



Photo by Lara Swimmer

University of Washington Computer Science & Engineering Proudly Announces Three New Research Centers

The NSF Engineering Research Center for
Sensorimotor Neural Engineering

The Center for Game Science, sponsored by
DARPA and the Bill & Melinda Gates Foundation

The Intel Science and Technology Center for
Pervasive Computing



<http://www.cs.washington.edu>

University of Washington Computer Science & Engineering continues to excel as one of the nation's premier computer science and computer engineering programs

We are proud to introduce three new center-scale activities that dramatically enhance our capabilities:

- The NSF Engineering Research Center for Sensorimotor Neural Engineering

An \$18.5 million 5-year NSF ERC launched in July 2011

- The Center for Game Science

Funded at \$15 million by DARPA and the Bill & Melinda Gates Foundation

- The Intel Science and Technology Center for Pervasive Computing

One of five \$2.5 million per year Intel STCs, to be formally announced in September 2011

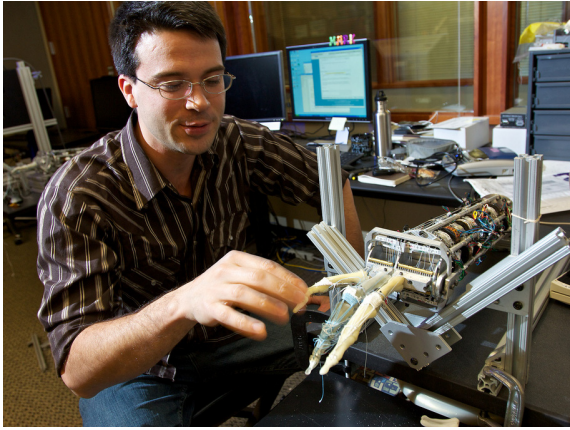


Photo: M. Levin

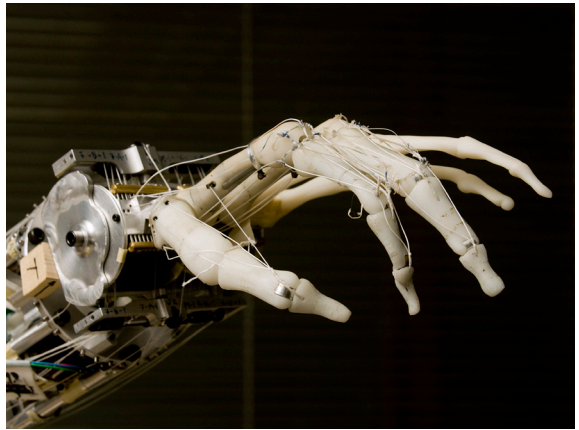
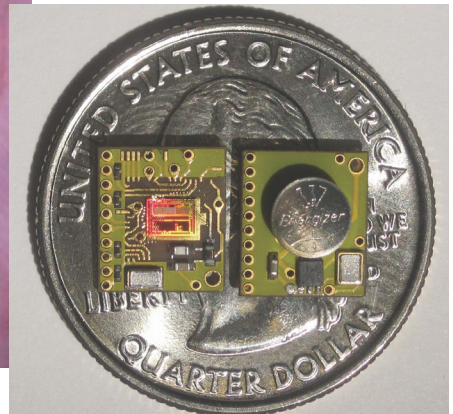
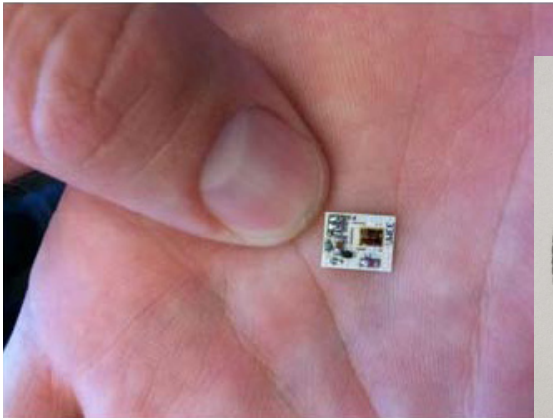


Photo: M. Levin



The NSF Engineering Research Center for Sensorimotor Neural Engineering

Director: UW CSE Professor Yoky Matsuoka

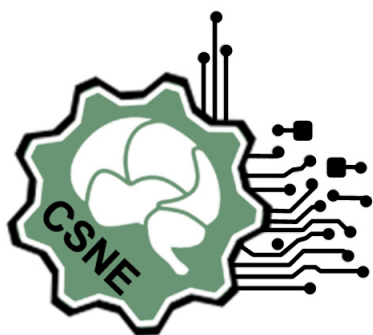
Professor Yoky Matsuoka directs the National Science Foundation Engineering Research Center for Sensorimotor Neural Engineering, established in July with a five-year, \$18.5 million award.

The Center will pioneer robotic devices that interact with, assist and understand the human sensory and nervous systems, combining advances in robotics, neuroscience, electromechanical devices and computer science to restore or augment the body's ability for sensation and movement. Researchers will develop new technologies for amputees, people with spinal cord injuries, and people with cerebral palsy, stroke, Parkinson's disease, or age-related neurological disorders. Early systems might involve remote or wearable devices that help guide rehabilitation exercises to remap brain signals and restore motor control. Ultimately, researchers hope to develop implantable prosthetics that are controlled by brain signals and include sensors that shuttle information back to wearers so they can react to their environment – creating robotic systems that are truly integrated with the body's nervous system.

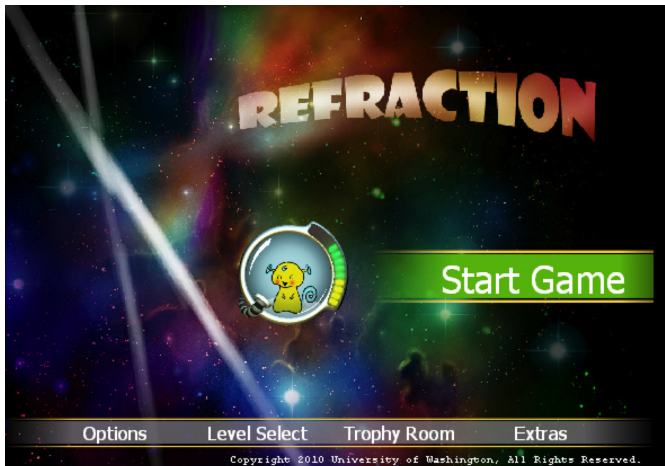


Partner institutions are the Massachusetts Institute of Technology and San Diego State University. Also involved are historically minority-serving institutions Spelman College and Morehouse College, both in Atlanta, and Southwestern College in Chula Vista, California. International partners are the University of British Columbia and the University of Tokyo. Collaborating organizations are major companies including Microsoft, Intel, and Lockheed

Martin; smaller companies and startups including Impinj, NeuroSky, and NeuroVista; and non-academic research institutions including the Allen Institute for Brain Science, the La Jolla Bioengineering Institute, and hospitals in Seattle and San Diego.



Learn more at <http://csne.washington.edu>.



foldit BETA

Solve Puzzles for Science

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Click to learn how you contribute to science by playing Foldit.

GET STARTED: DOWNLOAD

Win Beta
Win XP/Vista

Mac Beta
Intel OS X 10.4 or later

Linux Beta
Linux

RECOMMEND FOLDIT

USER LOGIN

Username:

Password:

- Create new account
- Request new password
- Sign in using Facebook

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What's New

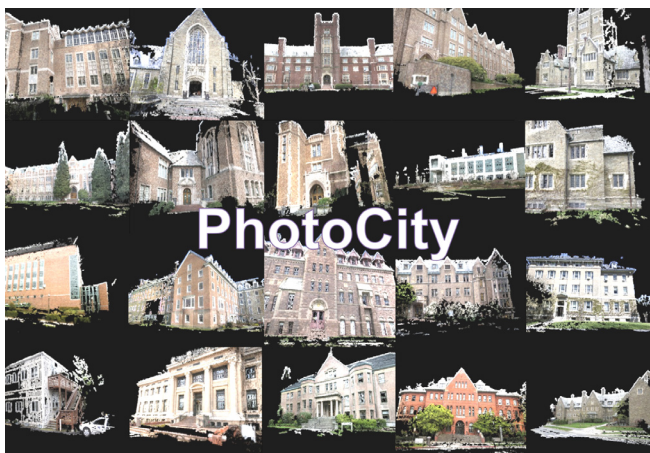
Developer Preview Release

We've just released a new update for the Developer Preview.

This update includes:

- New Intro Puzzles. There are now puzzles covering Quest to the Native, Electron Density, and Exploration Puzzles.

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The Center for Game Science

Director: UW CSE Professor Zoran Popović

Professor Zoran Popović's Center for Game Science recently received \$12 million in funding from the Defense Advanced Research Projects Agency and \$3 million from the Bill & Melinda Gates Foundation for research into games for science and for education.

The Center is focusing on two areas: scientific discovery in biochemistry and bioengineering, and creating student-specific learning games that address key bottlenecks in early STEM (Science, Technology, Engineering, and Mathematics) education.



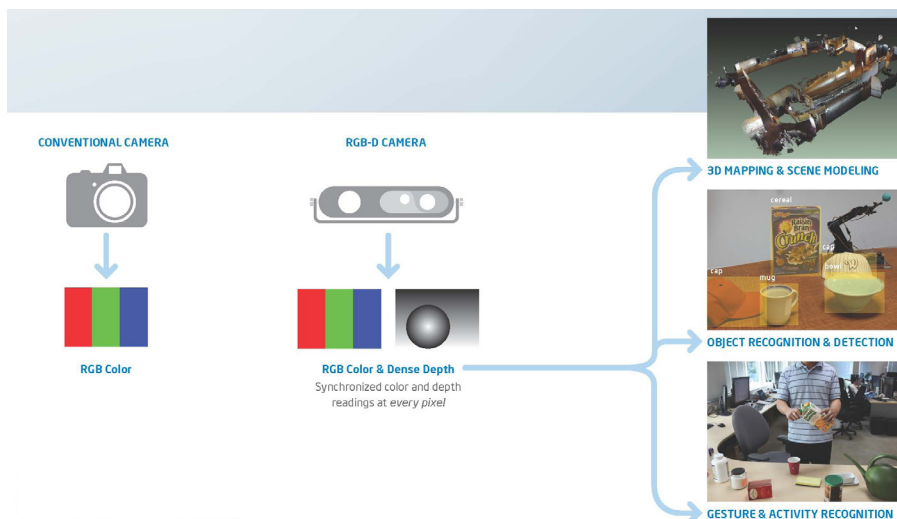
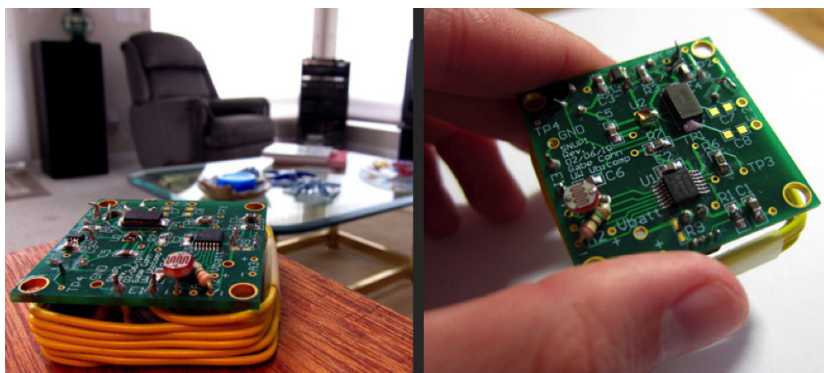
In the area of scientific discovery, Popović and his students have collaborated with UW Biochemistry Professor David Baker to create Foldit – a game designed to tackle the problem of protein folding. Understanding protein structures can increase our understanding of their function and teach us how to combat diseases and create vaccines. In use by over 200,000 players worldwide, Foldit augments computational search of protein structures with large-scale human 3D spatial reasoning. Foldit has demonstrated that human “crowdsourcing” can contribute to solving hard scientific problems, and that the gaming environment is capable of turning novices into skilled contributors in this complex domain.

In the area of STEM education, the Center’s initial focus is early math education, particularly fractions and algebra – some of the main bottlenecks preventing students from pursuing STEM careers. The objective is to leverage online games to discover the best ways to teach early mathematics. For example, players receive different versions of a game that have particular concepts presented in different ways; the game records how players perform;

researchers use this data to understand how students learn. An additional goal is to create games that adapt to every player so that each student will always be working on the next concept he or she needs to learn. Refraction, an early effort, has already become a hit: it won the Grand Prize in the Disney Learning Challenge at SIGGRAPH 2010, and over 100,000 students have played the game since its release.



Learn more at <http://games.cs.washington.edu>.



The Intel Science and Technology Center for Pervasive Computing

Director: UW CSE Professor Dieter Fox

Professor Dieter Fox leads the soon-to-be-announced \$2.5 million per year Intel Science and Technology Center for Pervasive Computing, one of five ISTC's established by Intel in 2011.

The mission of the Center is to develop the fundamental technologies needed for pervasive computing systems that are trustworthy, richly aware of their users and their activities, and continuously learning and adapting. The Center brings together leading researchers in pervasive computing, wireless communication and sensing, artificial intelligence and machine learning, computer vision, and human computer interaction. Nine faculty participants are from UW, two from Georgia Tech, and one each from Cornell, the University of Rochester, Stanford, and UCLA.



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 will 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 in order to demonstrate the game-changing impact that pervasive computing will have on future devices, applications, and services.



The other Intel Science and Technology Centers are led by UC Berkeley, Stanford, and Carnegie Mellon. In addition to leading the ISTC for Pervasive Computing, UW CSE is a major participant in the Stanford-led ISTC for Visual Computing.

Learn more at <http://istc-pc.washington.edu>.

Other Items of Special Note

While we are particularly excited by the launch of these three major research centers, UW CSE continues to excel across the board. For example ...



Professor Shwetak Patel's ElectriSense technology, which uses machine learning to provide fully disaggregated electric energy consumption data to consumers from a single sensor, is being brought to market this summer by Belkin, in partnership with the Department of Energy and Best Buy. Patel's group has applied similar approaches to

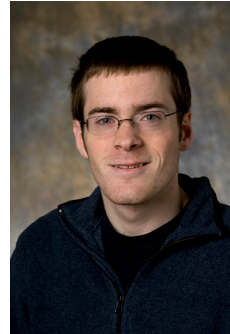
water and gas consumption. Learn more at:
<http://ubicomplab.cs.washington.edu>.

Professor Gaetano Borriello's Open Data Kit, developed in collaboration with Google, has become the standard toolkit for mobile smartphone data collection applications in the developing world. Borriello and professor Richard Anderson recently received a \$2.3 million grant from the NSF Smart Health and Well-being Cross-Cutting Program to collaborate with Seattle-based global health non-profit PATH to develop mobile technologies to strengthen health systems for under-served populations – tools that will permit community organizations to easily deploy new health services. Learn more at:
<http://change.washington.edu> and <http://opendatakit.org>.



In recent years, UW CSE faculty have been the source of over a dozen startups, which have attracted more than \$250 million in venture funding. Farecast, a travel data analytics company, was acquired by Microsoft as the foundation for Bing Travel. Skytap (self-service cloud automation services), Corensic (software quality tools for multithreaded programs), and Decide (data analytics to inform purchasing decisions) are thriving as privately-held companies. Professor Chris Diorio's startup Impinj – the leading provider of UHF RFID solutions – has just filed for IPO. Learn more at:
<http://www.impinj.com>.

Undergraduate student Will Johnson was named a Putnam Fellow for finishing among the top five students in the nation – from among 4,036 competitors – in the William Lowell Putnam Mathematical Competition.



UW CSE awarded 185 bachelors degrees this year and is always among the nation's top suppliers of new graduates to leading companies including Amazon.com, Microsoft, and Google. We lead the nation in the number of students recognized in the CRA Outstanding Undergraduate Researcher Awards competition in the past decade.



Graduate student Brian Ferris was honored in Washington DC in June as part of the White House Champions of Change program, recognizing his pioneering work on OneBusAway, a suite of applications that significantly enhances the usability of public transit. Learn more at: <http://www.onebusaway.org>.

UW CSE awarded 85 Masters degrees and 22 Ph.D. degrees this year.

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