfilms International. Gupta invents new sensing techniques and builds innovative hardware

and software systems to address hard challenges in sustainability sensing and human computer interaction. His research often requires identifying and exploiting physical phenomena around us in unique ways to continually redefine what, and how, signals can be sensed. In addition to computer science, his research incorporates a deep understanding of applied physics, embedded systems, design-for-manufacturability, machine learning, software-defined radios and cyber-physical security. Read more about Gupta at:

[www.sidhantgupta.com](http://www.sidhantgupta.com)

### CSE's Carlo del Mundo and Vincent Lee win 2015 Qualcomm Innovation Fellowships

Each year, Qualcomm provides Innovation Fellowships to a handful of students nationwide to enable them to pursue their innovative research ideas. This year, CSE students Carlo del Mundo and Vincent Lee were one of



eight winning teams selected from a highly competitive field for their proposal titled *Systems and Architecture Support for Large-scale Video Search*. Recommended by professors Luis Ceze and Mark Oskin, del Mundo and Lee were one of 35 teams chosen as finalists from among 146 initial proposals. CSE has made a strong showing in this competition in recent years: CSE's Vincent Liu and EE's Vamsi Talla won a 2014 QInF award, and CSE's Adrian Sampson and Thierry Moreau won in 2013.

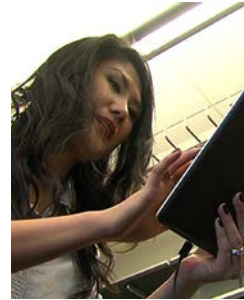
Learn more about Carlo and Vincent's project at:

[homes.cs.washington.edu/~cdel/presentations/large-scale-video-search\\_forprint.pdf](http://homes.cs.washington.edu/~cdel/presentations/large-scale-video-search_forprint.pdf)

### CSE's Irene Zhang, Nell O'Rourke win Google Anita Borg Memorial Scholarships



CSE grad students Irene Zhang and Nell O'Rourke have received 2015 Google Anita Borg Memorial Scholarships. Zhang works with professors Hank Levy and Arvind Krishnamurthy in the Computer Systems Lab where her research focuses on systems for large-scale, distributed applications. O'Rourke works with professor Zoran Popovic in the Center for Game Science. Her research focuses on educational technology and human computer interaction.



Past CSE scholarship recipients include Jenny Abrahamson and Nicki Dell in 2012, Janara Christensen and Katie Kuksenok in 2011, Lydia Chilton and Kristi Morton in 2010, Saleema Amershi in 2009, and Julie Letchner and Kate Everitt in 2008. Learn more about the scholarship at:

[www.google.com/anitaborg/](http://www.google.com/anitaborg/).

### CSE's Lilian de Greef, Irene Zhang win Microsoft Research Fellowships

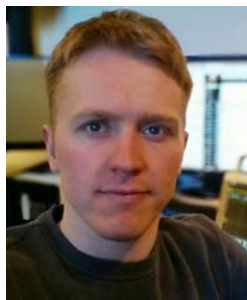
CSE's Lilian de Greef and Irene Zhang have been named 2015 Microsoft Research Ph.D. Fellows. They were two of the twelve recipients who were selected from among 169 nominees received by the company for this highly competitive fellowship. de Greef works with Shwetak Patel in the UbiComp Lab. Her interests include computer vision, embedded systems, machine learning and human-computer interaction. Zhang works with Hank Levy and Arvind Krishnamurthy in the Computer Systems Lab. Her research focuses on systems for large-scale, distributed applications, including the design of new operating system abstractions for mobile/cloud applications.



Past winners of this prestigious award at UW CSE include Yoav Artzi and Mayank Goel (2014); Gabe Cohn and Franz Roesner (2012); and Morgan Dixon (2011).

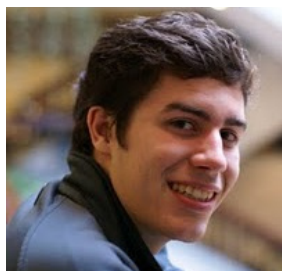
## UW's Kyle Rector, Aaron Parks receive Google Fellowships

UW's Kyle Rector and Aaron Parks are among graduate students named 2015 North American Google Ph.D. Fellows. Rector, a Ph.D. student in CSE, works with HCDE professor (and CSE adjunct professor) Julie Kientz and CSE professor Richard Ladner on research at the intersection of human-computer interaction and accessibility, such as accessible exergames for people who are blind or low-vision. Parks, a Ph.D. student in EE, works with CSE and EE professor Josh Smith on the design of ultra-low-power hardware and software systems, and RF energy harvesting for ubiquitous computing applications. Learn more about this year's Google Ph.D. Fellows at:



[googleresearch.blogspot.com/2015/02/announcing-2015-north-american-google.html](http://googleresearch.blogspot.com/2015/02/announcing-2015-north-american-google.html).

## CSE's Will Scott receives Information Controls Fellowship



CSE Ph.D. student Will Scott has received an Information Controls Fellowship from the Open Technology Fund. The new fellowship supports research exploring solutions and remedies to online censorship and surveillance. Will's UW CSE research has

included a large number of high-impact projects in this vein. With his fellowship, he will continue his work on Activist.js, a tool that helps publishers resist censorship by maintaining strong websites that are more resilient when subjected to network interference. Learn more about Will's research at:

<https://wills.co.tt/research>.

## CSE rocks the 2015 National Science Foundation Graduate Research Fellowships

NSF's Graduate Research Fellowship Program (GRFP) — the most prestigious graduate fellowships in science and engineering — recognizes and supports outstanding student researchers who



have demonstrated their potential for significant achievements in science, technology, engineering and mathematics.

This year UW had the second largest number of fellowship recipients in the "Computer and Information Science and Engineering" category of any institution in the country. And, to our delight, UW CSE had a record high of eight fellowship recipients: Yvonne Chen (human-computer interaction), Carlo del Mundo (computer architecture), Alex Mariakakis (human-computer interaction), Laurel Orr (databases), Pavel Panchekha (formal methods, verification and programming languages), Hannah Rashkin (natural language processing), Anna Kornfeld Simpson (computer security and privacy) and Doug Woos (formal methods, verification and programming languages). Learn more about NSF's GRFP here:

[www.nsfgrfp.org](http://www.nsfgrfp.org)

## CSE's Saloni Park, KimYen Truong and Brett Boston recognized by the Computing Research Association

Each year the Computing Research Association recognizes a small number of undergraduate students with its Outstanding Undergraduate Researcher



Awards — students who, as undergraduates, have conducted cutting-edge research working alongside faculty members, postdocs, and graduate students.

Three UW CSE students have been recognized in the 2015 competition. Saloni Parikh, who was recognized as a finalist, works with the late Gaetano Borriello, Richard Anderson, and Global Health faculty member Carey Farquhar to create a system for the longitudinal tracking of HIV-discordant couples in Western Kenya to determine which health interventions were most effective in saving the other partner from HIV infection. KimYen Truong, who received an honorable mention, works with Maya Cakmak to develop a low-cost robotic tutor for teaching language. Brett Boston, a runner-up, works with Dan Grossman, Luis Ceze, and senior graduate student Adrian Sampson in the area of approximate computing by using type systems and type interference to make it easier for programmers to guide the appropriate use of approximation.

Over the past decade more students from UW CSE have been recognized in CRA's Outstanding Undergraduate Researcher Award competition than from any other university. Learn more about the 2015 CRA award recipients at:

[cra.org/awards/undergrad-current/](http://cra.org/awards/undergrad-current/)

# UW CSE ups its game with recent faculty hires in theory, programming languages, and statistical machine learning

Faculty hiring season is upon us, and CSE already has reason to celebrate — four reasons, in fact. At the start of the year, CSE welcomed two rising stars in theoretical computer science, Thomas Rothvoss and Shayan Oveis Gharan. Recently, we announced two new senior hires who will join us this fall: Ras Bodik, a pioneering researcher in programming languages, currently a professor of computer science at the University of California, Berkeley, and Sham Kakade, a world-class expert in statistical machine learning, currently Principal Research Scientist at Microsoft Research New England.

With these four recruits, CSE is enhancing its leadership in critical areas and demonstrating, once again, that we are a preferred destination for the top talent in our field.



**Thomas Rothvoss** joined CSE in January as a joint faculty appointment with UW Mathematics. His research interests include discrete optimization, linear and integer programming, and combinatorics. Thomas was named a 2015 Sloan Research Fellow and earned Best Paper Awards at STOC 2014, SODA 2014 and STOC 2010.

Thomas first arrived at UW Mathematics in 2014 after completing a postdoc at MIT. He received his Ph.D. from the École Polytechnique Fédérale de Lausanne in Switzerland following his studies in Germany at the Universität Paderborn and the Technische Universität Dortmund.

**Shayan Oveis Gharan** arrived at CSE after completing a postdoc as a Miller Research Fellow at the University of California, Berkeley. His research interests include algorithm design, graph theory and applied probability. He has received several awards for his work on the traveling salesman



problem, including best paper awards at FOCS 2011 and SODA 2010 and an ACM Doctoral Dissertation Award Honorable Mention in 2013.

Shayan earned his Ph.D. in management science and engineering from Stanford University and a B.S. in computer engineering from Sharif University of Technology in Tehran, Iran.



**Rastislav Bodik** will join CSE's programming languages and software engineering group this fall. He is currently a professor of computer science at the University of California, Berkeley, where he has been a member of the faculty since 2002. Bodik is known for his groundbreaking work in programming languages and the application of programming concepts to a broad range of fields. His research focuses on making it easier to write computer programs using program synthesis, a technique for computer-aided construction of software.

Ras has earned numerous awards for his research and teaching, including Best Paper at PLDI 2005, the ACM SIGPLAN Doctoral Dissertation Award, and an NSF CAREER Award. He earned his Ph.D. in computer science at the University of Pittsburgh and a diploma in computer engineering at the Technical University of Košice, Slovakia.

**Sham Kakade** will hold a Washington Research Foundation Data Science Chair appointed jointly in CSE and Statistics when he arrives in the fall. Sham is currently Principal Research Scientist at Microsoft Research New England in Cambridge, Massachusetts. His research has ranged from economics, to neuroscience, to applied and theoretical machine learning and their intersection. He has made significant contributions to semi-



supervised learning, online learning, reinforcement learning, and learning of latent-variable and hidden Markov models.

Prior to Microsoft Research, Sham was on the faculty of the Wharton Statistics Department at the University of Pennsylvania and, prior to that, at the Toyota Technological Institute, Chicago. He earned his Ph.D. at the Gatsby Computational Neuroscience Unit at University College London and his B.S. in Physics at Caltech.

*Continued from page 15*

## Leadership Seminar (continued)

The 2015 Leadership Seminar Series offered a mix of individual speakers and panel discussions featuring CSE alumni. In addition to Ballinger, Hindman and El-Zohairy, we welcomed back to campus Carolyn Hughes (B.S. '07) of EMC Isilon, Jason Murray (B.S. '96) of Amazon, Brian Pinkerton (Ph.D. '99) of A9, and a panel of recent alums: Jennifer Apacible (B.S. '14) of Google, Mai Dang (B.S. '12) of Microsoft, Clint Tseng (B.S. '10) of Socrata, and Taylor Williams (B.S. '14) of Intentional Software.

A couple of our friends from local industry also were happy to provide guidance and encouragement to CSE undergraduates, including Mike Koss, who spent 19 years at Microsoft before going on to work at numerous startups and eventually landing at Google, and big data enthusiast Robert Morton, one of the early employees of Tableau Software (married to CSE Ph.D. student Kristi Morton). A panel discussion featuring current CSE graduate students Nicki Dell, Greg Nelson, Jeff Snyder and Irene Zhang rounded out our program.

The next Leadership Seminar Series kicks off in January 2016. Special thanks to everyone who participated this year and shared their stories with our students!

### Mark your calendars!

The Industry Affiliates annual meeting for the 2015-16 academic year is October 19-21, 2015:

- Startup recruiting fair: Monday, Oct. 19
- Research day: Tuesday, Oct. 20 (features: multiple research talks, keynote, and student poster session)
- Established company recruiting fair: Wednesday, Oct. 21

More information may be viewed at:  
[www.cs.washington.edu/industrial\\_affiliates](http://www.cs.washington.edu/industrial_affiliates)

## UW CSE & Washington's leadership in big data



UW CSE's Carlos Guestrin (left), Amazon Professor of Machine Learning, and Joseph Sirosh of Microsoft participate in a panel discussion at a day-long conference, "Insight to Impact: Transforming Washington's Industries Through Big Data." Sponsored by UW CSE and the non-profit Technology Alliance on March 3, 2015, the event examined the role of data science, sensing, machine learning and data visualization in driving our economy. Learn more at:

<http://tinyurl.com/TABigdataevent>.

## UW CSE annual donor recognition luncheon



At this year's annual donor luncheon, undergraduate student Mattie Carlson (one of two holders of the Wisniewski Endowed Scholarship) and graduate student Carlo del Mundo (holder of the Dora Zee Ling Endowed Fellowship) represented their fellow students in describing to the donors what these awards mean to them. Learn more about the event at:

<http://tinyurl.com/CSEdonorluncheon2015>.



# most significant bits

newsletter of uw computer science & engineering

volume 25, number 1, spring 2015



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Computer Science & Engineering  
University of Washington  
Box 352350  
Seattle, WA 98195-2350



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## UW CSE's Ed Lazowska receives UW's 2015 David B. Thorud Leadership Award



Ed Lazowska, Bill & Melinda Gates Chair in Computer Science & Engineering, was selected by UW to receive the 2015 David B. Thorud Leadership Award, which honors faculty and staff who demonstrate exceptional ability to lead, serve, inspire and collaborate with broad impact. In the words of the nominator:

"Ed has been a truly extraordinary leader for many years and in many settings — national, regional, institutional, and departmental. I will touch on all four in this letter, but the recent leadership accomplishment that stimulates this nomination is Ed's role in creating and leading the University of Washington eScience Institute, a cross-campus collaboration that has established UW as a recognized leader in data-intensive discovery.

"National leadership: Ed is widely viewed as the computer science research community's highest impact national leader and spokesperson ...

"Regional leadership: Ed is one of UW's most visible and effective advocates with the region's civic leadership ...

"Departmental leadership: UW CSE's rise from a 'top-ten also-ran' to the first rank of the nation's computer science programs began during Ed's eight years as department chair.

"Institutional leadership: Ed's role in creating and leading the University of Washington eScience Institute — a cross-campus collaboration that has established UW as a recognized leader in data-intensive discovery — illustrates his extraordinary performance in all of the areas identified as nomination criteria for the Thorud Award."

To learn more about Lazowska and his research, visit his website at:

[www.cs.washington.edu/people/faculty/lazowska/](http://www.cs.washington.edu/people/faculty/lazowska/).