



configurations

July 2007

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



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Congratulations to the Class of 2007

The Department of Computer Science and Engineering (CSE) graduated 41 students on Sunday, May 20, 2007. 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 **Ramzi Bualuan**, the director of CSE undergraduate studies and the Introduction to Engineering program. The master of ceremonies was Schubmehl-Prein Professor **Kevin Bowyer**, the department's chair.

The ceremony was organized and coordinated by seniors **Megan Lussier** and **Kyle Arnzen** with help from administrative assistant **Ginny Johns**.

This year's Outstanding CPEG Senior Award went to **Dylan Brandtner**, and the Outstanding CS Award went to **Kevin Braun** and **Daniel McGee**. Earlier in the week, **Andrew Magee** received the Steiner Award from the College of Engineering. **Kathleen Otten** received the International Engineering Consortium's Everitt Award. The Outstanding CSE Faculty teaching award was granted to Bualuan.

Most of our graduates are planning to take a position in industry. Of those taking different paths one is pursuing an MBA, one is entering Moreau seminary, two are entering the military, one is teaching English in China before starting a job in the fall, five are entering graduate school, and one is joining the Alliance for Catholic Education.

Students receiving their degrees at this ceremony were Bryce Aona, Kyle Arnzen, Corey Baggett, Andrew Blanford, Dylan Brandtner, Kevin Braun, Billie Bullock, David Campbell, Bryan Carroll, Michael Coughlin, Aaron Dingler, David Farley, Thomas Hanrahan, Mark Healy, Michael Jewell, Rohan John, Chris Kolaczowski, Steven Kurtz, Juan-Pablo Lauz, Francis Leyhane, Megan Lussier, Andrew Magee, Christopher Martin, Nicole McCabe, Daniel McGee, Patrick Miller, Bryn Mohan, Jeffrey Paone, Timothy Paukovits, John Polchow, Raymond Powers, Ryan Ritter, Jonathan Schuster, Jeffrey Smith, Andrew Stapleton, Vincent Thomas, Dustin VonHandorf, and Matthew Wharton.

Congratulations to all of our 2007 graduates!



COMPUTER SCIENCE
AND ENGINEERING

*Departmental
Graduation*

Healy Co-authors Papers

Mark Healy, a senior in the Department of Computer Science and Engineering, supported in part by a Research Experiences for Undergraduates grant from the National Science Foundation, has recently co-authored two papers based on work conducted during summer 2006 and the 2006-07 academic year.

Both papers recap research on the development of new algorithms and software for planning radiation cancer treatment. The first, "A New Field Splitting Algorithm for Intensity Modulated Radiation Therapy," was accepted to the 13th Annual International Computing and Combinatorics Conference (COCOON), held July 2007 in Banff, Alberta, Canada. The second paper, "Geometric Algorithms for the Constrained 1-D K-Means Clustering Problems and IMRT Applications," was accepted to the 1st International Frontiers of Algorithmics Workshop, which will be held in Lanzhou, China, in August 2007.

Healy's faculty adviser is Professor **Danny Z. Chen**.

Blanford Co-authors Paper

A senior working in the Distributed Adaptive Real-time Systems Lab under the direction of Assistant Professor **Christian Poellabauer**, **Andrew Blanford** has co-authored a paper titled "Cooperative Dynamic Voltage Scaling Using Hierarchical Slack Distribution in Distributed Real-time Systems." Blanford's paper was accepted to the 4th Annual International Conference on Mobile and Ubiquitous Systems (MobiQuitous) to be held in August 2007 in Philadelphia, Penn.

Ph.D. History

The Department of Computer Science and Engineering awarded the largest number of Ph.D. graduates in its history during this May's graduation ceremony. The 12 graduates, who have taken positions at universities, corporations, and national laboratories, are:

- **Xin Chen**, co-advised by **Kevin W. Bowyer**, the Schubmehl-Prein Chair and Professor of Computer Science and Engineering, and Professor **Patrick J. Flynn**
- **Yongqin Gao**, advised by Associate Professor **Gregory R. Madey**
- **Scott Hampton**, advised by Associate Professor **Jesus A. Izaguirre**
- **Xiaomei Liu**, co-advised by Bowyer and Flynn
- **Chad Mano**, advised by Assistant Professor **Aaron Striegel**
- **Bren Mochocki**, advised by Associate Professor **X. Sharon Hu**
- **Richard Murphy***, advised by **Peter M. Kogge**, the Ted H. McCartney Professor of Computer Science and Engineering and Associate Dean for Research
- **Arun Rodrigues***, advised by Kogge
- **Zhong Wang**, advised by Hu
- **Xiaorong Xiang**, advised by Madey
- **Jin Xu**, advised by Madey
- **Ping Yan**, advised by Bowyer

* *Richard Murphy and Arun Rodrigues also received their undergraduate degrees at Notre Dame.*



Photo courtesy Tim Schoenhardt

Left to right in the front of the picture are Xin Chen, Xiaomei Liu, Xiaorong Xiang, Chad Mano, Jesus Izaguirre, Bren Mochocki, and Scott Hampton. Standing behind are Gregory Madey, Aaron Striegel, Patrick Flynn, Kevin Bowyer, Richard Murphy, Peter Kogge, and Sharon Hu.

Notre Dame Hosts Midwest Theory Day

The 54th Midwest Theory Day was hosted by the Department of Computer Science and Engineering on Saturday, April 28, 2007. **Marek Chrobak**, professor of computer science and engineering at the University of California-Riverside, gave the invited talk. Assistant Professor **Amitabh Chaudhary** was the local organizer/host for this conference. More than 50 faculty from schools throughout the midwest attended.

Thain and Flynn Receive NSF Grant for Distributed Biometric Computing



Patrick J. Flynn

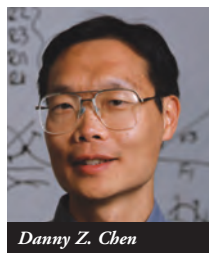
Faculty members **Douglas Thain** and **Patrick J. Flynn** have received a grant from the National Science Foundation to attack data inten-

sive biometric applications with distributed computing systems. The project will create a system for the rapid evaluation of image matching algorithms on very large datasets by harnessing large numbers of clustered computers. The system will allow biometric researchers to develop and evaluate image matching algorithms in record time.

CSE-EE Alumni Tailgate on November 3

Alumni and friends of the CSE department are invited to a tailgate before the Notre Dame-Navy game this fall. The cost is \$10 for burgers, brats, and soft drinks. A limited number of tickets to the game are also available for \$62 each (limit two). Contact Leona Strickland at (574) 631-5480 or lstrickl@nd.edu. Join us and connect with department alums.

Chen Receives NIH Grant from the National Cancer Institute



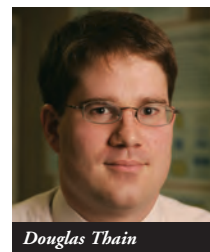
Danny Z. Chen

Professor **Danny Z. Chen**, together with researchers at the University of Maryland School of Medicine (led by Professor **Cedric Yu**) and researchers

at the University of New Mexico (led by Professor **Shuang Luan**), received a four-year National Institutes of Health grant from the National Cancer Institute for the project titled "Four-dimensional IMAT Planning Using Graph Algorithms."

Intensity-modulated radiation therapy (IMRT) is a state-of-the-art technique for modern radiation cancer treatment that aims to deliver a radiation dose to a tumor while sparing the surrounding normal tissue and sensitive structures. Among the various IMRT techniques that have been proposed or implemented, intensity-modulated arc therapy (IMAT) is one of the most promising. IMAT offers superior dose conformity with a minimized treatment time. However, due to the many degrees of freedom in IMAT planning, optimizing an IMAT plan is computationally difficult. The goal of this collaborative project is to develop a clinically practical IMAT planning system that allows tumor tracking and image guidance through a bioengineering research partnership.

Thain Receives NSF CAREER Award



Douglas Thain

Assistant Professor **Douglas Thain** has received an Early Career Faculty Development Award from the National Science Foundation.

The project, titled "Data Intensive Grid Computing on Active Storage Clusters" explores how to efficiently execute large data intensive scientific workloads by employing an array of storage servers with an embedded computational ability. According to Thain, by bringing data and code close to each other, large workloads can be made highly scalable. However, such systems introduce new management problems: How do we keep track of and exploit data that is distributed across many devices? The project will develop new languages, data structures, and algorithms to make harnessing active storage clusters easy and effective.

Established in 1995, the CAREER program recognizes junior faculty who exhibit a commitment to providing stimulating research and outstanding educational opportunities. It is the highest honor given by the U.S. government to young faculty members in engineering and science and provides a five-year grant to support their integrated research and education activities.

Alumni Association Award Honors Brenner



Paul R. Brenner

Paul R. Brenner, a doctoral student in the Department of Computer Science and Engineering, has been selected the recipient of the Alumni Association's 2007 Distinguished Graduate Student Award. Recognized for his outstanding work as a teaching assistant, Brenner has co-authored more than 10 peer-reviewed papers and instructed multiple undergraduate courses. For the past three years, he has led a service-learning program in the Department of Computer Science and Engineering. His team of student engineers, operating under the name Student Engineers Reaching Out (SERO), functions as a consulting firm for local and national nonprofit agencies. SERO has undertaken a variety of projects, including renovation design for St. Margaret's House in South Bend, toy modifications for children with disabilities, and Web technology for a minority community support center.

Brenner also serves as an engineering officer in the U.S. Air Force Reserves, providing leadership for his squadron of more than 150 personnel and consulting support for a Department of Defense high-performance computing center.



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Pruchnik Graduates from ACE Program

Walter Pruchnik, a 2004 computer science graduate, has completed Notre Dame's Alliance for Catholic Education (ACE) program. ACE is a two-year service program through which college graduates serve as full-time teachers in under-resourced Catholic schools throughout the United States while also earning a master's of education.

"These two years have been incredibly fulfilling and challenging," he notes, "very different from challenges in industry or the lab." Pruchnik, who has taught geometry, pre-calculus, computer applications, and Web design (and served as a member of the IT staff) at St. Petersburg Catholic High School in St. Petersburg, Fla., has put the skills he learned at Notre Dame to work. "The problem-solving techniques I learned in the classroom and practiced in the lab, as well as the quality example of my professors, gave me many of the techniques I have used." He will join the Congregation of Holy Cross as a candidate at Moreau Seminary in August.

Several other CSE students have participated in ACE, including **Kevin Braun**, who graduated this year, and 2002 grad **Kelly Keegan**. To find out more about the ACE program, visit <http://ace.nd.edu>.

Patent Issued to Kogge



Peter M. Kogge

U.S. utility patent 7,185,150 was issued in February 2007 to **Peter M. Kogge**, the Ted H. McCartney Professor of Computer Science and Engineering and Associate Dean for Research. The patent, titled "Architectures for Self-contained, Mobile, Memory Programming," deals with a new class of computer architectures where computation

can travel along with a memory reference for execution in memory rather than back in the microprocessor.

Izaquirre to Serve on NIH Study Section



Jesus A. Izaquirre

Associate Professor **Jesus A. Izaquirre** has accepted an invitation to serve on the Biodata Management and Analysis Study Section for the National Institutes of Health (NIH). His term runs from 2007 through 2011. Study sections review grant proposals submitted to the NIH and make recommendations on these applications.