



ECE Welcomes New Faculty

Ali Abedi - Assistant Professor of Electrical and Computer Engineering



Prof. Abedi received his Ph.D. in Electrical and Computer Engineering from the University of Waterloo where he worked on analytical performance evaluation of wireless communications systems. Prior to coming to Maine, he was an adjunct assistant professor at Queen's University where he developed new methods for convergence analysis of Turbo-codes. Dr. Abedi is director of WiSe-Net laboratory focusing on developing new algorithms and protocols for next generation of wireless sensor networks. He is the recipient of several fellowships from Natural Sciences and Engineering Research Council of Canada (NSERC) and Japan Society for the Promotion of Science (JSPS).

Yifeng Zhu - Assistant Professor of Electrical and Computer Engineering

Prof. Zhu obtained his Ph.D. from the University of Nebraska-Lincoln (UNL) with the honor of Outstanding Graduate Research Assistant Award. His main research and teaching interest lies in cluster computing and parallel I/O storage systems, and his Ph.D. thesis work emphasized the application of such systems for problem solving in various disciplines in a more cost-effective manner. Currently, Prof. Zhu is actively involved in the development and promotion of high-performance computing tools and facilities for the University of Maine System, the New England region, and the North American continent.



Incoming Students

We are off to a great start in this new academic year. The number of incoming students has increased by more than 35% for a total of 60 Electrical & Computer Engineering students and 8 General Engineering students who are planning to join ECE. From these, 31 students are majoring in Computer Engineering and 29 in Electrical Engineering. The ECE department, in collaboration with the IEEE student branch, organized a hike in Mount Desert Island on a beautiful sunny Saturday and a cookout for students and the faculty.



ECE Expanding Its PhD Program

The University of Maine was awarded a \$3.16 million research award to establish an interdisciplinary graduate education program in Sensor Science, Engineering and Informatics (SSEI). Rosemary Smith and John Vetelino are co-principal investigators of the IGERT program which will educate Ph.D. scientists and engineers across multidisciplinary areas ranging from the design, manufacturing, integration and networking of sensors to the interpretation of complex sensor data. IGERT fellows, who will receive \$30,000 per year, will develop knowledge and skills in (1) sensor materials and devices, (2) sensor systems and networks, and (3) the integration and transformation of raw sensor data streams into knowledge. A *systems view* will emphasize leadership skills, the ability to contribute effectively to an interdisciplinary team, and appreciation for the complex social and ethical ramifications of ubiquitous sensing, including privacy issues. UMaine has an outstanding research record in all areas of sensor science, engineering, and informatics, and is well positioned to integrate such research into education at all levels. Faculty, staff, and students are developing novel sensor materials, platforms and applications for healthcare, the environment, energy, agriculture, food safety, transportation, manufacturing, mapping, homeland security, and other areas. More than seven sensor-related companies have already spun-off from the UMaine's research programs and involve graduates of our programs. The SSEI program will package such expertise into an interdisciplinary training program for 20 IGERT fellows (including at least 25% women and/or minorities) over five years. Nineteen UMaine faculty members from five departments (Spatial Information Science and Engineering, Electrical and Computer Engineering, Chemical and Biological Engineering,

Chemistry, and Physics) will participate along with a faculty member from the Maine Business School who will oversee training in technology commercialization and entrepreneurship. Among the fellows chosen for the IGERT program, three (Bennett Meulendyk, Dana Gallimore and Patrick Spinney) were from Electrical and Computer Engineering. The program officially started September 1, 2005.

ECE Donors Help Maintain Department Excellence

Our alumni and friends helped the department in establishing and updating two of the departmental laboratories, a new Computer Engineering Hardware Lab and an updated Computer Cluster Lab. The money raised in our 2004-2005 annual appeal was augmented by the College of Engineering Curriculum Fee funds to build these two labs.

The purpose of the Computer Engineering Hardware Lab is to provide computers and support for students to build hardware that interfaces to computers and system-level software tools. In essence, this is a hands-on laboratory where computer engineering students are allowed to do a number of things that are strictly forbidden in any other computer cluster on campus (and yet, these are things that we expect them to learn). This was a major milestone in the Department and has already proven to be highly successful. The laboratory is currently used in the following courses: ECE 275, Sequential Logic Systems, ECE 331, Introduction to Unix System Administration, ECE 435, Network Engineering, ECE 471, Microprocessor Applications Engineering, ECE 473, Computer Architecture and Organization, ECE 477, Hardware Applications of C, ECE 478, Industrial Computer Control, ECE 571, Advanced Microprocessor Applications Engineering and ECE 578, Advanced Industrial Computer Control.

A plaque will be permanently placed outside of the Computer Engineering Hardware Lab to recognize those donors with contributions of \$1000 or more.

Grants Received

M. da Cunha, "SENSORS: Detecting Microbial Pathogens with Novel Surface Acoustic Wave Devices," NSF Supplement, \$6,000, May 1.

M. da Cunha, "Behavior of LGX Crystals," American Chemical Society-Petroleum Research Fund, \$80,000, June 9.

D. Kotecki, "2005 IBM Faculty Award," \$24,000, July 14.

D. Kotecki, "High Speed Mixed Signal Research 2005," BAE, \$30,000, July 18.

Donations

The Baker Company donated a laminar flow hood for the ECE undergraduate nanofabrication laboratory, July 21.

Publications

Peer Reviewed Journals

S.E. Turner and D.E. Kotecki, "Benchmark Results for High-Speed 4-bit Accumulators Implemented in Indium Phosphide DHBT Technology," International Journal of High Speed Electronics and Systems, Vol. 14, No. 3. pp. 646-651, May 2005.

Peer Reviewed Conference

D. Hummels and S. Saucier, "Multiband Analog to Digital Conversion," accepted for publication in Proceedings of the Fifth IEE International Conference on Advanced A/D and D/A Conversion Techniques and Their Applications - ADDA 2005 (Limerick, Ireland), July 2005.

A. Delic-Ibukic and D. Hummels, "Digital Architecture for Background Calibration of Pipeline ADCs," Accepted for publication in Proceedings of the Fifth IEE International Conference on Advanced A/D and D/A Conversion Techniques and Their Applications - ADDA 2005 (Limerick, Ireland), July 2005.

Other

Since May the faculty have been involved in 10 proposals for a total of approximately \$4,975,000.

ECE Donors

We extend our appreciation and gratitude to those who have generously supported our department and its students and helped us to maintain its excellence. The list below gives the names of all donors who contributed to the department from January 1, 2004 to August 30, 2005. If we have inadvertently omitted your name, please notify us by contacting Janice Gomm at (207) 581-2223 or Janice@eece.maine.edu

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