



Second UM Student in Four Years Named Outstanding EE in the Nation



Priyanth Chandrasekar (BSEE '07) has been named the 2007 most outstanding electrical engineering student in the nation. Eta Kappa Nu (www.hkn.org), the national electrical engineering honor society has announced Chandrasekar as the winner of the Alton T. Zerby and Carl T. Koerner Outstanding Electrical Engineering Student award. Priyanth was an international student from Bangalore, India. He graduated in May 2007 with a double degree in Electrical Engineering and Economics. He challenged himself with a rigorous academic program in both the College of Engineering, as well as the College of Business. Priyanth held numerous leadership positions in various student organizations throughout his four undergraduate years. He stepped into many roles of leadership, not for his own benefit, but in order to create a better UMaine. He served as President of

numerous student organizations, such as the International Student Association, the South Asian Association of Maine, Eta Kappa Nu, IEEE, Golden Key Honor Society and the Cricket Club. During his senior year, he was the President of Student Government Inc., a Senior Skull and Treasurer of the Senior Council. He was a Resident Assistant with Residence Life for three years and was awarded "Resident Assistant of the Year" in 2006.

While the Resident Assistant position helped him develop his personality, the International Students Association (ISA) and Student Government Inc., were instrumental in his leadership development. Under his leadership, the International Students Association (ISA) fundraised a record \$2500 and established the Team ISA Scholarship Fund. The scholarship, the first to be setup by a student run organization, is an endowed scholarship that will recognize meritorious international students. He contributed significantly in promoting diversity and bringing students from different cultures together. To recognize his contributions, Priyanth was awarded the prestigious "Outstanding Student Leader of the Year" award.

In May 2006, Priyanth was selected to be a member of the highest all-inclusive honor society at UMaine, the Senior Skulls Honor Society. In December 2006, Priyanth was elected as the President of Student Government by a landslide victory in a student vote. The position gave him the opportunity to connect with thousands of students and faculty. In his role, he led over 9,000 students, managed a non-profit with a budget of \$750,000 and closely interacted with top University officials. It was the icing of his leadership development. During his presidency, he made significant changes such as providing an extra move-out day for graduating seniors, improved lighting on campus and implemented important meal plan changes.

Priyanth is presently pursuing his Masters in Business at the University of Cambridge (UK). He is the son of Sashikala and Raju Chandrasekar of Bangalore, India.

Editor's Note: This is the 2nd UMaine student to have achieved this prestigious award in the last 4 years (Matthew Rodrigue in 2004). In the 43-year history of this award, 48 students have been selected from which 3 are UMaine graduates (Louise Veilleaux in 1979). This represents the highest number of awards given to any school. There are only three other schools with the same number of awards, the University of Illinois at Urbana-Champaign, the University of Missouri-Rolla, and the University of California Berkeley!

\$1.2M NSF ITEST-Information Technology Experiences for Teachers and Students Awarded

ECE faculty members Bruce Segee and Yifeng Zhu are PI's on a recently funded NSF ITEST award. They have teamed with Geodynamics, Climate Change Institute, Apple Computer, the Maine Center for Mathematics and Science Research, the Maine Mathematics and Science Alliance, Challenger Learning Center of Maine, the Maine Learning Technology Initiative, the State of Maine Department of Education to create a program that links Supercomputing resources at UMaine, the Maine middle school laptop computers, and Maine Learning results in a meaningful and age appropriate way. This three-year project links the Maine middle school laptops with ongoing supercomputing research at the University of Maine in a meaningful and age appropriate way. In particular, this project seeks to improve interdisciplinary collaboration by providing visualization tools through which researchers in the areas of cluster computing, geodynamic modeling, and climate modeling can integrate scientific visualization with K-12 education. Toward this end, the researchers have developed as an educational outreach tool a tiled visualization wall for viewing large, high-resolution images. In the State of Maine, every 7th and 8th grade student has a laptop computer. The tiled display is intended to be a tool to promote the use of the laptops in a classroom as a scientific visualization wall. The program intends to interact with middle school teachers during the academic year by holding bi-monthly mini-conferences at the University of Maine focused on computer modeling and visualization. The year will culminate with a two-week workshop on campus in which teachers will develop lesson plans and classroom modules appropriate to their curriculum. The two-week workshop will culminate with a day in which students selected by the teachers are brought to campus and the modules tested. Follow up assessment will be performed to determine the effectiveness of the approach. The intent is to not introduce a new topic to an already full curriculum, but rather to assist teachers to use existing technology to more effectively teach topics already in the curriculum.

This project builds on the existing supercomputer facilities at the University of Maine, a major fiber-optic cable deployment that will significantly improve connectivity in the State of Maine and from two recent NSF Major Research Infrastructure Awards for Visualization hardware and web portal hardware.



Bruce Segee and Commissioner of Education Susan Gendron stand beside a 3X3 visualization wall at the University of Maine



Bruce Segee and Yifeng Zhu pose with five middle school students and a teacher from Medway, Maine during the M-STEM conference in June 2007, their laptops are displaying a fractal image six times larger than a single laptop screen.

Maine IEEE Communications Society Chapter Chosen as One of Four Best in World

The Maine Chapter received the IEEE Communications Society (ComSoc) Chapter Achievement Award. Every year the best four chapters in the world are selected by IEEE ComSoc headquarters. This year's winners are:

1. **North America: Maine Chapter – Prof. Ali Abedi**
2. Asia-Pacific: Taipei Chapter – Prof. Po-Ning Chen
3. Europe and Middle East: Turkey Chapter – Prof. Hakan Delic
4. Latin America: Peru Chapter – Mr. Jorge Reyna

In order to recognize and reward the outstanding achievements of its best chapters from among more than 170 chapters worldwide, ComSoc has established the Chapter Achievements Award Program. Regional Directors and the Membership Programs Development Director select chapters that provide their members with the highest quality of service in areas of technical activities, public relations, educational services, membership development, job placement support and services geared toward student members. The award includes a plaque and \$1,000 honorariums, which will be presented to the chapter chairs during an award luncheon on November 27, 2007 at the IEEE GLOBECOM Conference in Washington, D.C.

Best Paper Awarded at 2007 Cluster Conference

Graduate students Jianhui Yue and Cai Zhao along with their advisor Professor Yifeng Zhu from the Computer Architecture and Systems (ArchSys) Lab have received a Best Paper award for their work on *Evaluating Memory Energy Efficiency in Parallel I/O Workloads* at the annual IEEE International Cluster Computing Conference in 2007. The Cluster conference is ranked as the top 6% among all computing research and education conferences according to the 2007 Australian Ranking. Over 150 researchers from around the world attended the best paper presentation given by Jianhui.



Jianhui Yue (l) and Prof. Zhu (r) at IEEE Cluster '07 in Austin, Texas

The work presented in this paper is to investigate the memory energy efficiency of high-end data servers used in a supercomputing environment. On high-end data servers, the memory consumes 41% of the total energy and is 50% more than the processors. Emerging memory technologies allow memory devices to dynamically adjust their power states. To achieve maximum energy savings, the memory management on data servers needs to judiciously utilize these energy-aware devices. This work

quantifies the impacts and provides insightful conclusions of modern memory management schemes on energy efficiencies through extensive trace-driven experiments.

ECE Alumni Attend Reunion Weekend

UMaine Reunion Weekend was held June 1-3, 2007 honoring the classes of 1932, 1937, 1942, 1947, 1952, 1957, 1962, 1967 and senior alumni.



James Jalbert ('50) was honored by his classmates with a Greatest Generation award for his heroic military service during WWII. He is shown here with members of his family at the Class of 1950 flag plaza at the south entrance of campus.

Dean Dana Humphrey hosted a reception for all returning College of Engineering graduates at the Engineering Science Research Building on Saturday, June 2. ECE present included: l-r: James Jalbert ('50), John Thomas ('57), Ralph Martin ('52), Dr. Asimiyu Oyetunji ('67), Dr. Fred Irons, Roger Gould ('52) and ECE Department Chair Mohamad Musavi.



Incoming Students

Fall 2007 is off to a great start. There are a total of 62 incoming students from which 34 are in Electrical Engineering and 28 in Computer Engineering. There are also 2 General Engineering students who are planning to join ECE. These students are looking forward to a great education experience with our dedicated faculty members and great facilities.



Maine Mathematics and Junior Engineering Camp



In June the Maine Junior Engineering Technical Society (MJETS) in cooperation with the ECE Department offered a one-week summer day camp program for students currently in grades 4-8 using the LEGO NXT Robotics kits to design and program robots, learn relevant mathematical concepts and logic puzzles. The program concluded with a mini-competition consisting of an obstacle course and with construction of some of modular origami polyhedra. The camp was led by Eva Szillery, Director of the Maine Mathematics, Science and Engineering Talent Search (MMSETS) Program. Assisting Ms. Szillery were MJETS members, high school students, Emily Goldman from Maine Central Institute and Gabriella Raymond from Bucksport High School. ECE graduate students, Morvarid Bassir and Ali Shareef also assisted.

Summer 2007 NSF Research Experience for Undergraduates in Sensors

During the Summer of 2007 highly qualified undergraduate students participated in research under the guidance of various faculty in the area of sensor science and engineering in the Electrical and Computer Engineering Department and the Laboratory for Surface Science and Technology (LASST). Dr. John Vetelino is director of the program that is supported by the National Science Foundation. Pictured below are the participants.



Back row l-r: Jonathan Evans (Cedarville College, OH), Matthew Jones (UM), Berc Kalanyan (Lehigh Univ., PA), Jason Withee (UM), Joshua Wright (UM), Carl Hansen (UM), Kale Schrader (Fort Hays Univ., KS), James Hillegass (Univ. of Scranton, PA), Front row l-r: Radek Glaser (UM), Qian Gao (UM), Melinda Conroy (UM) and Ryan Cota (UM).

Gifts/Donations

The following people and organizations provided gifts/donations to the ECE Dept. and Al Whitney funds during June-September, 2007.

Analog Devices (Ayyagari match) \$1,000
Andrew Jordan \$500
Anonymous (yard sale proceeds) \$1,063
Ansoft (software donation) \$600,000
Eleanor Stearns \$1,000
Fairchild Semiconductor \$35,000
FLIR Systems, Inc. (Norm Stetson) \$1,000

GE Matching Fund Center \$1,500
IBM Watson Research Ctr. \$28,000
IEEE Student Branch \$1,500
Leonard Bowles \$500
Norman Stetson \$5,800
Tundra \$10,937.50
Willis and Bonnie Tompkins \$1,000
Various other donors \$4,600

Grants Received

D. Hummels, “Marine Mammal Monitoring on Navy Ranges,” US Dept. of Defense, \$24,911, June 1.

M. da Cunha, “SENSORS: Detecting Microbial Pathogens with Acoustic Wave Devices,” Supplement, NSF, \$6,000, June 1.

J. Vetelino (20%), **R. Smith** (20%), K. Beard (PI) (30%), R. Lad (10%) and M. Worboys (10%), “IGERT: Sensor Science, Engineering, and Informatics YR 3,” NSF, 638,191, July 9.

M. da Cunha, “NSF Career Supplement,” \$6,000, August 1.

J. Vetelino, PI (80%) and C. Holden (20%), “Track II GK 12 Sensors,” NSF, YR 2 Funding, 332,095, August 13.

N. Emanetoglu, “Novel Symmetric Gain Devices for Single Pixel LADAR Applications,” Army Research Office, \$66,795, August 31.

M. da Cunha (PI) (50%) and R. Lad (50%), “High Temperature Microwave Acoustic Sensors for Aerospace Vehicle Health Management FY 2007, DEPSCoR Competition, \$392,881, Sept. 1.

P. Millard (PI) (40%), **M. da Cunha** (30%), and J. Singer (30%), “Explosives Tracking: A Microsystem for Detection of Bacterial Endospores as Self-Replicating Nucleic Acid Taggants,” \$399,892, Sept. 1.

J. Vetelino (50%) and D. Neivandt (50%), “NSF EXP-SA: Lateral Field Excited Acoustic Wave Sensor for Peroxide-Based Explosives,” NSF, \$400,000, Sept. 1.

B. Segee (34%), **Y. Zhu** (33%), and P. Koons (33%), “IDEAS: Inquiry-based Dynamic Earth Applications of Supercomputing, Seeing the Big Picture with Information Technology,” NSF-ITEST, \$1,185,460, Sept. 20.

Publications

Peer Review Journals

Y. Zhu and H. Jiang, "RACE: A Robust Adaptive Caching Strategy for Buffer Cache", IEEE Transaction on Computers (accepted, to appear), July 1.

Y. Zhu, H. Jiang, J. Wang and F. Xian, "A Novel Distributed Metadata Management System for Large Cluster-based Storage", IEEE Transaction on Distributed and Parallel Systems, (minor revision, submitted for third round review), August 1.

P. Gu, J. Wang, **Y Zhu**, and H. Jiang, "Metadata Prefetching in Large Scale Distributed Storage Systems", submitted to IEEE Transactions on Computers, August 1.

Peer Reviewed Conference Proceedings

C. Farah, C. Hansen, M. Bassir, and **A. Abedi**, "Cluster Head Assignment in Wireless Sensor Networks," OPNETWORK 2007, August 2007, Washington, D.C.

C. Hansen, C. Farah, and **A. Abedi**, "Enhancing Error Correction Code in Transceiver Pipeline," OPNETWORK 2007, August 2007, Washington, D.C.

B. Shen and **A. Abedi**, "A Simple Error Correction Scheme for Performance Improvement of IEEE 802.15.4," IEEE International Conference on Wireless Networks, June 2007, Las Vegas, Nevada (Invited Paper).

A. Abedi, M.E. Thompson, and A.K. Khandani, "Appliation of Cumulant Method in Performance Evaluation of Turbo-Like Codes," IEEE International Conference on Communications, June 2007, Glasgow, Scotland.

Other

Since May the faculty have submitted four proposals for a total of about \$1,960,000.