Riek Receives NSF CAREER Award

Professor Laurel Riek has been named a recipient of the 2013 National Science Foundation (NSF) Early Career Development (CAREER) Award for her project titled "Next Generation Patient Simulators". This is the highest honor given by the U.S. government to young faculty in engineering and science and provides a five-year grant to support their integrated research and education activities.

Every year in the United States, over 150,000 people needlessly die and billions of dollars are lost as a result of communication-related medical errors. Through her CAREER project, Dr. Riek hopes to reduce the incidence of these errors by creating expressive, high-fidelity robotic human patient simulators (HPS). HPS systems are the most commonly used android robots in America, tens of thousands of clinicians train on them each year. However, no commercially available systems exhibit realistic, clinically-relevant facial movements, movements which contain critical cues clinicians need to learn how to read to properly assess and treat patients. This work will address this shortcoming by creating novel expression synthesis algorithms that model various pathological states such as pain and drowsiness.

These new HPS systems will enable clinical educators to run simulations currently impossible with commercially available technology, thereby leading to more realistic training experiences for clinical students. This work may also improve our understanding of many of these disorders, and lead to an improvement in patient safety and healthcare quality.

CSE Junior Wins 4th In International GE Competition

Junior Jon Gautsch, a CS major, is the youngest winner (placing 4th) against teams of MD's, PhD's and MBA's in the first ever GE Hospital Quest Competition with his startup WorkMeln. WorkMeln is a web-based patient referral management platform. The GE Hospital Quest competition is a competition backed by GE, Ochsner Health Systems, and Kaggle, a platform for data prediction competitions, and is part of the new GE Quest competition series. This first round of the Quest series competitions had over 3000 competitors.

The current process of referring a patient from physician to physician is filled with unnecessary friction, which WorkMeln aims to remove.

The concept for WorkMeln was further inspired and refined through Professor Nilesh Chawla’s Healthcare Analytics class, which allows students the opportunity to learn about the current state of the healthcare industry, and how to take an effective data-driven approach to many of the inefficiencies plaguing the industry. The patient referral platform is under development, and hopes to have physicians using it for patient referral management in the near future.
McCloskey Business Plan Competition Announces Winners

One of two CSE teams (out of the original 147 teams) made it to the semifinals of the 2012-2013 McCloskey Business Plan Competition and one placed first. Professor Jesus Izaguirre and CS graduates Justin Hintz and Ryan Hammond had advanced to the semifinal round with their presentation. Among the six finalists, Context emerged as the winner of the $25,000 McCloskey Business Plan Competition grand prize. Christian Poellabauer and Patrick Flynn, faculty members in computer science (along with CSE Ph.D. student Nikhil Yadav and ESTEEM student Shane McQuillan), presented their technology for a new, instantaneous, accurate concussion assessment tool that will be particularly helpful in detecting concussions in soldiers and athletes. The service captures an individual’s voice and detects subtle changes that may indicate a concussion.

Undergrads Participate in Multi-Disciplinary Service Learning

Dr. Paul Brenner, Associate Director of High Performance Computing in the Center for Research Computing at the University of Notre Dame led a small team of multidisciplinary engineering students this semester that tackled many engineering challenges. These challenges included, but were not limited to, a sustainable soil pump for the city of South Bend, a human well-being computer simulation in partnership with psychology, and the electro/mechanical re-engineering of a power wheels toy vehicle for a small child in partnership with Memorial Hospital. The engineering students were inspired through application and evolution of their new technical skills and many will apply the lessons learned throughout their careers. The two most active CSE students on the projects were recent graduates Nicholas Schmidt and Steven Kraska.

Antwane Mason and Cedric Strickland are Second-place Winners in Curriculum Development Competition

Cedric Strickland and Antwane Mason participated in a curriculum development competition sponsored by the Center for Minorities and People with Disabilities in Information Technology, CMD-IT. Both African-American students are Computer Science seniors and received the second-place prize of $1500. They had the opportunity to attend this year’s SIGCSE Technical Symposium held in Denver, Colorado, March 6-9th, to present their project proposal and receive the award. The SIGCSE Symposium is a forum for the sharing of ideas concerning teaching and pedagogy in computer science education.

CMD-IT is a center whose mission is to ensure underrepresented groups are engaged in computing and information technology and to promote innovations that enrich, enhance, and enable underrepresented groups. In 2012, CMD-IT held a competition titled “Introductory CS Course: It’s All About Inclusion”. The challenge was to design a two-week project for an introductory computer science course that would excite and inspire students from underrepresented groups. Strickland and Mason’s submission was a course project called “Under-Represented Minority Advancement Site (URMAS)”. The concept of the URMAS project is to have students create a website targeting high school and undergraduate students, allowing them to contribute content on topics such as applying to schools, obtaining scholarships, or applying for U.S. citizenship. This project would provide students with an introduction to skills necessary to succeed in the field of computing and information technology as well as allowing underrepresented groups to uplift one another, pulling their knowledge and resources to succeed both individually and collectively.

D’Mello Receives Grants from Gates Foundation

Dr. Sidney D’Mello receives two grants from the Bill and Melinda Gates Foundation. The first project, in collaboration with University of Pennsylvania, focuses on developing measures of non-cognitive factors that predict college persistence. The second project is in collaboration with Teachers College Columbia and Florida State University. This project aims at building automated classifiers of engagement and other cognitive-affective constructs (confusion, frustration) by analyzing facial expressions and interaction patterns while students learn Newtonian Physics by playing an educational game.
Valparaiso University Appoints CSE Alum as Dean to the College of Engineering

Valparaiso University has appointed Eric Johnson as Dean of the College of Engineering. Johnson has served as acting dean of the College of Engineering since July 1, 2012, and he has been on Valpo’s faculty since 1997 as professor of Electrical and Computer Engineering, serving as chair of the Department of Electrical and Computer Engineering from 2008 to 2012. He was the director of the University’s study abroad center in Reutlingen, Germany, from 2004 to 2007, has been named the Brandt Professor of Engineering, and was awarded the Valparaiso University Alumni Association Distinguished Teaching Award in 2003. Johnson earned his master’s and doctorate degrees from the Computer Science and Engineering Department at The University of Notre Dame (1994, 1997).

CSE Faculty To Be Part of $194 Million University Research

The University of Notre Dame has been selected to lead one of six new university-based, microelectronics research centers that will share $194 million in funding from the Semiconductor Research Corporation (SRC) and the Defense Advanced Research Projects Agency (DARPA) to support the continued growth and leadership of the U.S. semiconductor industry. Notre Dame’s center - the Center for Low Energy Systems Technology (LEAST) - will be led by Alan Seabaugh in the Department of Electrical Engineering. Over the next five years, LEAST will receive about $6 million per year to support the exploration of new concepts for dramatically lowering the power requirements for electronics.

CSE faculty members, Dr. X. Sharon Hu and Dr. Michael Niemier, are members of the LEAST research team. They will work on finding circuit and architecture solutions that can best exploit the unique features of the new devices being developed by the device researchers in the center. Their work will particularly focus on non-Boolean circuits and architectures, finding new ways to improve hardware security, and architectural-level benchmarking of new devices. See http://least.nd.edu/ for more details.

Blanton Receives Young Investigator Award

Dr. Marina Blanton has received the 2013 Young Investigator Award from the Air Force Office of Scientific Research (AFOSR) for her project “A Comprehensive Toolset for General-Purpose Private Computing and Outsourcing”. The Young Investigator Research Program recognizes scientists and engineers at research institutions who received a Ph.D. in the last five years and show exceptional ability and promise for conducting basic research. The objective of this program is to foster creative basic research in science and engineering and enhance early career development of outstanding young investigators.

Dr. Blanton’s three-year research grant will allow her to develop techniques for general-purpose secure data processing and outsourcing. This in particular includes new privacy-preserving techniques for computation with all major data types, novel data-oblivious algorithms that can be securely executed in outsourced and distributed contexts, and a compiler that will translate a general-purpose program written in an extension of C into its distributed secure implementation.

Taylor Seale, Ryan Shea 1st Prize Winners in the ND-Schurz Communications Competition

The Department of Computer Science & Engineering in collaboration with Schurz Communications of South Bend has announced the winners of the first-of-its-kind “innovation challenge” competition. The contest for this year focused on creative mobile development. A committee comprised of CSE faculty and Schurz executives chose the top projects from among six finalists in the competition. The winners are:

First Prize: Taylor Seale and Ryan Shea who will share a $3500 cash award for their model app which crowd sources photos, bringing together conventional media and social media.

Second Prize: David Lopes and Nathan Wickham who will share a $1500 cash award for their News Cloud app.

Third Prize: Justin Bartlett and Eli Kloswick who will share a $1000 cash award for their Mobile Radio Contest app.

Congratulations to our winners! And a special thank you to all who participated in the competition.
New Faculty Spotlight

Collin McMillan started in the Fall of 2012. He received his Ph.D. in that year from the College of William & Mary in Virginia. Previously, he received his M.Sc. from William & Mary and B.Sc. from the University of Tulsa. While at William & Mary, he received the Park Research Award and a Fellowship from the Virginia Space Grant Consortium. Professor McMillan studies the concept assignment problem in Software Engineering. In particular, he is researching new methods for automatic source code comment generation and dynamic reuse of retrieved source code components. The target of this work is to decrease waste by dramatically increasing the amount of source code that can be recycled or reused.

CSE Experiencing Increased Enrollment

Professor Ramzi Bualuan relates that the CSE enrollment has experienced steady growth over the last few years and will continue to rise the next three years as well. Whereas prior to 2010 Computer Science and Computer Engineering majors numbered in the lower 50’s, the numbers started growing in 2011 with a graduating class of 57 students. The classes of 2012 and 2013 then saw single-digit increases (9% and 2% respectively), and the current classes of 2014 and 2015 are at double-digit growth (10% and 14% respectively). We anticipate the numbers to remain high for the following classes.