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Riek Receives NSF Grant to Study Robot Perception of Context

Professor Laurel Riek

Professor **Laurel Riek** has received a three-year NSF grant for $500,000 from the National Science Foundation for the project "Modeling Social Context to Improve Human-Robot Interaction". Perception is a core technology in building advanced robotic systems. However, current approaches are content-based, and only successful within known, static environments. This is not suitable for robots operating in human environments, which are dynamic, noisy, and always in flux. For robots to be truly useful, it is critical they are able to understand and operate independently in human spaces. The goal of this project is to create and evaluate new models of social context in order to enable robots to act appropriately with people in HSEs. Project outcomes will help give all "things that think", from social robots to smart homes, a better understanding of human social context and a greater capability to operate effectively in real-world human spaces.

Notre Dame Participates in NSF Entrepreneurial Boot Camp

Representatives from Notre Dame are participating in the National Science Foundation's Innovation Corps (I-Corps) program, which is an entrepreneurial boot camp that takes place in Washington, D.C. and across the country over a seven-week period. **Gregory R. Madey**, research professor of ND CSE, is the principal investigator for the project; recent Notre Dame Ph.D. graduate in computer science and engineering **Cynthia Nikolai** is the entrepreneur. Together with Page Heller, licensing manager in Tech Transfer, and Chelsea Treboniak of Critical Ops, LLC, as mentors, they are working to bring a software training package for emergency operations centers, which are located in every county in the United States, to market.
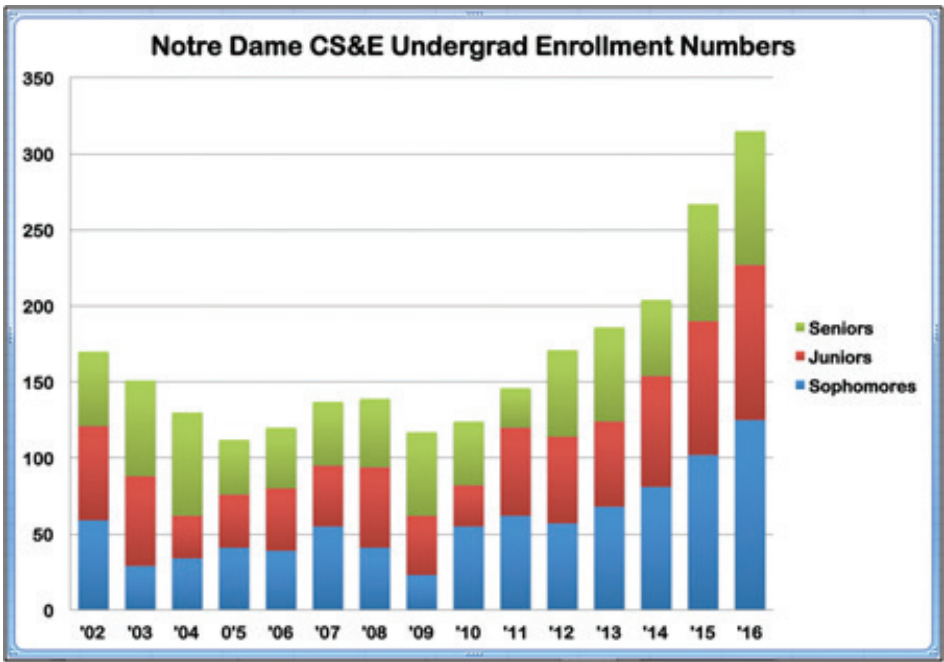
The I-Corps program is a government boot camp for entrepreneurs looking to start companies based on the results of NSF-funded research. Its goal is to strengthen the innovation ecosystem at both local and national levels across the country. For information about I-Corps, visit the NSF Innovation Corps.

— *Joanne Fahey, Office of Research*

configurations

configurations

Spring 2016 — A newsletter of the Department of Computer Science and Engineering at the University of Notre Dame

IN THIS ISSUE

CSE's Rapid Departmental Growth

CSE is experiencing rapid growth-over 140 sophomores declared a CSE major for fall of 2016! This year, we are also the largest department in the College in terms of size of PhD program, with 120 graduate students. Fast growth and large size are nice, but they also bring significant challenges. In response to the large undergrad numbers, the CSE department is working to split all of our required courses into multiple sections to meet the size increase of the undergraduate class.

Notre Dame CS&E Undergrad Enrollment Numbers
(Seniors, Juniors, Sophomores — '02 through '16)

Chen Receives NSF Supplemental Grant

Professor **Danny Chen** has received a supplemental grant from the Algorithmic Foundations (AF) Program of the National Science Foundation (NSF) for his project "AF: Small: Applied and Theoretical Algorithm Problems in Computational Geometry." This project focuses on solving a set of applied geometric problems in medicine (e.g., disease diagnosis and treatment), biology, biomedical imaging, data mining, etc. The target applied problems include geometric clustering, matching, partition, covering, shaping, and approximation.

Danny Chen

College Names New Assistant Dean from CSE

Peter Kilpatrick, the McCloskey Dean of Engineering at the University of Notre Dame, has announced the appointment of **Ron Metoyer**, associate professor in the Department of Computer Science and Engineering, as an assistant dean of the College of Engineering.

Ron Metoyer

Professor Metoyer will play an important role as assistant dean of diversity and special initiatives. His immediate task is to expand the pool and recruitment of under-represented groups as tenure and tenure-track faculty. He also will serve as liaison to the new director of academic diversity in the provost's office. A substantial portion of Metoyer's role will be to identify diverse faculty candidates, ensure that these candidates when appropriate make the short list in faculty searches, and help identify sources of funding for diverse faculty hiring. As with Christensen, a significant part of Metoyer's role will be to communicate important opportunities for identifying diverse faculty candidates to hiring committees and department chairs.

CSE Undergraduate Camilla Tassi Discusses Participation in The Reilly Five Year Dual-Degree Program

Camilla Tassi

CSE undergraduate, Camilla Tassi, discusse how participating in the Reilly Center for Science, Technology, and Values' original education program, The Reilly Five Year Dual-Degree Program in Arts and Letters / Engineering (AL/ENG), has helped merge the pursuit of degrees in Computer Science and Music Performance through avenues such as engineering research and directing performance projects. The program's time frame has also allowed her to pursue an Italian Studies minor, for which she was recently nominated into Gamma Kappa Alpha Italian Honor Society.

D'Mello Awarded Two Grants

Sidney D'Mello

Sidney D'Mello (PI) along with collaborators James Brockmole (Co-PI) from Psychology and Matt Kloser (Faculty Advisor) from the Institute for Educational Initiatives received a 3-year $550k grant from the NSF for a project entitled "Attention-Aware Cyberlearning to Detect and Combat Inattentiveness During Learning." The project will advance basic research on attention during learning and use these insights to develop technologies that can detect, and subsequently intervene, when a student is mind wandering or otherwise not paying attention. The research involves a unique and interdisciplinary blend of basic and applied research in attention, learning, affect, eye-tracking, mental-state estimation, and computational modeling.

Sidney D'Mello was also Co-PI on a $1.2M grant ($180k to ND) funded by the Walton Family Foundation entitled "Measuring Character". The project led by the University of Pennsylvania will develop and validate performance measures of self-control and grit in middle- and high-school students for the purpose of program evaluation, formative assessment, and basic research.

Bowyer Appointed Honorary Professor in Biometric Technologies at NUI Galway in Ireland

Dr. Kevin Bowyer

Professor **Kevin Bowyer** has been appointed as Honorary Professor in Biometric Technologies in the College of Engineering and Informatics at NUI Galway in Ireland. Honorary Professor is a title awarded by NUI Galway to distinguished academics "who have obtained clearly recognized and verifiable eminence and leadership in their field of expertise".

Professor Kogge Invited to White House Workshop

Professor **Peter Kogge** has been invited to participate in the White House Workshop on the National Strategic Computing Initiative (NSCI). The President issued an Executive Order creating the NSCI in July of 2015. The purpose of the NSCI is to create a whole-of-government effort to develop a multi-agency vision and Federal investment strategy that maximizes the benefits of high performance computing to strengthen the Nation's economic competitiveness, increase sector-based productivity, unleash new scientific discovery, and grow regional innovation ecosystems.

Peter Kogge

Fay and Hu Named 2016 IEEE Fellows

X. Sharon Hu

Xiaobo Sharon Hu, faculty in the College of Engineering at the University of Notre Dame, has been named a fellow of the Institute of Electrical and Electronics Engineers (IEEE). The grade of fellow is the highest grade of membership conferred by the IEEE Board of Directors upon an individual member. It is bestowed in recognition of outstanding accomplishments in fields related to the IEEE. Fewer than 0.1 percent of voting members are selected annually for this honor.

Hu, who is being recognized for her "contributions to resource management for embedded systems," joined the University in 1996. She serves as a professor of computer science and engineering, as well as electrical engineering, and leads the Embedded System Design Group. She has also served as director of graduate studies for computer science and engineering, senior assistant provost for internationalization, and associate dean for professional development in the Graduate School.

Best known for her work in power-aware resource management for real-time embedded systems, which has led to fundamental advancement in the understanding of the interplay between real-time performance and energy consumption in such systems, her research in hardware accelerator design of embedded systems has resulted in better medical treatment for cancer patients. She has also been actively engaged in exploiting emerging devices for low-power and secure hardware applications.

New Technology to Provide Insights into the Health of Students

Aaron Striegel   Christian Poellabauer   Nitesh Chawla   Tijana Milenkovic

Cellphones, any parent can attest, play a central role in the lives of college students. Studies show that nearly all college students own a cellphone, and most of those students use text messaging as their main form of communication. CSE faculty members **Aaron Striegel**, **Christian Poellabauer**, **Nitesh Chawla**, and **Tijana Milenkovic** are teaming up with faculty from Sociology to conduct a technology-based study of entering college freshmen dubbed NetHealth. They have provided 500 freshmen with Fitbits to track their physical activity and sleep patterns, while a monitoring app will map their social activity by tracking communication via phones, tablets and laptops as well as in-person interactions with other participants in the study. Funding for the study is provided by the National Institute of Health.

Weninger Wins Inaugural Rome Global Gateway Research Award
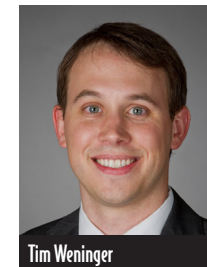
Tim Weninger

Notre Dame Research, together with Notre Dame International, have awarded three new grants for faculty to complete research at the University of Notre Dame's Rome Global Gateway. One of the grants was awarded to **Tim Weninger**, assistant professor in the Department of Computer Science and Engineering, will establish a research collaboration with the Università degli Studi Roma Tre in information network analysis. Graduate students from Notre Dame and Roma Tre will collaborate on two research questions: can we use information hidden in information networks to reason about the meaning of truth and what effect does social media have on human beliefs, behaviors, and the perception of truth?

CSE Women Undergrads Participate in Baraka Bouts

The department of Computer Science and Engineering had four women undergrads who participated in the 13th Annual Baraka Bouts tournament. The funds raised by the tournament help to support Holy Cross Missions in East Africa. The department was honored to support **Maria Ines Aranguren, Erin Bradford, Katrina Gonzales and Madalyn Schulte.**

Professor Bowyer Edits Virtual Special Issue In Connection with Biometrics 2015

Professor **Kevin Bowyer** served as Chair of the Research and Innovation Track at the Biometrics 2015 conference in London on October 13-15, 2015. In connection with this conference, Professor Bowyer is also the Editor of a Virtual Special Issue of selected papers that appeared in Elsevier journals in the last year. Elsevier is making the 26 papers in the Virtual Special Issue, drawn from 10 different Elsevier journals, available open access through the end of April 2016.

CS&E Co-sponsors Showing of "Code: Debugging the Gender Gap"

The Department of Computer Science and Engineering and the John J. Reilly Center for Science, Technology, and Values co-sponsored a showing of the documentary "CODE: Debugging the Gender Gap" at the DeBartolo Performing Arts Center last December.

CODE exposes the dearth of American female and minority software engineers and explores the reasons for this gender gap and digital divide. The film highlights breakthrough efforts that are producing more diverse programmers and shows how this critical gap can be closed. CODE asks: what would society gain from having more women and minorities code and how do we get there?

New Faculty Spotlight

CSE welcomes Drs. **Ronald Metoyer** (Associate Professor), **Yiyu Shi** (Associate Professor), **Walter Scheirer** (Assistant Professor), and **Peter Bui** (Assistant Professional Specialist) to the department.

Ronald Metoyer   Yiyu Shi   Walter Scheirer   Peter Bui