



The monitor displays a HydroSense pressure wave created by using the kitchen faucet (background). Each water fixture in the home generates unique pressure waves, which travel throughout the home plumbing system, thus enabling the single-point sensing HydroSense approach.

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CSE makes sense

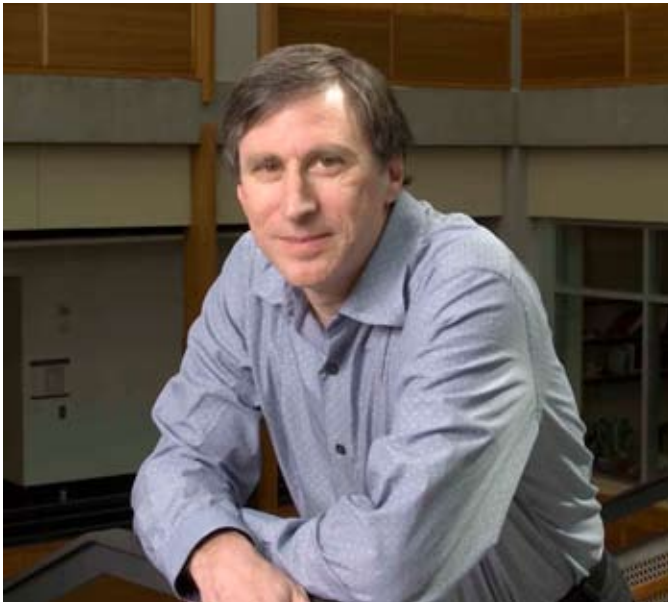
Technology impacts our lives every day: how we conduct business, how we communicate, how we are entertained. CSE faculty and students continuously explore how technology influences and improves the world — both locally and globally. Three current areas of research affect the greater community in various ways: helping the individual consumer reduce water and energy consumption, encouraging more people to use public transportation, and exploring how technology can improve the lives of under served populations in the developing world.

Next-generation smart grid technology

In an effort to contribute to the nation's goal of reducing our overall energy use, UW Computer Science & Engineering researchers have started applying their expertise in sensing, embedded systems, and human-computer interaction to create solutions to help better inform consumers of their energy use and encourage more sustainable activities. Our students and faculty have begun to garner significant recognition, not just in the research community, but nationally through the successful commercialization and dissemination of their work to the larger community.

Shwetak Patel and his students have been developing next-generation smart grid technology for the home. Reducing the use of energy and water is one way homeowners can do their part to decrease pollution and slow global warming. Monitoring utility demand has not been easy or affordable for the general public or utilities until now.

From where I sit...



Spring has arrived on campus — signaled by the long days, the nesting blue herons atop the tall trees in the Sylvan Grove next to the Allen Center (see photo, right), and the annual ACM student chapter barbeque with faculty pie-toss (see photos, page 9).

Our faculty and students are doing incredibly well — developing astonishing technology, doing high-impact research, and winning top local and national awards. In the last issue of MSB, we introduced you to three new faculty members: Anup Rao, who works in theoretical computer science, Su-In Lee, who applies machine learning to computational biology, and Luke Zettlemoyer, who works in natural language processing and AI. We have recently made two more faculty offers for the future, which I hope to tell you about in the next issue of MSB. It's exciting to be able to renew and grow in such difficult times.

With this year's graduation ceremony, we are establishing a new tradition of honoring some of our most successful and influential alumni with the CSE Alumni Achievement Award. The first two honorees are Greg Andrews (PhD '74), now professor emeritus (and former chair) of Computer Science at the University of Arizona, and Rob Short (MS '87), whose career spanned the development of the VAX computer at Digital Equipment Corporation and the development of Windows NT at Microsoft, where Rob became corporate vice president for Windows Core Technology. Greg and Rob are featured later in this issue. We are extremely proud of all of our alumni, and this new award gives us an opportunity to celebrate — as we're about to send off the next generation of graduates — those who have made especially important contributions in their careers.

It's hard to believe, but this summer brings the start of my 5th year as CSE department chair. It's been both fun and satisfying to see the department continue to make significant progress on the national stage. I've very much appreciated the tremendous support I've received from faculty, staff, students, and alumni over that time.

Wishing all of you a wonderful summer!

Henry M. Levy
Chairman and Wissner-Slivka Chair



Blue heron nest in Sylvan Grove, with newly hatched babies.

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Contributors: Ed Lazowska, Hank Levy, Sandy Marvinney

Photo credits: Jon Froehlich, Carl Hartung, Bruce Hemingway, Ed Lazowska, Mary Levin

MSB available online at www.cs.washington.edu/msb

We are working toward a greener 2010! And part of the process is to move MSB online!

To effectively achieve this goal, we need your email address and updated contact information! (We will not share your address outside the UW community.) If you would like to receive the online version of the newsletter, please sign up by sending an email to: msb@cs.washington.edu.

Additionally, please be sure to add msb@cs.washington.edu to your email list of contacts.

Accessibility capstone premiere

Each year, CSE offers a number of "capstone design courses" in a broad range of areas. In these courses, students work in teams to conceive, design, implement, and deploy complete solutions to interesting problems.

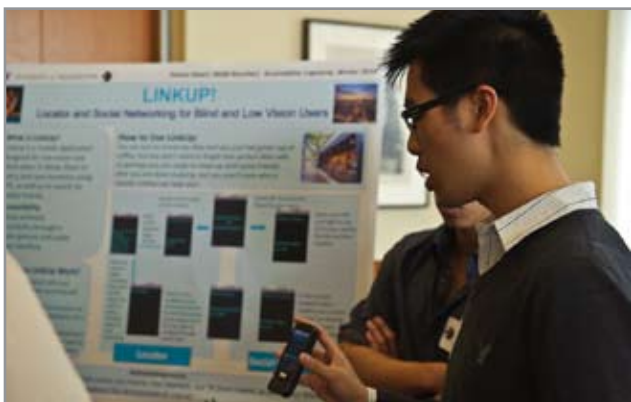
As cell phones become more capable with internet connectivity and sensors such as cameras, compasses, GPS, and accelerometers, opportunities arise to use them as accessibility or assistive devices. This was the focus of the Accessibility Capstone taught by Professor Richard Ladner. Students worked in teams to create new applications on mobile phones that allow persons with disabilities to accomplish tasks that would be difficult to impossible without such applications. An example for a blind person would be an application that would take a picture of a bar code on a product, decode it, look it up on the internet, then speak the name of the product.

At the March 15 capstone premiere, five teams presented their design projects with posters and demos. Members of the blind, deaf, and deaf-blind community attended. All projects were accessibility-oriented applications for the Google Android platform. (We acknowledge and thank Google for providing Android phones for use in this course.)

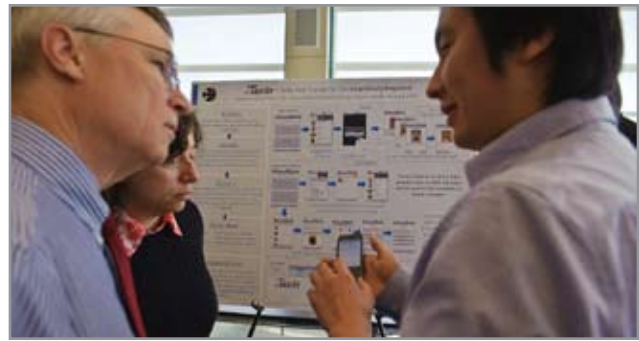
Additional information about the **Accessibility Capstone** may be viewed here:
<http://www.cs.washington.edu/education/courses/481h/10wi/>

Additional information about the **MobileAccessibility** project may be viewed here:
<http://mobileaccessibility.cs.washington.edu/>

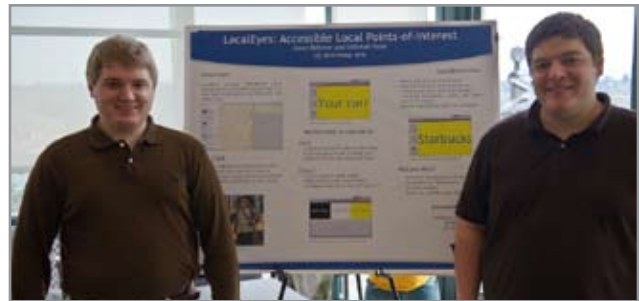
Featured projects:



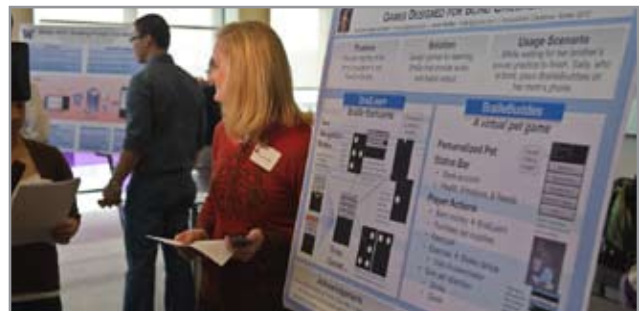
LinkUp! — a mobile application to find people and places nearby for people who are blind or have low-vision.



ezTasker — mobile daily task trainer and scheduler assists people with cognitive disabilities through daily activities with visual and audio aid.



LocalEyes — a mobile application to find where you are, what direction you are going, and what points of interest and businesses lie ahead for people who are blind, low-vision, or deaf-blind.



BrailleLearn and Braille Buddies — mobile games that encourage learning Braille while having fun for children who are blind.



MOCR — an application that uses optical character recognition (OCR) to read aloud printed text for people who are blind or low-vision users.

(Continued from first page)

CSE makes sense

Patel and his team have developed sensor systems that allow on-line monitoring of water, electricity, and gas use by recognizing the unique signature given off by every faucet, toilet, appliance, and electronic device in the home. Using this system, residents can track their electricity and water consumption and take advantage of off-peak power rates. That data can also be fed back to the consumers to help them better understand their own consumption.

At the heart of the team's utility monitoring system is a novel pattern recognition technology that, once calibrated, can identify individual components of a home's plumbing or electrical system. The beauty of the system is that the homeowner only needs to install one pressure sensor, usually at the outside hose faucet or water heater drain valve. The entire home's water usage can then be tracked fixture by fixture. The signal recognition software is smart enough to distinguish between two or more simultaneous events, such as two different faucets being turned on at the same time.

Similar technology has been developed to monitor electrical systems. As with the water sensor, a single sensor plugged into a conventional wall outlet will detect a variety of electrical events throughout the home, each of which has its own unique electrical noise signal. Machine learning techniques allow the monitoring system to distinguish between each light switch, home appliance, or electronic device.

Milestones/Recognitions: Sensing Technology

August 2009: Patel receives TR-35 award in recognition of his research.

October 2009: Team receives Madrona Prize for most innovative research for sustainability sensing.

March 2010: Team receives two best paper awards and nomination at CHI 2010.

April 2010: Zensi, Patel's startup company focused on the commercialization of these new sensing solutions, acquired by Belkin International, Inc. Belkin will market and sell these eco-devices by late 2010.

June 2010: Jon Froehlich (CSE PhD student) receives College of Engineering Research Innovator Award.

Improving the usability of public transit

For tens of thousands of Seattle residents, public transit is the primary way to get from place to place on a daily basis. And, as anyone who has ever taken public transportation knows: buses don't always run on time. Waiting for the bus on a cold and rainy Seattle day can be a frustrating experience. Fed up with the existing transit tools, Brian Ferris, a CSE grad student, created OneBusAway, a set of tools to make using public transportation easier in the Puget Sound region. Kari Watkins, a grad student in Civil & Environmental Engineering, quickly joined. With the support of Professor Alan Borning, the team has been growing OneBusAway ever since.

Available on the web at <http://onebusaway.org/>, OneBusAway provides easy access to real-time arrival information for public transit vehicles across a variety of interfaces: web, touch-tone phone, SMS, iPhone, Android, mobile-web, and other mobile devices. Participating Puget Sound transit agencies include King County Metro, Pierce Transit, Sound Transit, and Washington State Ferries. OneBusAway focuses on answering the question, "Where is my bus?"

Here's how it works: A rider using the OneBusAway iPhone app can quickly pull up a list of nearby transit stops, select one, and see a list of arrival time estimates for that stop. If a bus is running five or ten minutes late, the rider can use that time to do something else, like grab a cup of coffee or find someplace more comfortable to wait on a rainy day.



Screen shot of OneBusAway mobile interface

OneBusAway is having a positive effect on transit usage in Seattle and beyond. A large survey of OneBusAway users found that, since using OneBusAway, they were: overall more satisfied with public transit; took transit more frequently; and spent less time waiting for busses. A significant set of users reported feeling safer when using the OneBusAway, especially when waiting for the bus late at night. Additionally, users also reported walking more than prior to using OneBusAway, which gave them more information about how to get home, including walking to a different bus stop, or getting a little exercise while waiting for the bus. As one user puts it, "I no longer sit with pitted

stomach wondering where is the bus. It's less stressful simply knowing it's nine minutes away, or whatever the case." These survey results were presented at CHI 2010, where it received a nomination for "best paper."

OneBusAway has also been a big hit in the community, with over 20,000 riders accessing information from OneBusAway each week. This popularity has led to several recognitions. OneBusAway was a winner for Best Use of Technology in the Government, Non-profit or Educational Sector in the Washington Technology Industry Association 2010 Industry Achievement Awards. OneBusAway also was nominated for best non-profit startup in the 2010 Seattle 2.0 Awards.

Ferris and Watkins plan to continue improving and adding new features to OneBusAway, including adding more regional transit agencies. Since OneBusAway is open-source software, it's easy for the community to get involved with improving OneBusAway and expanding it to other areas. Ferris and Watkins hope that some day using public transit will be easier for riders everywhere, not just here in Seattle.

Open Data Kit: data collection from mobile devices

In industrialized countries, data is relatively easy to collect. In low-income regions, the lack of reliable infrastructure, ubiquitous connectivity, and adequate expertise makes data collection difficult. Current practice is paper-based forms. However, physical collection tends to be slow and expensive, data transcription errors are plentiful, there is no access to relevant historical data, and lag time to obtain usable information is significant.

The exponential growth of cell phone usage and infrastructure in low-income regions has sparked great excitement for using mobile devices to address current gaps in data gathering. In addition to the variety of data — text, photos, location, audio, video, barcode scans — that can be gathered, mobile devices have proven to be dramatically faster at both collecting the data and making it available to decision makers.

Open Data Kit (ODK) has been developed to help fill this gap. The software builds upon the Android operating system, the first comprehensive open-source platform for mobile devices; the ODK suite of tools enables users to collect their own rich data. ODK is designed to let users own, visualize, and share data without the difficulties of setting up and maintaining servers. The tools are easy to use, deploy, and scale. They also go beyond open source: they're based on open standards and supported by a larger community. The ODK team is working with NGOs in many countries to apply the tools and demonstrate the difference they can make in efficiency and effectiveness in a variety of contexts including public health, human rights, and environmental monitoring.

ODK's goals are to: (1) make tools modular and customizable so that they can be easily composed into appropriate arrangements for each deployment; (2) exploit open interfaces and standards so that solutions are not "siloed" into monolithic enterprise-level packages that are difficult to understand and maintain; and (3) establish data collection tools at the cutting edge of technology to avoid early obsolescence and make it easier to attract talented developers. There have been nearly 2,700 downloads of the free software, and visitors from over 140 countries have visited the Open Data Kit Web site (<http://opendatakit.org>).

The ODK research group is building new layers on top of the data collection application base. These include: using the phones as sensors to turn a single mobile device into a Swiss army knife of instrumentation and to better connect data gathering with historical databases (such as medical record systems). With these applications, the phone can help untrained users with diagnostic and triage protocols. Several courses are being connected to the ODK effort at both the undergraduate and graduate levels; a capstone course and a PMP course are planned for next year so more students can apply their skills to create new features that will make ODK more useful.

ODK is possible thanks to generous support from Google.org and Google Research. In February, Gaetano Borriello, the Jerre D. Noe Professor of Computer Science & Engineering, received an inaugural Google Focused Research Award for the work his team is conducting on mobile data collection for public health and environmental monitoring. ODK also received the Pizzigati Prize, the nation's top public interest computing honor.

Our fall 2010 issue of MSB will present a more in-depth look at current research projects using ODK.



UW computer scientists are turning cell phones into flexible tools for collecting data in the field. Here, CSE PhD student Yaw Anokwa (right) watches an employee of a Ugandan nonprofit try out the tool he developed.

Datagrams

UW honors Luis Ceze, James Lee

On May 17, five junior faculty from across UW were honored for national recognition received this year. Two of CSE's finest were among the five: Luis Ceze (Microsoft New Faculty Fellow) and James Lee (Sloan Research Fellow).



Eric Arendt wins 2010 Dean's Medal in Engineering



Eric Arendt, a dual major in CSE and EE (with a minor in African Studies!), was named one of two recipients of the 2010 Dean's Medal in Engineering. Eric is a member of Phi Beta Kappa and Eta Kappa Nu and has served as a TA and TA Coordinator in CSE. He has received multiple scholarships, including the James Hewitt Endowed Scholarship.

Eric spoke eloquently at CSE's annual Scholarship/Fellowship Recognition Luncheon about how this scholarship has affected his experience at UW.

A. J. Bernheim Brush wins CRA-W Borg Early Career Award

CRA-W — the Committee on the Status of Women in Computing Research — named CSE PhD alum A. J. Bernheim Brush, a researcher at Microsoft Research, as one of two recipients of the 2010 Borg Early Career Award. A. J. studies human-computer interaction with a focus on computer-supported collaborative work (CSCW) and ubiquitous computing. She enjoys investigating how technology can help people and families with everyday challenges including coordination, awareness, and energy conservation.



Chris Re wins 2010 ACM SIGMOD Doctoral Dissertation Award

The annual ACM SIGMOD Jim Gray Doctoral Dissertation Award, inaugurated in 2006, recognizes excellent research by doctoral candidates in the database field. The award honors Dr. Jim Gray, a database software pioneer and a Microsoft researcher. Chris Re, a 2009 CSE PhD alum, has been recognized as the winner of the 2010 award. Chris — now a faculty member at the University of Wisconsin-Madison — completed his dissertation under Professor Dan Suciu.



Anna Cavender wins 2010 UW Graduate School Medal

CSE's Anna Cavender, completing her PhD with Professor Richard Ladner, has been awarded the 2010 University of Washington Graduate School Medal. The Graduate School Medal is given annually "to recognize PhD candidates whose academic expertise and social awareness are integrated in a way that demonstrates an exemplary commitment to the University and its larger community." UW CSE's Vibha Sazawal, now a professor at the University of Maryland, received the UW Graduate School Medal in 2004.



Ed Lazowska wins ACM Distinguished Service Award



CSE's Ed Lazowska has received the 2009 ACM Distinguished Service Award "for his wide-ranging service to the computing community and his long-standing advocacy for this community at the national level." Throughout his career, Lazowska has been a persistent and vocal advocate of diversity in computing at the highest levels.

Yaw Anokwa wins Pizzigati Prize

CSE graduate student Yaw Anokwa, a lead developer on Open Data Kit (ODK), has won the fourth annual Antonio Pizzigati Prize for Software in the Public Interest. The \$10,000 Pizzigati Prize honors software developers who, in the spirit of open source computing, are fashioning exceptional applications that aid activists and nonprofits in their efforts to make the world a better place. ODK is a modular set of tools that's helping nonprofits across the world collect data, via mobile phones, on everything from deforestation to human rights violations. Anokwa will use the \$10,000 Pizzigati Prize to deepen Open Data Kit's interaction with users.



Will Johnson scores in Putnam Competition!



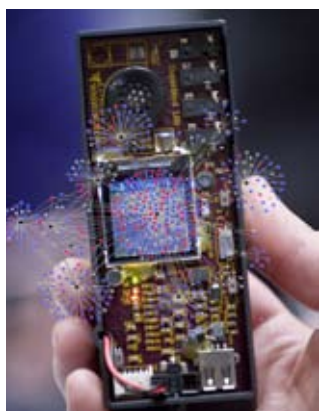
Will Johnson, a senior majoring in computer science and mathematics, has been named a Putnam Fellow for finishing among the top five students in the nation — from among 4,036 competitors — in this year's William Lowell Putnam Mathematical Competition. Will is the first UW student to win a Putnam Fellowship since the competition was initiated in 1938. On April 12, the Washington State Senate honored Johnson for his extraordinary performance by passing Senate Resolution 8725.

SWARMS featured at Kirkland Arts Center

The SWARMS project, by CSE's Bruce Hemingway and DxArts grad student Hugo Solis, was part of the "Off the Map" exhibit at the Kirkland Arts Center, February 12 – March 10, 2010.

Swarm intelligence describes a system where a group's highly coordinated collective behavior is more sophisticated than that of its individual members. Traditional examples for describing swarm systems are insect colonies, flocks, and fish schools. These elegant swarm-level behaviors are the result of a self-organized process where no leader is in charge and each individual bases its movement decisions solely on locally available information: the distance, perceived speed, and direction of movement of neighbors.

Based on that example, this project models a swarm system employing a collection of wireless processors called "superbirds,"



which are electronic circuits designed and developed by Hemingway. Several courses have used these superbirds for teaching computer embedded systems and also as devices for artistic projects. Their set of capabilities — such as audio synthesis, color LCD screen, and radio communication — makes them a suitable technology for exploring audiovisual interactive experiences.

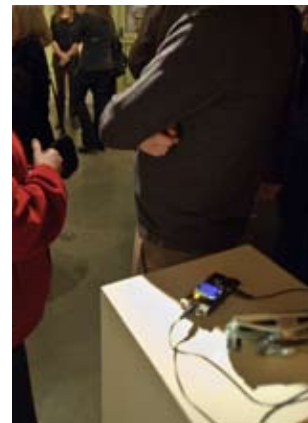
In SWARMS, Hemingway and Solis map what is unseen by exposing the communication behavior of collective systems. Approximately a dozen superbirds are scattered throughout the gallery, establishing an ad-hoc mesh network. Each is programmed to create its own insect-like sounds projected through small speakers and blinking light patterns displayed on LCD screens. The superbirds wirelessly detect their neighbor's visual and sound transmissions and internally map each other's



location in a virtual network throughout the gallery. All superbirds send and receive audio and visual information simultaneously, without a leader or hierarchy.

Depending on proximity, signal strength, and an

element of randomness, the sound and light organically evolve over time as the configuration of the network becomes more sophisticated. Similar to organic creatures, these digital agents transit between different states of sound and visual gestural production, listening and copying other's materials, sleeping, and confronting other agents. Alone and without neighbors, one bird would remain static and silent, but as a member of a community, variation and complexity arise over time. SWARMS maps a slice of the continuously evolving natural world through audiovisual compositions that make visible internal behavior that is traditionally invisible.



Bruce Hemingway, Hugo Solis, Brian Mayton, and the students of CSE466, "Software for Embedded Systems," developed this work.

For more information about the course version of SWARMS, please see:

<http://www.cs.washington.edu/education/courses/466/07au/labs/18/18.shtml>

Swarms movie created by students:

<http://www.cs.washington.edu/homes/bruceh/Files/swarmDemo.mp4>

Where the jobs are ...

CSE hosted its Industrial Affiliates Winter Recruiting Fair on January 28. Proving that there are still jobs out there, twenty companies participated in this event, with opportunities for both internships and full-time positions. As the picture to the right shows, it was a madhouse! The winter recruiting fair is an annual "reduced" version of our main recruiting fair, which is held in conjunction with our October Industrial Affiliates meeting.



Inaugural CSE Alumni Achievement Award

Greg Andrews and Rob Short are the inaugural winners of the University of Washington Computer Science & Engineering Alumni Achievement Award. The department honored them during its June 12th graduation ceremony and at a dinner the prior evening. Each year hence CSE will recognize two alumni with exceptional records of achievement. These awards will reaffirm to CSE graduates (past, current, and future) that each contributes to a long, successful line with impact far and wide.

Gregory Andrews (PhD '74)

A bridge from the pioneers to the present

Greg Andrews arrived at UW to begin doctoral work in computer science just a few years after the program's founding. A mathematics major at Stanford, Andrews' first position at UW



was an RA in the then-new Computer Science Laboratory (equipped with an SDS Sigma-5 computer), occasionally visited by high school students Bill Gates and Paul Allen. He did his doctoral research on computer security, working with Alan Shaw — decades ahead of the swell of interest in the topic.

Andrews learned from the pioneering first generation of computer science professors and, over his own 36-year academic career, has guided and inspired several new generations. Early this year, Andrews transitioned to professor emeritus status at the University of Arizona, where he received a career distinguished teaching award (2002) and twice served as chair of the Department of Computer Science, from 1986–93 and 2006–08.

His body of research work ranged over all aspects of parallel and distributed computing, including languages, applications, systems, and performance. In the 1990s, he developed Filaments, a software package that supports shared memory and efficient fine-grained parallelism. A long-term project has been design and implementation of SR programming language and its new variant, MPD. More recently he worked with students on the Solar software optimization project, and on a lightweight approach to writing parallel programs for multicore machines. He was instrumental in developing the computing systems for UA's iPlant, a \$50-million National Science Foundation-funded

project to develop cyber infrastructure that enables the solution to grand challenge problems in the plant sciences.

Andrews authored three textbooks, is a Fellow of the Association for Computing Machinery, has served on the boards of the Computing Research Association and the Computing Community Consortium, and has served the profession in numerous other leadership roles.

Rob Short (MS '87)

PC architecture visionary and industry leader

Rob Short's remarkable professional journey traces to an unassuming start in his native Ireland, where he earned a two-year electronics degree from the Cork Institute of Technology.

He was working as a computer systems technician at Digital Equipment Corporation when a manufacturing problem brought one of Digital's top hardware engineers to Ireland. Short's talent, inquisitive nature, and knowledge soon won him a transfer to DEC headquarters in Massachusetts, at that time home to the best engineering team in the computer world.



Short contributed to DEC's next-generation computer system, the VAX-11/780, which became the standard for educational and industrial computing for more than a decade. His impressive work sparked another geographic leap to the newly created DECwest Engineering team in Bellevue, as hardware expert and principal engineer for the MicroVAX system.

At a career transition point, Short decided to return to school to complete a BS degree, but CSE faculty channeled him directly into a master's program befitting his experience. Working with Hank Levy, he earned his MS in 1987 and joined Microsoft in 1988 as part of the Windows NT team. This new system drove Microsoft and the PC industry forward. Short led a team tasked with helping the industry create computer systems to run the new software. Short also developed the first plug-and-play hardware and led the team driving industry standards such as PCI and USB. His vision, engineering ability, and management skills catapulted him in 2000 to corporate vice president

for Windows Core Technology, a team developing the core components of the system including the kernel, file systems, and storage. He also focused on ensuring engineering excellence in the core components of Windows.

Short retired from Microsoft in late 2007 and now focuses on non-profit enterprises. He has travelled to Africa and Asia with Habitat for Humanity. He is a founding board member of www.seeyourimpact.org, working to create a new model for giving. He is on the board of Eastside Preparatory School and Woodland Park Zoo. He remains a close friend and strong supporter of CSE and UW. He and his wife, Emer Dooley, also a UW alum and instructor, established the Short-Dooley Endowed Career Development Professorship in CSE, and in 2008 the College of Engineering honored Short with its Diamond Award for Entrepreneurial Excellence. Short also serves the college as a member of its Visiting Committee.

UW CSE reunion ...



This year's IEEE Symposium on Security and Privacy marked the presentation of a paper describing a UW/UCSD collaboration on automotive security and privacy. Displaying their pride, the team sported UW CSE t-shirts. Unless otherwise noted, students and alumni are UW CSE; from left to right: Roxana Geambasu (PhD student), Tammy Denning (PhD student), David Molnar (MSR, teaching in UW CSE), Alexei Czeskis (PhD student), Franzi Roesner (PhD student), Stefan Savage (PhD alum, now UCSD CSE faculty), Steve Checkoway (BS alum, now UCSD CSE PhD student), Damon McCoy (PhD intern, now UCSD CSE postdoc), Karl Koscher (PhD student), Tadayoshi Kohno (CSE faculty and UCSD CSE PhD alum), Gabriel Maganis (BS alum, now UCD PhD student), Charlie Reis (PhD alum, now Google Seattle), Miro Enev (PhD student), Vitaly Shmatikov (BS alum, now UT Austin faculty).

ACM spring barbeque

This year, the UW CSE ACM student chapter replaced the traditional faculty dunk tank with a faculty pie toss. Lots of good licks were had by all.



Dan "Was That Really Your Best Shot?" Grossman



Luis "I Think I May Have Messed My Pants" Ceze



John "This Was My Only Clean Shirt" Zahorjan



Anup "Maybe I Should Have Given An Easier Final Exam In CSE 421" Rao



Gaetano "Take Him Out With The Trash, He's Already Bagged" Borriello

Photos of faculty victims by Ed "On The Smart Side of the Lens" Lazowska.

CSE alums Loren Carpenter and Tapan Parikh win 2010 College of Engineering Diamond Awards

Congratulations to Loren Carpenter and Tapan Parikh, two exceptionally creative innovators, who returned to campus on May 7 to receive 2010 College of Engineering Diamond Awards. The college bestows five awards annually for excellence in academia, industry, entrepreneurship, early career, and service. Seven CSE alumni have now been honored since the inaugural awards in 2006.

(<http://www.engr.washington.edu/da>)

Loren Carpenter (MS '76)

**Computer graphics wizard and pioneer at Pixar
Diamond Award for Entrepreneurial Excellence**

Loren Carpenter has exerted game-changing impact on the entire film industry. As chief scientist at Pixar Animation Studios since 1986, he and Pixar colleagues took computer animation into new realms by perfecting software for texture mapping, programmable shading, and other effects. Pixar's RenderMan software has been used to make hundreds of films, including *Jurassic Park*, *Titanic*, *The Matrix*, *Avatar*, and Pixar's own animated films such as *Finding Nemo*, *Cars*, and *WALL-E*. It is the technical heart of every Academy Award visual effects winner of the past 15 years. Carpenter and two colleagues have their own



Scene from *Vol Libre*, presented at 1980 SIGGRAPH meeting

Oscar for technical achievement, awarded in 2001 for RenderMan.

Carpenter first demonstrated his technical wizardry at the 1980 SIGGRAPH meeting when he presented the world's first fractal

movie, a two-minute aerial zoom through a mountain range, accomplished by algorithms he developed to allow computer rendering of complex landscapes. At the time, he was a computer graphics expert at Boeing. This demo film, *Vol Libre*, won a standing ovation and landed him a position with Lucasfilm, where he applied his technology to the first full-fledged use of computer animation in a major motion picture — the famed "Genesis" scene in *Star Trek II: The Wrath of Khan*. His digital fingerprints are now everywhere.

Carpenter and his wife, Rachel, also founded their own company, Cinematrix, focused on his patented interactive entertainment

system that allows large audiences to play a variety of games together and experience another level of human-computer interaction.

Upon accepting the Diamond Award, Loren remarked that he sought a master's degree in CSE because "I wanted to know what I didn't know ... Not a day goes by that I don't use something I learned here at the University of Washington."

Tapan Parikh (PhD '07)

**Rock star technologist for sustainable development
Diamond Award for Early Career Excellence**

Tapan Parikh has thrust the "teach a man to fish adage" into the digital age. He is empowering people in the world's poorest areas by harnessing and translating technology. Since his UW graduate school days, Parikh has worked in rural Asia and Central America to address problems that hinder the open market. Working collaboratively with communities, he designs, evaluates, and deploys appropriate information systems that support sustainable economic development.

In India, Parikh realized that the efforts of microfinance groups suffered from poor paper-based record keeping. He developed cell phone software that results in greater transparency and accurate record keeping. It's a technique he also used in Guatemala, where he retrofitted cell phones so coffee growers can find the best bean prices, document their aid needs, and ensure accurate inspection of fair-trade coffee co-op members.



Tapan Parikh working with villagers in India.

Colleagues describe Parikh as a "rock star technologist" who understands the importance of linking technology to sustainable business models. He is passionate about giving poor people information and tools to boost their own creativity and power and achieve a more equitable role in society.

In 2007, MIT's *Technology Review* named Parikh "Humanitarian of the Year" and a top innovator under the age of 35. In 2008, he was recognized as one of *Esquire's* "Best and Brightest."

Kings screened at SIFF

Kings, CSE's 2008 Animation Capstone film, was screened at this year's SIFF (Seattle International Film Festival). Selected from more than 3,000 entrants, *Kings* premiered May 21, 2010, as an official selection during SIFF's Short Film Weekend in the Animation for Adults session. The showing (which included a dozen other animated shorts) was a sellout; a second SIFF showing was scheduled for June 6. SIFF is now an Academy Award qualifying festival, and ShortsFest draws entries not only from filmmakers from around the country, but also an increasingly large contingent of international filmmakers.

SIFF is the largest and most well-attended film festival in the US with an estimated 150,000 attendees. SIFF screened a wide selection of the best new international features and documentaries over the 25-day festival, presenting more than 400 films from over 50 countries. With extensive local, national and international media coverage, the festival has emerged as one of the country's most accessible and highly publicized film events.

The computer-animated film *Kings* explores the theme "Old men play, while young men die" and poses the question "Is war an inevitable part of life?" It is set in a 19th century railroad car where playing cards come to life.

CSE's Animation Capstone courses are taught by Barbara Mones and a host of collaborators to UW undergraduates from Computer Science & Engineering, Art, and Music. There is a long tradition of these wonderful student-created animated shorts



Barbara Mones signs posters of CSE's *Kings* in the theater lobby following its world premiere at SIFF on May 21

competing well against professional submissions at national and international animation festivals.

Director Bio: Barbara Mones has been working in the field of computer animation for many years. Trained in character animation at Sheridan College, she worked at Dreamworks/PDI and Industrial Light & Magic before coming to UW CSE, where she teaches and serves as the director of animation production for the Animation Research Labs.

For more information on our animation capstone, see: <http://www.cs.washington.edu/research/ap>



Two stills from UW CSE's animated short *Kings*

(Diamond Awards continued from page 10)

Parikh is now an assistant professor at UC Berkeley's School of Information and holds an affiliate appointment at UW CSE.

An intellectual explorer and risk-taker by nature, Parikh now inspires the next generation of students. At the awards dinner, Parikh thanked CSE faculty for mentorship and support to "become the person I am now ... even if I didn't know what the heck I was doing, there was recognition that whatever I was doing was important."

See further information — including Carpenter's and Parikh's acceptance remarks — on the web at:

<http://news.cs.washington.edu/2010/05/10/uw-college-of-engineering-diamond-awards/>.



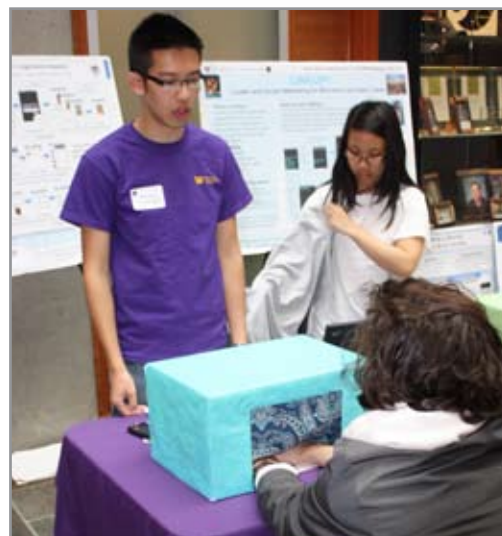
UW CSE's Ed Lazowska with Diamond Award recipients Tapan Parikh and Loren Carpenter at the Diamond Awards on May 7

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Engineering Discovery Days



Held April 23-24, Engineering Discovery Days 2010 — formerly known as "Open House" — continued the tradition of sharing exciting research projects with students, teachers, and families. *Above:* Ben Stoddard discusses OneBusAway technology with several attendees. *Above right:* Steven Kwan and Chris Acuario demonstrate projects from the Accessibility Capstone. *Right:* Kimberly Todd engages attendees with a Scribbler robot.