ECE Chair’s Message

Welcome ECE Students!

On behalf of the ECE faculty and staff I’d like to welcome our new students – freshmen, transfers and graduate students! As you start your UML career I encourage you to get involved in extracurricular activities offered by the department, college and university. The ECE Department and the College of Engineering offer many opportunities to extend yourselves by participating in research, service learning and student groups. Student branches of IEEE and Eta Kappa Nu are among the most active. I assure you that your college experience will be richer if you get involved!

This newsletter and future editions will include profiles of your fellow students who have gotten involved and enriched their educational experience. Our Faculty work on many research projects that can provide opportunities for you to travel and to present your work at professional conferences.

If you have a story about your experience as an ECE student let us know! Have a great semester! --Professor Martin Margala

---

Prof. Mil’shtein Continues on NASA Organizing Committee

Professor S. Mil’shtein attended the International NASA Symposium on Nanotechnology, Energy, and Space, which was held in Almaty, Kazakhstan, August 5-9, 2013. Prof. S. Mil’shtein was serving as member of organizing committee and US NASA representative at the Symposium. Prof. S. Mil’shtein was selected again to serve as member of organizing committee on following Symposium in 2015.
New ECE Faculty Spotlight

**Dr. Vinod Vokkarane** joined the ECE department this semester. He is also a Visiting Scientist at the Claude E. Shannon Communication and Network Group, Research Laboratory of Electronics (RLE) at Massachusetts Institute of Technology (MIT) from 2011. He was the Associate Professor of Computer and Information Science at the University of Massachusetts Dartmouth from 2004 to 2013. He received the B.E. degree with Honors in Computer Science and Engineering from the University of Mysore, India in 1999, the M.S. and the Ph.D. degree in Computer Science from the University of Texas at Dallas in 2001 and 2004, respectively. His primary areas of research include design and analysis of architectures and protocols for ultra-high speed networks, grid and cloud networks, and green networking. He is the recipient of the UMass Dartmouth Scholar of the Year Award 2011, the UMass Dartmouth Chancellor's Innovation in Teaching Award 2010-11, the University of Texas at Dallas Computer Science Dissertation of the Year Award 2003-04, and the Texas Telecommunication Engineering Consortium Fellowship 2002-03. Dr. Vokkarane is the co-author of a book, “Optical Burst Switched Networks,” Springer, 2005. He is currently on the Editorial Board of Springer Photonic Network Communications Journal and has also served as an Editor of IEEE Communications Letters and Elsevier Journal of Optical Switching and Networking. He has co-authored several Best Paper Awards, including the IEEE GLOBECOM 2005 and IEEE ANTS 2010. He has been on the technical program committees of several IEEE conferences including INFOCOM, ICC, GLOBECOM, ICCCN, HSN, and ANTS, and served as TPC Co-Chair for the Optical Networks and Systems (ONS) symposia at ICCCN 2007 and 2010, INFOCOM High-Speed Networks (HSN) workshop 2011, GLOBECOM 2011, ICC 2012, and IEEE ANTS 2013. He is a Senior Member of the IEEE.

“I am very excited to join the Electrical and Computer Engineering (ECE) Department at University of Massachusetts Lowell. I bring in 9 years of experience as a dedicated teacher and researcher. It’s been a month since I joined the department and I am already working on several new collaborative projects with the strong and diverse department faculty. I am currently teaching a graduate elective on high-speed networks, which is full of aspiring students. I look forward to working with the high caliber students in the coming semesters. Together with the students and faculty, I plan to establish a strong research center on big-data and ultra-high speed networks at UMass Lowell.”

---

Prof. Anh Tran Recognized by Honors Program

On Nov. 11, 2012, Prof. Anh Tran was recognized as a difference maker for his excellent work at UMass Lowell. Dr. Tran and five other honorees received certificates and a UMass Lowell blanket at a luncheon hosted by the Honors Program. Also attending were Dr. Tran’s wife and the ECE Chair, Dr. Margala as well as Charlotte Mandell, vice provost of Undergraduate Education; Laurence Siegel, dean of Student Affairs; and Steven Tello, associate vice chancellor for Entrepreneurship & Economic Development.

“These are very special people on our campus and each, in their own way, has contributed to the welfare of our students for decades,” says Jim Canning, director of the Honors Program.
Professor Prasad Inducted a Fellow in ASEE

American Society for Engineering Education (ASEE) recently inducted Prof. Kanti Prasad as Fellow. The Grade of Fellow is one of unusual professional distinction and is conferred by the ASEE Board of Directors upon an ASEE member with outstanding and extraordinary qualifications and experience in engineering or engineering technology education or allied field, who has made appropriate and important individual contributions. Fellow member status is a distinction conferred upon those who have been members for at least 10 years and special attention is given to an individual's contributions within ASEE.

Prof. Prasad received the B.E (Telecommunications) in 1961 and served as Lecturer in the Electronics and Communication Department (formerly Telecommunications Department) from 1963-1965 at University of Roorkee (now IITR). He completed his Ph.D. in Solid State Electronics from University of South Carolina in 1971. After serving at South Carolina and Boston University, he joined UMASS Lowell in 1982 with a part time appointment at Volpe Research Center of the US DOT.

During his tenure here at UMASS Lowell, he initiated a consummate program in VLSI including Design and Fabrication and established their laboratories including Semiconductor Instructional Processing Lab (DSIPL). Here he introduced courses like VLSI Design, VLSI Fabrication, MMIC Design and Fabrication, VHDL based Design, and Introduction to ITS Design. Prof. Prasad received over 4 million dollars towards research and lab maintenance from hi-tech companies such as Analog Devices Inc. and Skyworks Solutions Inc.

Prof. Prasad has been a member of the ASEE since 1971 and has received the Best National Campus Award two times and Best Zone 1 Award five times including the Best Teacher Award from the ASEE’s North-East Section.

AETC News: Professor Mil’shtein Attends NASA

On October 12th 2012, Prof. S. Mil’shtein attended the opening of the Uri Gagarin and John Glenn monuments at first NASA headquarters in Houston and put red roses to both monuments together with members of NASA committee Profs. A. Friendlich and A. Ignatiev (both of the University of Houston). A celebration event took place that evening in Russian consulate in Houston with many Houston dignitaries, representatives of Russian government and NASA officials. Uri Gagarin’s daughter, Ludmila, and his grandson, Sergei, were among the guests invited by NASA.
In an open and sincere discussion, the general manager of Russian shuttle program revealed that this program, being seven years old, did not progress much due to the number of factors. It was regretfully admitted one was the lack of American cooperation in Russian efforts to launch the shuttle. Looking back at past successful American-Russian space cooperation, one can hope that in the near future these two countries will join forces in space again.

The continuous commitment of UML Advanced Electronic Technology Center to develop novel, lightweight solar cells for space applications was discussed during Professor S. Mil’shtein visit to Houston.

**Professor Therrien Gives Talk at Boston Museum of Science**

On September 22, Prof Therrien gave an invited talk to the general public at the Boston Museum of Science. The talk was about his research on a living cell based biosensor for customized medicine, toxicity testing, chemotherapeutics, and drug discovery. The basis of the sensor is a piezoelectric oscillator, such as the quartz crystal used to keep time in watches. Cells placed on this oscillator alter the frequency according to their physiological state, allowing continuous monitoring of their health. When exposed to toxins or drugs that alter their state, a change in frequency is observed, indicating their reaction to the material.

Following the talk, Prof Therrien was interviewed by a staff member. The interview was released as a podcast ([http://www.mos.org/node/111120](http://www.mos.org/node/111120)). Since its release, the podcast has been featured on Nanowerk ([http://www.nanowerk.com/news2/newsid=27460.php#ixzz2Ch6UWsTg](http://www.nanowerk.com/news2/newsid=27460.php#ixzz2Ch6UWsTg)), the National Nanomanufacturing Network, and on NSF’s Science 360 news section. Prof Therrien was invited back to the MOS in April to be one of the guest speakers for their annual Nano Days event. His talk will be published on the Nano Nerds YouTube channel in mid May.
Lab-In-A-Box Gains Notoriety

As seen on Forbes.com, Erin Webster, a Computer Engineering Graduate Student and UML, along with Professor Jay Weitzen, and technology companies Analog Devices and Digilent, are creating a “Lab In A Box” – a new way of getting students excited about electrical and computer engineering for the 21st century.

The starter kit consists of a Parallax Board of Education proto board, an Analog Discovery digital and analog IO kit, and all the parts needed to perform a set of experiments. Students only need a computer to use the kit. IF they have a laptop, they can take it anywhere: home, office, even outdoors. Students can repeat experiments, take extra time, innovate, tinker and try their own projects. This flexibility allows faculty to create more open-ended experiments. An open-ended project requires the student to come up with their own solution to a problem rather than follow a rigid set of procedures. According to Erin, “We’ve found that each student needs a different amount of time to complete open-ended design projects, often more than the three hours per week they have with the equipment in the traditional lab. With the Lab In A Box every student uses the equipment on their own, so that every student gets the hands on experience that employers seek in their engineers (rather than in a team where often the weaker students do not participate).”

The model we plan to use is that each engineering student will purchase their Lab In A Box at the start of their first year. The total cost will be on the order of a single engineering text book. They will use the Lab In A Box for their entire four years at UMass-Lowell. Having each student purchase their own “lab” ensures that every student gets the hands-on lab experience that employers require. Students can work on projects when and where they want, not just for homework, but to tinker or develop new products.

By running the new hands-on curriculum during the 2013 spring semester, the retention rate for the semester rose from the usual 83 percent to 91 percent. Students self-reported that they enjoyed the labs and felt like they learned new skills. Many also said that talking about these labs during interviews helped them get summer internships.
AETC Student, Anup Pillai, Earns Ph.D.

AETC doctoral student Anup Pillai defended his Ph.D. dissertation last November 9th. Anup seen in the picture demonstrates miniaturization steps of contactless systems during thesis defense. The dissertation committee of professors C. Armiento, M. MahD, and S. Mil’shtein approved the thesis, which describes novel development in fingerprinting technology and image processing. After graduation Anup started a postdoctoral fellow position at the University of South Carolina. Congratulations Dr. Anup Pillai.

Recent ECE Publications

ECE faculty members and their students recently published the following journal and conference papers:

Professor Samson Mil’shtein and Professor John Palma


Professor Samson Mil’shtein

Sam Mil’shtein, Anup Pillai, Zachary Durkee, Charles McPherson, Josiah Hackendorf, “Contactless Fingerprints Taken by Simultaneous Three Camera Snapshots”, Instit. of Engineer. and Technol. October 2012.


Professor Xingwei Wang and Professor Alkim Akyurtlu


Professor Xingwei Wang


Ye Tian, Nan Wu, Xiaotian Zou, Haitham Felemban, Chengyu Cao, and Xingwei Wang, “Fiber-optic ultrasound generator using periodic gold nanopores fabricated by a focused ion beam”, Optical Engineering, 52(6), 065005, 2013.


Professor Tricia Chigan


Professor Kanti Prasad

K. Prasad, “Advanced VLSI Training Being Imparted Regionally, Nationally and Internationally ” to be presented at ASEE’s North East Conference held at Norwich University at Vermont (March 15-16th, 2013).
