

Photo courtesy the John D. & Catherine T. MacArthur Foundation

Shwetak Patel, 2011 winner of MacArthur award

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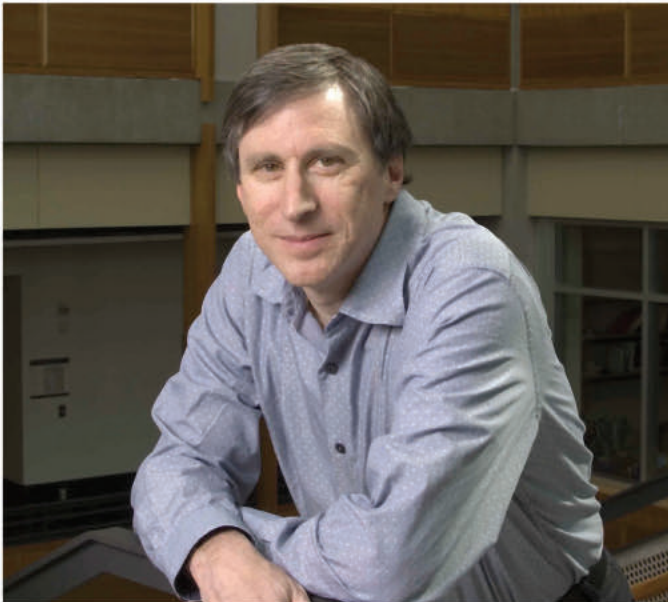
## Shwetak Patel Receives MacArthur "Genius" Award

Shwetak Patel, assistant professor in Computer Science & Engineering and Electrical Engineering, has been named a 2011 MacArthur Fellow. Often colloquially referred to as the "Genius Award," this \$500,000 prize was awarded to Shwetak for developing low-cost, easy-to-deploy sensor systems that leverage existing infrastructures to enable users to track household energy and resource consumption. Shwetak was the youngest of the 22 individuals across the nation honored with the prestigious award this year. MacArthur Fellowships are awarded to "individuals who show exceptional creativity in their work and the prospect for still more in the future." The selection criteria include exceptional creativity, a track record of significant achievement, and promise for important future advances. Fellowships are given without specific reporting requirements or obligations, with the intent of encouraging awardees to pursue their most innovative ideas without restriction. Recently, Shwetak also received a 2011 Microsoft Research Faculty Fellowship and was named "most influential person of 2011" by *Seattle Magazine*.

Shwetak's work in sustainability (electricity, water, and gas) has led to a number of accolades and national recognition, as well as a successful startup company that was acquired by Belkin Inc. in 2010. Beyond sustainability sensing, Shwetak has also been working on novel low-power wireless sensing solutions for dramatically increasing the battery life of wireless in-home sensors by using the power lines as a receiving



## From where I sit...



The last few months have been especially exciting for us in CSE. In particular, in September we learned that Shwetak Patel, who has a joint position in CSE and EE, was awarded a prestigious MacArthur Foundation Fellowship for his research in easy-to-deploy energy sensors and human-computer interaction technology. We are featuring Shwetak and his work on the front page of this issue of MSB. At about the same time, the news broke that a group of online players of Foldit, a protein folding game developed by Zoran Popović and his research group in collaboration with UW biochemist David Baker, had solved a decade-old mystery in the structure of a key enzyme related to HIV/AIDS in monkeys. This scientific advance may lead to the design of better anti-viral drugs.

These are just a few of the many ways that our faculty and students are having impact on important global challenges. And it demonstrates the extent to which interdisciplinary research has become the key to scientific innovation and discovery. Computer science is broadly changing the world, and we want to be part of that change. The best way to do that is to engage with fields outside of CSE that can be advanced by the computing technologies we develop. For this reason, over the last decade we have hired faculty in diverse areas such as synthetic biology, computational biology, neurobotics, novel sensors, and biomechanical control, in addition to hires in core areas. In the future, I expect us to move even further into fields where we can both contribute to computer science and help to address the major challenges that society faces.

Every year the UW College of Engineering honors five of its alumni who have made significant contributions to the field of engineering with its Diamond Awards. I'm very happy to

announce that this year the College has chosen two CSE alumni to receive Diamond Awards. Anne Condon, who received her Ph.D. from CSE in 1987, was selected for Distinguished Achievement in Academia; Anne is currently Head of the Department of Computer Science at University of British Columbia. And Greg Badros, who received his Ph.D. from CSE in 1998, will receive the Early Career Award; Greg is an engineering director at Facebook where he leads several key technical areas, including search and data infrastructure. Congratulations to Anne and Greg!

Wishing all of you a happy and healthy new year!

Henry M. Levy  
Chairman and Wissner-Slivka Chair



UW Computer Science & Engineering 2011 PhD Graduates

From left to right:

Suporn Pongnumkul  
Stefan Schoenmakers  
Hoifung Poon  
Tyler Robison

Xu Miao  
Jon Froehlich  
Jian-Hung Chen  
Seth Cooper

Marianne Shaw  
John P John  
Peng Dai  
Stephen Friedman

Brian Ferris  
Chandrika Jayant  
Michael Piatek  
Roxana Geambasu

Benjamin Lerner  
Natalie Linnell  
Ethan Katz-Bassett  
Keith Grochow

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Contributors: Dieter Fox, Sally James, Ed Lazowska, Hank Levy, Sandy Marvinney, Shwetak Patel

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

## We want to hear from you!

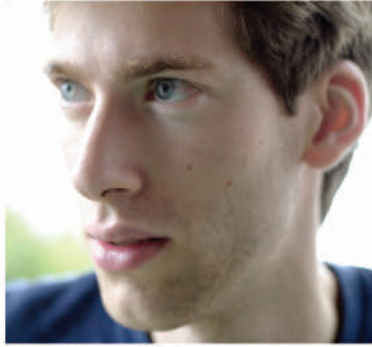
Do you have news you'd like to share with the CSE community?  
Comments or suggestions for future issues of MSB? Let us know!  
Email the editors at: [msb@cs.washington.edu](mailto:msb@cs.washington.edu)

To receive MSB electronically, please sign up by sending an email to: [msb@cs.washington.edu](mailto:msb@cs.washington.edu). Additionally, please be sure to add [msb@cs.washington.edu](mailto:msb@cs.washington.edu) to your email list of contacts.



## Harrow joins CSE faculty

Aram W. Harrow joins us from the University of Bristol where he was a lecturer (the UK equivalent of assistant professor) from 2005-2010 in Computer Science and Mathematics. He attended MIT for his BSc (in math and physics) and his PhD (in Physics).



Harrow's research is on quantum computing and quantum information, and relates to questions such as what would we do with a quantum computer if we were able to build one, and which new mathematical tools do we need to understand the capabilities of quantum information? For example, he recently developed a quantum algorithm for solving large systems of linear equations. Harrow has also found ways to relate quantum information to the computer science notion of pseudo-randomness, as well as to the mathematical method of analyzing symmetries known as representation theory.

Currently he is studying the optimization problems that arise in quantum physics. If successful, this work could be useful not only for modeling complicated quantum systems such as large molecules, but also could give new ways to detect patterns in large data sets.

*(Continued from first page)*

## Patel (cont'd)

antenna. Shwetak and his group have been collaborating closely with Microsoft Research on developing new user interface technologies that leverage the human body as an antenna to turn ordinary surfaces into touch surfaces and for gestural interaction. He also has been looking at ways to leverage mobile phones as sensors for medical health monitoring. In one example, Shwetak has developed ways to apply machine learning to turn an ordinary microphone on a phone into a digital spirometer and cough assessment device for patients with chronic respiratory diseases, such as asthma, cystic fibrosis, and COPD.

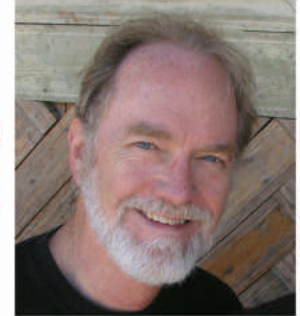
Shwetak's work continues push the boundaries of computing technology for a variety of interesting applications spaces.

More information on Shwetak may be viewed here:  
<http://abstract.cs.washington.edu/~shwetak/>

## CSE's newest ACM Fellows

CSE professors Carl Ebeling, Dan Suciu, and David Wetherall have been elected to this year's class of Fellows of the Association for Computing Machinery. The ACM Fellows Program, initiated in 1993, celebrates the exceptional contributions of the leading members in the computing field.

Carl was recognized for his contributions to the architecture and design of reconfigurable systems. Currently, he is working to develop a programming model and system compiler for executing large data/compute-intensive applications on large-scale reconfigurable platforms.



Dan was recognized for his contributions to probabilistic databases and semistructured data. His past work has addressed various aspects of managing semistructured data, including query languages, compression, query processing and type inference. More recent work includes data security and querying unreliable and inconsistent data sources.



David was recognized for his contributions to computer network design. His research broadly focuses on the Internet and network systems, including wireless and mobile computing, and privacy and security. He mixes blue-sky projects with industrial collaborations and is known for pioneering research on programmable networks, de-duplication, Internet mapping, and denial-of-service.



Carl, Dan, and David join 12 other CSE faculty members as Fellows of the ACM: Tom Anderson, Jean-Loup Baer, Alan Borning, Gaetano Borriello, Susan Eggers, Richard Ladner, Ed Lazowska, Hank Levy, David Notkin, Alan Shaw, Larry Snyder, and Dan Weld.

Also elected in this year's class of 46 new Fellows of the ACM were CSE Ph.D. alum Hugues Hoppe (now at Microsoft Research) for contributions to computer graphics, and CSE Ph.D. alum Dean Tullsen (now a faculty member at UCSD) for contributions to the architecture of high-performance processors.



## CSE leads new Intel Center for Pervasive Computing

The Intel Science and Technology Center for Pervasive Computing (ISTC-PC) launched in the fall 2011. Led by CSE professor Dieter Fox and Intel principal engineer (and CSE PhD alum) Anthony LaMarca, UW serves as the hub, coordinating research among five other top-tier universities involved in the collaboration.

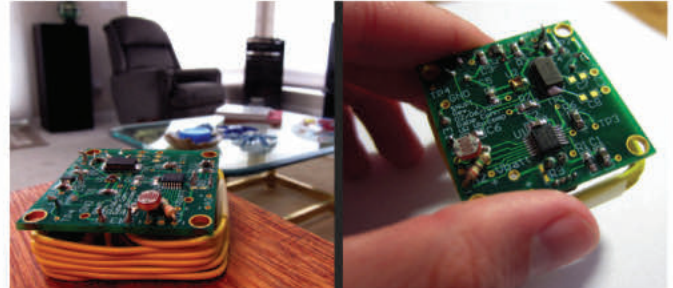
The center's mission is to develop fundamental technologies needed for pervasive computing systems that are trustworthy, richly aware of their users and their activities, and continuously learn and adapt. The ISTC-PC brings together leading researchers whose focus is on pervasive computing, wireless communication and sensing, artificial intelligence and machine learning, computer vision, and human computer interaction, fifteen faculty participants in total. Nine are from UW, two from Georgia Tech, and one each from Cornell, the University of Rochester, Stanford, and UCLA. From the UW, participating faculty are Jeff Bilmes, James Fogarty, Dieter Fox, Yoshi Kohno, Richard Ladner, Shwetak Patel, Josh Smith, David Wetherall, and Luke Zettlemoyer. In addition to faculty, the ISTC-PC will fund roughly 30 grad students and post docs and provide research experiences for undergrads.

To enable continuous, unobtrusive awareness of people, the research team will develop embedded, power-harvesting sensors capable of running for long periods of time. Novel algorithms will combine data from a variety of sensors to recognize a user's context and interactions with people, objects, and environments. These algorithms will learn; they will continuously improve system performance while simultaneously growing their understanding of the user's preferences, goals, and activities. Three key application areas drive the center's research: smart task spaces that provide task assistance in the home and on the go; mobile devices to improve a user's health and well-being by reducing and mitigating stress in everyday situations; and technology to support family life management in the face of increasing schedule complexity and mobility. These applications were chosen because of the difficult requirements presented to a pervasive computing system, and demonstrate the game-changing impact that pervasive computing will have on future devices, applications, and services.

### Low-Power Sensing and Communication Research

Pervasive computing systems must be continuously aware of the environment, the people nearby, and the activities in which they're engaged. Because such systems need to be "always on," saving power whenever possible is crucial. The researchers will develop "perpetual power" techniques that harvest energy from ambient sources and allow simple sensing and computing systems to run indefinitely. For larger devices, they will explore

how to dynamically use the most energy-efficient 802.11 and cellular modes available in the current locale, based on RF conditions and competing network traffic.



SNUPI (Sensor Nodes Utilizing Powerline Infrastructure) nodes are ultra-low-power, general-purpose 27 MHz wireless sensor nodes that transmit their data by coupling over the power line to a single receiver attached to the power line in the home.

Because pervasive computing systems perform continuous sensing and inference about people, within their homes and on the go, developing privacy and trust is paramount. With that in mind, the researchers will investigate how applications, sensors and data coding techniques can be modified to improve privacy.

### Understanding Human State and Activities Research

Next-generation pervasive systems require fine-grained recognition of activities, objects, and social context. To achieve this, the ISTC-PC researchers will deploy dense, heterogeneous sensors in mobile environments and smart spaces, including audio and depth video sensors (via novel cameras that measure 3D shapes) and classic pervasive computing sensors such as GPS, accelerometers, and wireless signals (802.11, cellular and RFID). The research will focus largely on developing new algorithms to extract complex context and activity information from sensor data far more accurately and robustly than the current state of the art. For instance, the algorithms might determine not just that someone is in the kitchen but that the person is slicing an onion, and that the slices are too thick for the recipe being used. To be the most useful, pervasive computing systems must be able to assess the user's context in real-time, a challenge for systems that must operate on low power. To address this challenge, the researchers will explore how to divide the computation between mobile devices and the cloud.

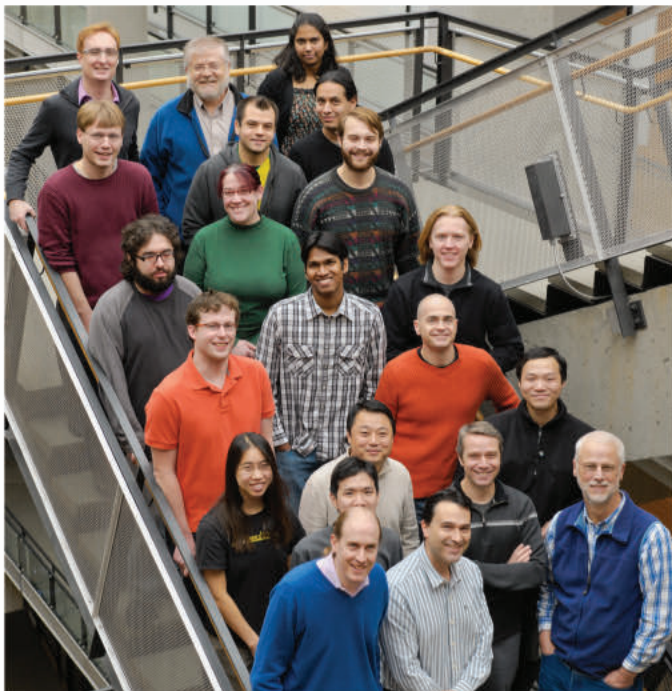
### Personalization and Adaptation Research

Successful pervasive computing systems must be able to learn interactively the environments, objects, schedules, and preferences of their users. It should be easy for a user to



teach a device to recognize activities such as a regular jogging routine, places such as a favorite grocery store, or objects such as the user's car. The research in this area will focus on developing techniques for handling the complex estimation and learning problems required for lifelong learning, adaptation and personalization of systems for individual users. Probabilistic graphical models that describe users and their context will continuously adapt, allowing the incorporation of new places, activities, personal objects, and social contexts over time.

In addition to personalizing what systems know, the center plans to build systems that personalize how they interact with users. The goal is to enable interactions between users and systems that seamlessly blend multiple modalities (e.g., gestures and natural language), enabling users to focus on their goals rather than making the technology work.



ISTC-PC UW team

## Concept Applications

The center will initially focus on three concept applications that will drive the research and demonstrate the technologies.

### Mobile Health and Wellbeing

Improving physical and emotional wellbeing is a high-value application area. The center will explore this topic by developing technologies to help users recognize and reduce stress and anxiety in their daily lives. To achieve this, the researchers aim to develop mobile systems that can understand the rich context of their users' lives (both at home and on the go) and learn about their routines and interactions. The researchers will combine multiple sensing modalities to recognize common stressors and to learn which stressors most affect the user.

This application area will challenge the center to develop power-optimized mobile systems, fine-grained models of everyday activities, interactions, and environments, and personalized and adaptive feedback systems to help users manage stress.

### Task Spaces: A Smart Cooking Assistant

Computers often assist with tasks, but most of the tasks are performed in a traditional computing context. The ISTC-PC aims to demonstrate a space that is capable of helping users with physical tasks that don't involve a computer. For example, a task space could help someone assemble a piece of furniture; teach a person to cook a soufflé; or assist someone who is visually impaired in configuring a new piece of audio equipment. This highlights an important promise of future pervasive computing apps: the ability to deliver expert knowledge to novices, providing "hands" on training at home or on the go.

Provided with a recipe, the Smart Cooking Assistant will guide the cook through the different steps of the recipe. With the help of sensors that watch the kitchen counter top and other surfaces, the system will recognize tools and implements for cooking, and their use, and will detect when ingredients are measured and added. It will track the user's progress, providing audio and visually projected cues as needed. It will also monitor time and convey to the user the scheduling and timing associated with the recipe (e.g., timing the rising of dough, marinating, and baking time).

Users will be able develop new recipes for the Smart Cooking Assistant via interactive demonstration. The system can be taught to correctly interpret gesture and speech input, and trained to recognize the ingredients, amount, order, physical manipulation of ingredients, etc. The resulting recipe will be captured by the system for later use.

Although the researchers will demonstrate cooking-related functionalities in this space, the techniques developed will be general enough to be applied to other task spaces, such as workbenches, wet labs, and classrooms.

### Family Coordination System

Thanks to increasingly busy, mobile, over-scheduled lives, it's becoming harder for families to spend time together. The ISTC-PC will address this challenge by developing pervasive computing systems that help families coordinate their lives through monitoring, tracking, and reflecting on family activities. Activities will be tracked over the entire day at a relatively coarse level both inside and outside the home, and at a far more detailed level in sensor-rich areas of the home, such as the kitchen and dining room. The system will use activity information to assist families in planning their lives. For instance, one goal might be to help a family get ready to

(Continued on page 7)



## Wen-Hann Wang: Our Man at Intel

CSE's collaboration with Intel shoots to new heights with the Intel Science and Technology Center for Pervasive Computing (page 4). An enthusiastic booster for the center is CSE alumnus Wen-Hann Wang (PhD '89), a vice president of Intel Labs and director of circuits and systems research, based in Hillsboro, Oregon.

"I'm excited about the center, whose executive sponsor is a close colleague, so I'll be keeping up with its work," Wang said.

Wang also keeps close tabs on CSE as Intel's liaison to the University of Washington, a role he had eyed for many years. Recruited to Intel in 1991 as a microprocessor expert and platform architect for the Pentium Pro, his work was instrumental in the P6 family and creation of the Intel Xeon processor product line. His ascending career included two postings to Shanghai, first as director of Intel China Software Lab from 2000 to 2003, and then from 2006 to 2008 as general manager of Software and Solutions and Product Development, China. In 2004 he scouted the Middle East from Beirut to Cairo and Istanbul to locate a new R&D lab, but settled on Argentina as the best fit. In between his two assignments in China, he managed the Core Software, Managed Runtime, and Middleware Products divisions in Oregon and Intel's R&D in Russia, where he traveled more than two dozen times.

"Finally my turn as liaison at UW came a year and a half after I moved back to the US. Now I officially visit in spring and fall to meet with Dean O'Donnell, Hank Levy and other Engineering chairs, and with faculty, Intel scholarship fellows, and other students."

***"I'm a life-long learner and will continue to visit the UW to learn from Jean-Loup and other faculty. The UW is forever my university."***

Wang's circuitous journey to the UW originated in a small village in Taiwan, beginning with what he calls a "blind date" with electrical engineering. Just the second person in his family and village to attend college (20 years after his uncle), Wang loved Chinese and English literature, but top examination grades earned entry into the number one program at National Taiwan University — electrical engineering. "I knew nothing about the field, but thought it would be an opportunity for a career with a good income," he recalled.

After two years as a communications intelligence officer in the Taiwan army, he followed several classmates to graduate school

at Santa Barbara, where he was a TA for a "hippie" professor with long hair and a big bushy beard.

"My English was poor then. I couldn't read his lips or understand anything he said. Luckily, Phillips International Institute of Technological Studies offered me a fellowship, so I instantly accepted and went off to earn my MS degree in The Netherlands," he recalled.



Classmates from 17 countries and travels throughout Europe provided an eye-opening cross-cultural experience. Upon his return to Taiwan, he weighed a teaching position there versus an opportunity to return to Europe with Phillips and also earn a PhD. Instead, he followed his mother's advice to pursue his doctoral studies in the US, where she believed he was more likely to find a Chinese wife than in Europe.

### Rainier Effect Plus Baer Effect

Graduate program catalog perusal (before Internet time) convinced Wang that the UW had the most beautiful campus, plus it was the closest university to Asia. While in The Netherlands researching his master's thesis, he also came across Jean-Loup Baer's book on computer architecture.

"I was interested in this topic and was impressed with his book, which further prompted me to apply to the UW computer science program," Wang said. "Jean-Loup became my advisor, helped me secure RA and TA positions, and let me think and explore. He was an excellent mentor. Everyone on the faculty was so nice, and I was very happy at the UW."

Baer describes Wang as "a brilliant student, first-rate researcher, and the nicest guy on earth." Wang and Baer worked on multi-level cache hierarchies and coauthored a ground breaking paper in 1988 that won the inaugural "test of time" paper award from the International Symposium of Computer Architecture in 2003. They have kept in close touch, and he returned to Seattle to celebrate Baer's 75<sup>th</sup> birthday, as well as Susan Eggers' recent retirement. He also is a generous donor to CSE with a gift to the Allen Center capital campaign.

He dreams of becoming an essayist when he retires, perhaps writing about people he's met all over the world, each with an interesting story to tell. For ten years (before blogs existed),

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(Continued from page 6)

he wrote the "Dawg Food Digest" — a tech watchdog report for Intel — four paragraphs on key items digested from reading 20 articles each weekend.

Wang has passed Dawg blood to his son, who earned a UW degree in anthropology and is now perfecting his Chinese in Taiwan, and computer science talent to his daughter, a grad student at Washington University in St. Louis. No matter where they land, you can't take the Washington out of this family.

## CSE Major Research Centers

In addition to the Intel Science and Technology Center for Pervasive Computing (see page 4), CSE has recently announced two other research centers. These three center-scale activities take CSE's work to a new level and bring new opportunities to our students and faculty.

**NSF Engineering Research Center for Sensorimotor Neural Engineering (CSNE):** Led by CSE's Yoky Matsuoka, the CSNE is funded with an \$18.5 million, five-year grant from the National Science Foundation, with potential for a five-year renewal. The Center is a global hub for delivering neural-inspired sensorimotor devices. Using devices that mine the rich data in neural signals available from implantable, wearable, and interactive interfaces, the CSNE builds end-to-end integrated systems. The fall issue of *Trend* highlighted the new center: [www.engr.washington.edu/news/trend/aut11\\_erc.html](http://www.engr.washington.edu/news/trend/aut11_erc.html)

For more information about the CSNE, visit:  
[csne.washington.edu](http://csne.washington.edu)

**The Center for Game Science (CGS):** Led by CSE's Zoran Popović, the CGS is funded at \$15 million by DARPA and the Bill & Melinda Gates Foundation. The CGS focuses on solving hard problems facing humanity today in a game based environment. The fall 2010 issue of *MSB* highlighted the CGS: [cs.washington.edu/publications/msb/html/20.2/games.html](http://cs.washington.edu/publications/msb/html/20.2/games.html)

For more information about the CGS, visit:  
[games.cs.washington.edu](http://games.cs.washington.edu)

Bill Gates, in his CSE Distinguished Lecture on October 27, 2011, briefly discussed the Center and two of its play-based games: FoldIt and Refraction. His lecture may be viewed here: [www.cs.washington.edu/events/billg\\_oct27\\_2011/](http://www.cs.washington.edu/events/billg_oct27_2011/)

(Continued from page 5)

## ISTC-PC (cont'd)

leave on a weekday morning with a minimum of fuss, or to plan a day's strategy for picking up the kids at school if there's a change in normal daily routines.

To bootstrap learning of the models used for inferring activities, the researchers will develop techniques to motivate family members to provide data about their daily activities within and outside the home. The system will include engaging visualizations to encourage members to provide input. It will also use persuasive, unobtrusive, privacy-preserving methods of providing feedback and generating awareness.

For more information about the ISTC-PC, visit:  
<http://istc-pc.washington.edu>

## Make an Impact: Support CSE

Supporting UW CSE is a left-brain decision.

Traditionally, the nation's public universities have been powerful engines of upward mobility for bright students who grow up in their regions, with tuition kept low by taxpayer support. In Washington and elsewhere across the nation, this long-standing contract has been broken: public funding for higher education has been reduced dramatically in the past few years.

Your gift provides the department with resources for scholarships, fellowships, research support, and funds to build the CSE community we hope you value. Small gifts might not seem significant by themselves but when pooled together they make great things possible.

As you think about your giving, please consider making a gift to CSE. Every gift, regardless of size, helps maintain a quality experience for students that reflects the sense of community you've come to expect from us. An easy way to make a gift is online.

Just go to our website ([www.cs.washington.edu](http://www.cs.washington.edu)) and select "Support CSE." You will find a variety of funds that can benefit from your support.





## Datagrams

Seattle Business hearts UW CSE



The December issue of *Seattle Business* magazine identifies "The Good, The Bad, and The Stupid" for 2011. Featured on "The Good" were:

- Oren Etzioni and Mike Fridgen, UW CSE and Decide.com.
- Luis Ceze, UW CSE and Corensic.

- Desney Tan, Microsoft Research and UW CSE Affiliate Professor.
- Yaw Anokwa, UW CSE.

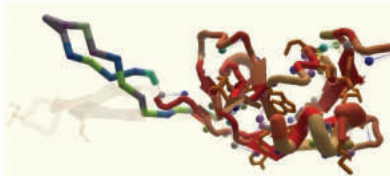
Happily, UW CSE was not listed among "The Bad" or "The Stupid." The full article may be viewed here:

[seattlebusinessmag.com/article/good-bad-stupid-2011](http://seattlebusinessmag.com/article/good-bad-stupid-2011)

### Foldit named TechFlash 2011 "Innovation of the Year"

Foldit, the massive multi-player protein folding game created by CSE's Center for Game Science, was named by *TechFlash* as the 2011 "Innovation of the Year" for its role in cracking an AIDS-related problem whose solution had eluded scientists for a decade. [In September, a study published in *Nature Structural & Molecular Biology* reported that in just three weeks, gamers deciphered the structure of a key protein in the development of AIDS that has stumped scientists for years by playing Foldit.] Play Foldit here:

<http://fold.it/portal/>



### Jason Lin receives 2011 TWAS Prize in Engineering Sciences



Jason Yi-Bing Lin (1990 Ph.D. alum) was recognized with the 2011 Prize in Engineering Sciences from TWAS, the academy of sciences for the developing world. Jason is Dean of the College of Computer Science, lifetime Chair Professor, and Vice President of the National Chiao Tung University, Taiwan. He has been widely recognized for

his many contributions to wireless communication, including (among many other honors) being named a Fellow of the Association for Computing Machinery, a Fellow of the Institute of Electrical and Electronics Engineers, and a Fellow of the American Association for the Advancement of Science.

### CSE's Shwetak Patel and Stuart Reges - on the big board!

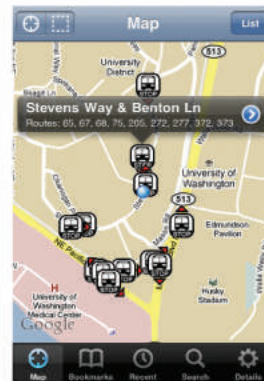


Two of CSE's finest were recognized this fall on the stadium scoreboard during home football games. During the October 16 game against the Colorado Buffaloes, Stuart was recognized for his 2011 University of Washington Distinguished

Teaching Award. Two weeks later at the October 30 game against the Arizona Wildcats, Shwetak was recognized as the UW's newest MacArthur "Genius Award" winner.



### OneBusAway wins Vision 2040 Award

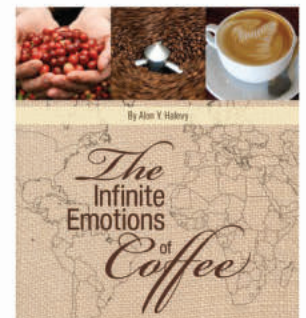


OneBusAway has won a 2011 VISION 2040 Award from the Puget Sound Regional Council for the OneBusAway project. The awards recognize innovative projects and programs that help ensure a sustainable future as the region grows. Said Mukilteo Council member Jennifer Gregerson, Chair of the VISION 2040 Awards Selection Committee, "Access to real time information in a variety of mobile formats has taken some of the uncertainty out of using transit, making it an even more convenient way to get around."

### The Infinite Emotions of Coffee

Alon Halevy's labor of love for the past few years — in addition to leading Google's database research group — has been researching and writing a book on coffee: *The Infinite Emotions of Coffee*. He traveled to more than 30 countries on six continents to shed light on how coffee has shaped and is influenced by different cultures. More information on the book may be viewed here:

<http://www.macchiatone.com/>



(Alon, CSE affiliate professor, was a CSE faculty member for many years before joining Google when they acquired one of his startups.)



## Two CSE alums receive 2012 Diamond Awards

Each year the University of Washington College of Engineering recognizes five alums with Diamond Awards – the highest honor conferred by the College. Two CSE alums have received 2012 Diamond Awards – to be conferred at a ceremony on May 18.



CSE Ph.D. alumnus Greg Badros, an Engineering Director at Facebook responsible for advertising, search, data science and data infrastructure, will receive the UW College of Engineering Diamond Award for Early Career Achievement.

CSE Ph.D. alumna Anne Condon, Head of the Department of Computer Science at the University of British Columbia and a world-renowned researcher in theoretical computer science and computational biology, will receive the UW College of Engineering Diamond Award for Distinguished Achievement in Academia.



Read more about Greg, Anne, and the other honorees at: [www.engr.washington.edu/alumcomm/diamond/2012honorees.html](http://www.engr.washington.edu/alumcomm/diamond/2012honorees.html).

## Jean-Loup Baer turns 75



In early September, the CSE family celebrated CSE emeritus professor Jean-Loup Baer's 75th birthday. Jean-Loup, pictured above with his wife, Diane, hosted a wonderful party at Bastille.

## CSE honors Susan Eggers

On November 5th, the CSE family gathered to celebrate the retirement of long-time CSE professor Susan Eggers.

Susan, a leading computer architect and member of the National Academy of Engineering, was honored by CSE faculty and staff, former students, former Berkeley graduate school colleagues including Jim Larus, and her Berkeley Ph.D. advisor, Randy Katz, (Susan was Randy's second Ph.D. student; his first, Gaetano Borriello, is also on the UW CSE faculty.)

Photos of the evening may be viewed at:  
<http://lazowska.cs.washington.edu/eggers/>

Thank you, Susan, for all you've done to make UW CSE a special place.



Susan and some of her PhD alums (l-r): Jack Lo, Tor Jeremiassen, Andrew Putman, Susan Eggers, Andrew Schwerin, and Radhika Thekkath



Susan and Randy Katz, her PhD advisor



## Refraction wins NHK Japan Prize

Refraction, a game for teaching fractions developed by CSE's Center for Game Science, recently won the The Minister of Education, Culture, Sports, Science and Technology Prize for the Best Work in the Primary School Category in the 38th NHK Japan Prize. The NHK Japan Prize is an annual international competition for educational media. Refraction placed first among the 60 entries in the Primary School category, and was one of six overall winners selected from 313 entries from 61 countries. The jurors stated that "Refraction provides a brilliant solution to bring mathematical concepts to life in a rich environment that is fundamentally exciting while at the same time is rooted in pure education." The Center for Game Science competed with major international broadcasting organizations such as NHK, BBC, PBS, and the National Film Board of Canada. NHK flew CSE grad student Erik Andersen to Tokyo to receive the prize and broadcasted the awards ceremony throughout Japan.

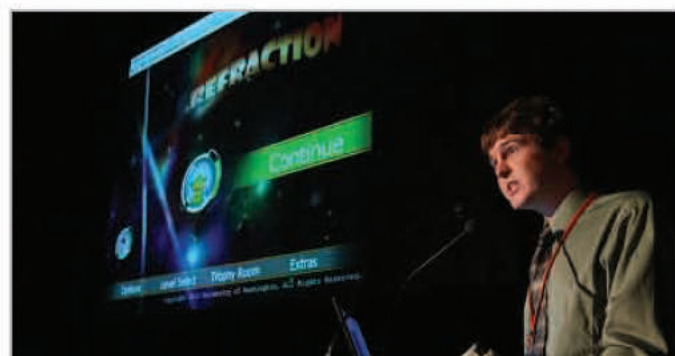


Erik Andersen receives the NHK Japan prize

Refraction was created by CSE graduate students Erik Andersen, Yun-En Liu, Eric Butler, and Seth Cooper, CSE Professor Zoran Popović, and a team of CSE undergraduate students, artists, educators, and game design experts. The game is accessible to anyone with a web browser, can be played for free, and has already engaged more than 400,000 players of all ages. A major goal of the project is to leverage the popularity of video games to gather huge amounts of data on how children learn fractions. Future versions of Refraction will adapt to each child individually and present a variation of the game most suited to the child's knowledge, learning preferences, and misconceptions. The long-term goal is to show that such games can be highly effective at making challenging math topics fun and to replace math homework with game playing.

To play the game, please visit:

[games.cs.washington.edu/refraction](http://games.cs.washington.edu/refraction)



Presenting Refraction to the audience

## UW's iGEM team is the 2011 world champion!

UW's team took home the top honor at the iGEM World Championship, held November 5 - 7 at MIT. iGEM is a synthetic biology competition in which teams compete by working on various technologies related to food, medicine, energy, and other topics. This student competition has taken place annually since 2003.

UW's team, made up of 23 undergrads from several departments including biochemistry, microbiology, bioengineering, materials science, and computer science, reflects the interdisciplinary nature of synthetic biology. CSE's own Sean Wu is a member of this year's winning team!

The team's projects consisted of a microbial-based diesel fuel and research into a new enzyme that could act as a therapy for gluten intolerance. The UW beat out teams from MIT, Harvard, Imperial College London, and ZJU-China.

More on the 2011 winning team here:

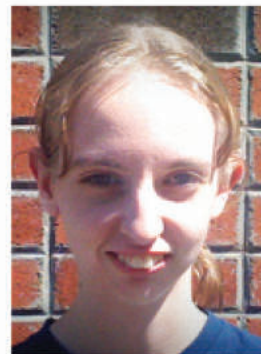
<http://2011.igem.org/Team:Washington>



UW 2011 winning iGEM team members



## 2012 CRA Undergraduate Researcher Award competition recognizes four CSE students



CSE undergraduates recognized by CRA (l-r): Elliott Brossard, Matt Bryan, Stephanie Dietzel, and Hilary Worden

The Computing Research Association (CRA) Outstanding Undergraduate Researcher Award competition recognizes undergraduates in North American colleges and universities who show outstanding research potential in an area of computing research. Universities may nominate as many as four students annually. In the 2012 competition, all four UW CSE nominees were recognized!

Matthew Bryan (finalist) researches brain-machine interfaces (BMI) in UW's Center for Sensorimotor and Neural Engineering. His publications have focused on designing interfaces that can adapt to BMI users, allowing them to be used for more complex tasks than any previously performed with BMI. He intends to enter a PhD program in computer science where he will continue his research.

Elliott Brossard (honorable mention) is a fourth-year student in computer science and math, doing research with Professor Carl Ebeling on creating a threaded object model for programming Field Programmable Gate Arrays (FPGAs), which allows for the swift development of highly efficient low-level applications. When he graduates in the spring, Elliott will continue his studies with the fifth-year combined bachelors/masters program in computer science at UW.

Stephanie Dietzel (honorable mention) has been working with the Programming Languages and Software Engineering group. Recently, she was listed as a coauthor on "Building and using pluggable type-checkers," which was presented at the 33rd International Conference on Software Engineering. Stephanie will continue her studies with the fifth-year combined bachelors/masters program in computer science at UW.

Hilary Worden (honorable mention) has been working for the Open Data Kit group since winter 2010. She currently works on ODK Tables, an Android app built to provide SMS-based data collection and information services with low overhead, and

designed mainly for use in developing regions. After graduation, she'll be working for Google.org's disaster response team.

This year's results extends CSE's record of having the largest number of students recognized in the most recent ten years of this competition! The winners join 38 previous CSE undergraduates recognized by the CRA since the award's inception in 1995.

Congratulations to Elliott, Matt, Stephanie, and Hilary!

## CSE rocks 2011 Grace Hopper Conference



Founded in 1994, the Grace Hopper Celebration of Women in Computing is a series of conferences designed to bring the research and career interests of women in computing to the forefront. UW CSE has consistently been a leader in inclusion and has consistently had a strong representation of undergraduate students, graduate students, staff, and alums at the Hopper conferences. The 2011 conference was conveniently located in Portland, Oregon. Given the close proximity, CSE's attendance broke all records!





# most significant bits

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## 2011 Annual Industrial Affiliates Meeting

More than 200 affiliate members and CSE alumni and friends participated in this year's annual Industrial Affiliates research day on October 19, which was capped with an evening of posters and demos also attended by regional alums. The keynote address was presented by Joe Tucci, Chairman & CEO of EMC. In a record breaking year, 54 companies participated in CSE's recruiting fair on October 20th. To accommodate that many participating companies, 14 companies were located in the Gates Commons and 40 companies in the Atrium.



Joe Tucci, Chairman & CEO of EMC, receives a Husky football jersey following his keynote address.



CSE open house:  
Alums and friends  
in the new Center  
for Game Science  
lab.



Nicola Dell, pictured with CSE's chair, Hank Levy. Nicki's poster "Paper to Digital, in ICTD/Computing for Development" won the People's Choice Award for research.



"Controlled chaos" effectively described CSE's recruiting fair on October 20th.