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July 2006

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

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CSE Class of 2006 Graduates

The Department of Computer Science and Engineering (CSE) graduated 37 students on Sunday, May 21, 2006. The departmental ceremony was held in the morning and attended by the graduates, their families, and CSE professors. This year's faculty speaker, selected by the students, was **Peter M. Kogge,** the Ted H. McCourtney Professor of Computer Science and Engineering and Associate Dean for Research in the College of Engineering. The master of ceremonies was Schubmehl-Prein Professor **Kevin W. Bowyer,** the department's chair.

The ceremony was organized and coordinated by seniors **Michael Wittman** and **Peter Bui** with help from administrative assistant **Ginny Johns.**

This year's Outstanding CSE Senior Award went to Bui, and the Outstanding CPEG Award went to **David Redenbaugh.** Earlier in the week, Bui also received the Rev. Thomas A. Steiner Award from the College of Engineering. The Outstanding CSE Faculty teaching award was granted to Assistant Professor **Aaron Streigel** and Professor **Patrick J. Flynn. Ramzi K. Bualuan,** associate professional specialist, received the Kaneb Award for undergraduate teaching from the College of Engineering.

A Special Recognition Award was given to **John J. Uhran Jr.,** the senior associate dean of the College of Engineering, who is retiring after 40 years of service. The award was presented by **Eugene W. Henry**, professor emeritus of computer science and engineering.

Thirty of our graduates are planning to take positions in industry, one is pursuing a dual-degree program, five are entering graduate school, and one is joining the military.

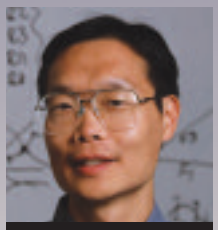
This year's graduates were **Romeo Acosta, David J. Anderson, Richard S. Bartholomew, Brian T. Bien, William A. Bordogna, Garrett A. Britten, Peter J. Bui, Ryan E. Butler, Travis A. Clark, Ryan M. Connaughton, Patrick M. Davis, Sean P. Devlin, Daniel M. Dostal, James C. Ehlinger, Eleazar V. Fernando, James F. Fitzgerald, William H. Harle, Cecilia J. Hopkins, John N. Korecki, Timothy C. Licata, Ryan N. Lichtenwalter, Kyle A. Long, Daniel L. Mack, Kevin T. McCusker, Brandon J. McGirr, Rebecca L. Oehmen, Mark S. Palladino, Richard A. Pingalore, John R. Polchow, David M. Redenbaugh, Andrew P. Sheehan, Jared C. Sylvester, Matthew J. Tanner, Paul J. VanLeeuwen, Richard M. Very, Michael G. Wittman,** and **Benny Yau**.

Congratulations to all of our 2006 graduates!

COMPUTER SCIENCE AND ENGINEERING *Departmental Graduation*

Chen Receives Medical Imaging Grant

Professor **Danny Z. Chen,** together with researchers at the University of Iowa led by Professor Milan Sonka, received a three-year National Institutes of Health grant from the National Institute of Biomedical Imaging and Bioengineering, for a project entitled "Graph-based Medical Image Segmentation in 3D and 4D." This project deals with the problem of detecting optimal single and multiple interacting surfaces in three-dimensional (3D) and four-dimensional (4D) medical image analysis applications. In this project, computational feasibility is accomplished by transforming the 3D/4D graph-searching problem to a problem of computing an optimal closed set in a weighted directed graph. Combining the global optimality of the novel methods with problem-specific objective functions used in the optimization process facilitates application of the methods to a wide variety of medical image segmentation problems.



Chen

Capozzi and Sadarangani Co-author Paper

Zack Capozzi and **Pavan Sadarangani** co-authored a paper titled, "A QCA PLA with Chemically Reasonable Constraints: Preliminary Results," presented at the 3rd Annual Conference on Foundations of Nanoscience, held in Snowbird, Utah in April. Capozzi and Pavan have been working with Research Assistant Professor **Michael T. Niemier,** a "Triple Domer" (B.S., 1998; M.S., 2000; Ph.D., 2004).

Niemier

Healy Interns in British Parliament

A rising senior, **Mark Healy** spent the fall of his junior year working as a research assistant with Mr. Stephen McCabe, MP. Healy specialized in healthcare policy research. A major issue during the time that he worked in Parliament was a bill introducing identification cards for citizens of the United Kingdom, which would contain biometric information. McCabe was a member of the Home Affairs Select Committee and had a lot of direct oversight on the bill's creation. Healy was able to discuss the bill with McCabe and had special background for this based on his work collecting biometric data in the Computer Vision Research Laboratory at Notre Dame with Professors **Kevin W. Bowyer** and **Patrick J. Flynn.** According to Healy, the internship was an amazing experience and the highlight of a great semester in London.

Brenner Awarded a Ganey Grant

Ph.D. student **Paul Brenner** was awarded a 2006 Rodney F. Ganey Collaborative Community-based Research Mini Grant by the Center for Social Concerns. The center awards the grants to Notre Dame researchers to stimulate partnerships between faculty, students, and the local community. **Gregory R. Madey,** professional specialist, is Brenner's faculty colleague on the project. The grant will be used to research and enhance the effectiveness of Engineering Projects in Community Service (EPICS). Brenner is a mentor for a team of 10 undergraduate engineers. Called Student Engineers Reaching Out (SERO), the team is currently engaged in two projects. One is helping the Logan Center and St. Joseph's Hospital in South Bend by redesigning and modifying standard commercial toys to provide functionality suitable for each child. These organizations provide therapy for children with physical and developmental disabilities. The second project addresses the needs of local adults with developmental disabilities by assisting Logan Industries, a local nonprofit packaging and distribution company, which provides employment and job skills training for adults with developmental disabilities.

The 2005-06 SERO team included, left to right, Corey Baggett, Kyle O'Reilly, Michael McConnell, Rachel Paietta, Nathaniel Barbera, Patrick Gourley, Paul Brenner (advisor), John Larson, Megan Schroeder, and Katie Murphy.

Sylvester Co-authors IJCNN Paper


Sylvester

Jared C. Sylvester, a 2006 graduate, co-authored a paper titled, "Evolutionary Ensemble Creation and Thinning," which was accepted at the International Joint Conference on Neural Networks (IJCNN). He has been working with Research Assistant Professor **Nitesh V. Chawla** on learning classifier ensembles and understanding and modeling their behavior and their applications to a variety of domains, including unbalanced datasets. Last year Sylvester co-authored a paper with Chawla in the American Association for Artificial Intelligence Workshop on Multi-agent Learning. Sylvester is starting the Ph.D. program in computer science at the University of Maryland this fall.

Bowyer's Paper Wins "Award of Excellence"

Schubmehl-Prein Professor and Department Chair **Kevin W. Bowyer's** article, "Face Recognition Technology: Security versus Privacy," published in the Spring 2004 issue of *IEEE Technology and Society Magazine,* was recognized with a 2005 "Award of Excellence" from the Society for Technical Communication, Philadelphia Chapter. These awards are given annually by the Society for Technical Communication at the Chapter and International levels to recognize excellence in technical communication. Professor Bowyer received the award at the 2006 International Symposium on Technology and Society (ISTAS '06) held in June 2006 on the campus of Queens College of the City University of New York.


Hu

Prowess, Inc. Licenses Invention of Professors Hu and Chen

Prowess, Inc., an international provider of medical software products and services for the radiation therapy community, recently signed a license agreement with the University of Notre Dame to use a technology invented by Professors **Sharon X. Hu** and **Danny Z. Chen,** together with a former graduate student **Kevin Whitton** and Dr. Cedric Yu at the University of Maryland School of Medicine.

The researchers developed a hardware-based radiation dose calculation system. Radiation dose calculation is a crucial step in the radiation therapy treatment of cancer patients. It ensures that the dose prescribed by a physician agrees with the dose delivered to the patient. Current software-based radiation dose calculation methods face a computational bottleneck in the radiation treatment planning process. Their prolonged computation time limits both the accuracy of the dose calculation and the number of patients that can be treated. The newly invented technology performs the dose calculation on a state-of-the-art system on a programmable chip (SoPC) and promises to yield a significant computational improvement that helps remove the dose calculation bottleneck in radiation treatment planning.

Murphy Accepted for CRA Workshop

Sarah (Frost) Murphy, a Ph.D. candidate in the Department of Computer Science and Engineering, has been selected as a participant in the Computer Architecture Summer School Workshop, which will be held July 19-21 at Princeton University. Sponsored by the Computing Research Association's Committee on the Status of Women and the Coalition to Diversify Computing, the workshop is focused on women and minorities working in the area of computer architecture. It will feature presentations by leading computer architects — such as Margaret Martonosi, professor of electrical engineering and associate dean for academic affairs at Princeton, and Mary Jane Irwin, professor of computer science and engineering and co-director of the Embedded and Mobile Computing Center at Pennsylvania State University — speaking on topics ranging from how to get started in computer architecture research to the future of the field. This inaugural offering of the workshop drew more than 80 applications for 40 participant spots.


Murphy

Poellabauer, Thain, and Chawla Receive DURIP Award

Assistant Professors **Christian Poellabauer, Douglas L. Thain,** and **Nitesh V. Chawla** were awarded $195,214 for the purchase of wireless equipment, including portable devices and navigation sensors, such as GPS receivers, digital compasses, and accelerometers, for their TeamTrak effort. TeamTrak is an experimental testbed for the study of research challenges in collaborative wireless environments, particularly addressing the need for robust navigation. This award is the result of a merit competition for Defense University Research Instrumentation Program (DURIP) funding, conducted by the Army Research Office, Office of Naval Research, and Air Force Office of Scientific Research. The acceptance rate for proposals in this year's program was less than one in four.


Poellabauer


Thain


Chawla

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Hemberger Displays Academy Award

At the 78th Annual Academy Awards *King Kong* won the Oscar for Best Visual Effects. **Allen Hemberger** (B.S., 2001) was part of Weta Digital's special effects team for the movie. He was back on campus just before the movie opened to give a talk about working in the special effects industry. Since that time, Hemberger has completed work as part of the Weta team producing the effects for *X-Men: The Last Stand* and has begun work on other projects. We hope to have him back on campus for another presentation in the near future. The bug on the wall in the background is the Weta symbol. The gold statute in the foreground is, well, you know.

Kogge Contributes to U.S.-U.K. Defense Technology Report

Ted H. McCourtney Professor **Peter M. Kogge** served as a member of a joint task force of the United Kingdom Defence Scientific Advisor Council and the United States Defense Science Board to study Defense Critical Technologies. This was the first collaborative science board effort between the U.S. Department of Defense and the U.K. Ministry of Defence. Kogge contributed to the chapter of their report on high-performance computing.

Kogge