



configurations

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



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CSE Majors in the Marching Band Enjoy the Sun Bowl

CSE majors are well represented in the Notre Dame Marching Band, which traveled to El Paso for the Sun Bowl where Notre Dame triumphed over Miami, 33-17.



(Left to right)

Bottom row: **Natalie Dehen, Lindsay Walker, Ashley Crish, and Greg Reilly**
2nd row: **David Klueck, Andrew Ofsonka, Stephen Siena, Josh Wise, and Mark Riehm**
3rd row: **Eli Kloswick, Ryan Conrad, Ryan Turner, Greta Hurlbut, Emmett O'Leary** (Assistant Band Director)
Back row: **David Ellet**

NSF Funds Project on Development of Educational Wireless Platform

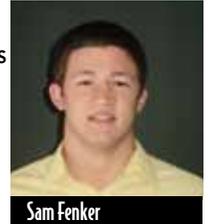
The DARTS Lab (directed by **Christian Poellabauer**) was awarded a 2-year grant of \$180,000 from NSF's Division of Undergraduate Education to design and construct a hardware and software prototype of a customizable educational wireless platform called WIPER (Wireless Platform for Education and Research). This platform allows teachers and students to emulate real-world devices by plugging in the desired modules such as different radio technologies, sensor types, and other components typically found in wireless systems. From the software perspective, WIPER automatically recognizes the inserted modules and provides programmers access to library functions that facilitate rapid development of wireless applications. The WIPER programming environment will be extensible and will offer an easy-to-use graphical programming interface.



The project provides instructors with a tool for rapid development of wireless networks and systems with minimal learning curve. Besides this new learning platform, the project provides novel learning materials for the WIPER platform. This platform can be used in courses such as computer networks, sensor networks, mobile computing, or wireless communications. The PIs (**Drs. Poellabauer** and **Blake** in CSE and **Dr. Laneman** in EE) intend to leverage the WIPER platform to further raise interest in wireless systems and recruit students from underrepresented groups.

Junior Sam Fenker Presents Paper at the Workshop on Applications of Computer Vision

Junior **Sam Fenker** is first author of a research paper, "Experimental Evidence of a Template Aging Effect in Iris Biometrics", which he presented at the Workshop on Applications of Computer Vision in January 2011. This paper explores how biometric performance degrades with increased time since a person was enrolled in the system. Sam is working with Schubmehl-Prein Professor **Kevin Bowyer** and is supported as an Ateyeh Undergraduate Research Scholar, made possible through the **Ateyeh Endowment for Excellence**.



Professor Kevin Bowyer Is EIC of IEEE Biometrics Compendium



The *IEEE Biometrics Compendium* is the IEEE's first virtual journal. The purpose of the Compendium is to bring together in one place all of the biometrics publications that appear in the IEEE Xplore digital library. The first issue of the Compendium appeared online in *IEEE Xplore* in October. This issue covers 134 papers published in 24 different journals in *IEEE Xplore* in the first half of 2010.

Professor Brian Blake Named an ACM Distinguished Scientist

Professor **Brian Blake** was named an ACM Distinguished Scientist. The ACM Distinguished Member program, initiated in 2006, recognizes those members with at least 15 years of professional experience who have made significant accomplishments or achieved a significant impact on the computing field.

SAVE THE DATE!

SEPTEMBER 3, 2011 is the scheduled date for the CSE/EE ALUMNI TAILGATE.

This event happens just before the ND vs. University of South Florida.

Watch the CSE website for upcoming details, <http://cse.nd.edu/>.



DARPA Grant to Fund Research into Magnetic Logic

The Defense Advanced Research Projects Agency (DARPA) has awarded a \$9.9 million grant to explore magnetic logic devices, which may open the door to all-magnetic information processing systems.



The Notre Dame team includes CSE faculty members **Sharon Hu** and **Michael Niemier** of Computer Science and Engineering, and **Joe Nahas** a visiting professor who has previously worked for Motorola and Freescale on magnetic memory chips. Other Notre Dame faculty members involved with the project include **Gary Bernstein**, **Gyorgy Csaba**, and **Wolfgang Porod** of Electrical Engineering.



Also participating in the Notre Dame led project are the University of California at Berkeley, the Technical University of Munich, and IBM and Grandis - two companies that are pioneers in developing and licensing innovative non-volatile memory solutions derived from cutting-edge research in spintronics.

Magnetics is already fundamental to memory and data storage, but the Notre Dame team's research demonstrates that nanomagnets can be used to perform logic functions too. One of the main advantages of nanomagnet logic (NML) is that computation could be performed with very little power. Potential applications for NML include mobile devices or sensor networks where power is at a premium. NML circuits should also be non-volatile – which could enable “instant on” computation.

Record Growth in Research Faculty

The CSE department has added six new research faculty this last year. CSE welcomes **Soma Biswas**, **Haitao Wang**, **Guarav Aggarwal**, **Karen Hollingsworth**, **Saurav Pandit**, and **Sekou Remy**. These new research faculty are supported through grant funds.

The research areas represented are Biometrics, Algorithms, Data Structures, and Data Mining. We look forward to seeing advances made in these areas in the new year due to the efforts of our new faculty.

Professor Emrich Publishes Article in Science

Professor **Scott Emrich** is co-first author on an analysis of two forms of the major malaria mosquito vector in Africa. In this article led by Notre Dame biologist **Nora Besansky** and including CSE graduate students **Allison Regier** and **Michael Olson**, researchers in the US and the UK report that two forms of *Anopheles gambiae* (M and S) are more isolated genetically than previous thought. This discovery has major implications for ongoing malaria control and eradication efforts.



As a follow-up Besansky also will be coordinating, and Emrich will play a key role in, analysis of an additional 13 mosquito genomes already underway.

This effort, also funded by NIAID/NHGRI, will provide important information on key genetic traits that can be used to fight malaria transmission throughout the world.

Adaptation to Climate Change Team Receives NSF Grant



An interdisciplinary team of faculty from the colleges of engineering, science, and arts & letters has received a Cyber-enabled Discovery and Innovation Type II Grant totaling more than \$1.55 million from the National Science Foundation to build and study a virtual organization (the Collaboratory) for adaptation to climate change. **Nitesh Chawla**, assistant professor of computer science and engineering serves as the principal investigator.

According to Chawla, the goal of the project is to link people and shared resources in order to enable more informed decision-making and novel research on the global challenge of adapting to climate change. The collaboratory effort relies on cyber infrastructure, data management, and computational algorithms, including tools to generate ecological projections, survey data on expert opinion, an information clearing house on regulation related to adaptation, interactive mapping with geographic information systems, mining of social media on the issue of climate change, and data mining algorithms that integrate these elements to create forecasts under uncertainty.

The Collaboratory promises to be transformative in its interdisciplinary integration and will lead the science of adaptation to climate change. The ultimate goal is to make it a one-stop shop that encompasses multiple dimensions of climate change adaptation - including but not limited to the managed relocation of species, building habitat corridors to allow species to move into newly appropriate habitat, maintaining endangered species in zoos and botanical gardens, growing genetically modified drought-resistant crops in newly dry regions, and planting non-native trees to maximize carbon sequestration.



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CSE Welcomes New Tenure Track Faculty in 2010

Professor Brian Blake started Fall 2009 and comes to us from the faculty of Georgetown University where he served as chair of the Department of Computer Science. Blake's research and teaching interests are in the areas of software engineering and internet computing. He moved to the South Bend with his wife, Bridget, and son, Brendan.



Professor Tijana Milenkovic received her Ph.D. in Computer Science at University of California, Irvine in 2010, her M.Sc. in Computer Science at the same university in 2008, and her B.Sc. in Electrical Engineering and Computer Science at University of Sarajevo, Bosnia and Herzegovina, in 2005. Her research is in the interdisciplinary area of computational and systems biology, focusing on developing and applying graph theoretic, mathematical, and computational algorithms to important problems in biology and medicine. Specifically, she performs large-scale analyses of biological networks that can lead to novel insights into biological function, disease, and evolution.