Mentoring Program Needs More Help

The department mentoring program is beginning its third year. Seventy students registered for the program last year. One hundred and sixty registered this year. So far, 135 alumni have signed up to be mentors (Thank you!) which means we need 25 more! This is a great way to reconnect with the department and share your wisdom with these wonderful kids. You can register on our website. Questions? Contact Cathy McClellan.

Electrical Engineering Alumnus Active at JPL

On Aug. 6, at 1:31am EST, the Jet Propulsion Laboratory's (JPL) Mars Science Laboratory (MSL) touched down on the Martian surface after entering the Martian atmosphere at 13,000 miles per hour just 7 minutes earlier. Brian Schratz (BSEE '06, MSEE '08) was in the JPL's mission control room on landing day helping to call out the data as it streams down.

Schratz joined the MSL project two years ago, a year after he started working at JPL. As the entry descent and landing communications lead, he is responsible for ensuring that the MSL hardware and software is designed correctly to transmit the critical entry, descent and landing data in real-time. He also will coordinate the three Mars UHF orbiters, and NASA and European Space Agency tracking stations on Earth.

The MSL entry capsule, which is bigger than Apollo, entered the Martian atmosphere and used thrusters to steer itself through the upper atmosphere, slowing down to supersonic speeds. It then deployed a 70-foot supersonic parachute—the largest ever deployed on any planet. As the MSL decelerates to subsonic speeds, it jettisoned the heat shield, allowing the landing radar to locate the ground. Once it had a lock on the ground, the descent stage separated from the parachute and backshell, and flew the rover towards the ground using eight throttled rocket engines. At 65 feet above the surface, the descent stage lowered the rover on a bridle while slowly bringing the rover towards a soft landing on the surface at about 2 miles per hour.

During this time, the MSL was constantly transmitting data back to Earth to report how the vehicle was performing. Schratz's responsibility was to ensure that if something goes wrong, engineers back on Earth will have enough information to diagnose exactly what the error was. Schratz comments on his experience, "It was an emotional roller coaster, where every successful milestone meant that something just as terrifying was coming up next. When we touched down and received the first pictures a couple minutes later, it was the happiest moment of my life. All of our years of hard work paid off, I fulfilled my childhood dream, and we achieved what many thought was impossible."

Schratz credits his accomplishments at JPL to his experiences with Penn State's Student Space Programs Laboratory (SSPL) and the earlier SPIRIT sounding rocket program. Schratz stated, "SSPL and SPIRIT projects educated me in the field of spacecraft design like no other opportunities at Penn State could. The Lab reinforced the lessons I learned in the classroom, and very often challenged me to go beyond the course materials. But beyond expanding my technical abilities, the lab also taught me how to manage teams and projects. These lessons have proven invaluable in the fast-paced environment that is JPL and MSL. SSPL and Penn State launched my career, and I have no plans of slowing down any time soon."
Department Tailgate

Penn State Electrical Engineering Society and the department are hosting a homecoming football tailgate.

Penn State v. Northwestern
Oct. 6
9:00 – 11:30 a.m. Kick off is noon.
RV space 2615

This is near the location of last year’s tailgate. It is west of the stadium in the first row of parking on the grass lot. There is a green chainlink fence that separates the grass lot from the asphalt parking directly in front of this parking space.

We’ll have a white easy-up tent (that looks just like everyone else’s white easy-up tent) and a sign.

Come join us for breakfast!
Everyone is welcome!

Who wants a Penn State Electrical Engineering golf shirt?
If all goes according to plan, we will have golf shirts that you may purchase at the tailgate.
$30 - Mens sizes: medium, large, and X-large. Quantities are limited. (We will have more made depending on demand.) Make checks payable to Penn State IEEE student chapter.

NSF CREATIV Grant Funds Computer Vision Researcher and Psychologists Seeking Synergy of Regularity Perception in Human and Computer Vision

Penn State and Stanford University will collaborate on a three-year, $800,000 National Science Foundation Creative Research Awards for Transformative Interdisciplinary Ventures grant which can potentially advance the understanding of visual regularity perception in both human and machines.

This research integrates theoretical, experimental and algorithmic thrusts to construct a novel conceptual framework for predicting and understanding the full range of regularity perception, both in humans, by measuring human brain activation and behavior, and in machines, through a computational framework for adaptive symmetry detection in computer vision. The ability to detect patterns in natural scenes serves critical biological needs while posing substantial computational difficulties for machine intelligence.

The project sits at an interdisciplinary nexus between computer science, psychology, neuroscience, and mathematics. The outcomes of this research could potentially transform the theory of human pattern perception and make a quantum leap in robust automatic detection of real world regularities. Because patterns are ubiquitous, this research impacts all information processing systems challenged by large digital datasets that are hard to explore manually. Applications include anomaly detection in medicine and surveillance data; mobile robot localization in man-made environments; and generic pattern indexing and retrieval.

Participants from Penn State include Yanxi Liu (PI from computer science and engineering and electrical engineering) and Rick Gilmore (co-PI from psychology). Anthony Norcia is the co-PI from psychology at Stanford University. This award resulted from an initial collaboration among the three participants and was supported by a Penn State Institute of the Neurosciences seed grant.
Department News

Dr. David Wormley, Harold and Inge Marcus Dean of Engineering, announced that Dr. Kultegin Aydin has agreed to lead the electrical engineering department as department head for the period July 1, 2012 through June 30, 2014. The plan is to pause the department head search for a year and reinstitute a search in the fall of 2013 with the expectation that a new department head will be in place July 2014.

Mohsen Kavehrad, W.L. Weiss Chair Professor of Electrical Engineering, co-chaired the 2012 IEEE Photonics Society Summer Topical Conference on Optical Wireless Systems Applications that was held in Seattle, WA, in July. Kavehrad and graduate students from his research center presented four papers.

Kavehrad was invited to present at the Wuhan National Laboratories for Optoelectronics in Optical Valley in Wuhan, China, in July. He provided a brief overview on the Penn State-Georgia Tech National Science Foundation Industry-University Cooperative Research Center on Optical Wireless Applications and then focused on free space optical communications through clouds and turbulent atmosphere.

Graduate student Perry Edwards was selected to receive one of the Diefenderfer Graduate Fellowships from the College of Engineering. This fellowship is designed to support outstanding students who show potential to be innovative and entrepreneurial-oriented graduate engineers. Edwards is a member of Zhiwen Liu’s research group.

Kenji Uchino, professor of electrical engineering, was invited to the 8th Asian Meeting on Ferroelectrics held in Penang, Malaysia, in July and also to the International Conference on Traditional and Advanced Ceramics held in Bangkok, Thailand, in August. Uchino provided an opening plenary talk on “ POLITICO-Engineering,” in which he introduced politically-initiated engineering such as sustainability and crisis technologies. He discussed the causes of the Fukushima Nuclear Power Plant accident in Japan and introduced various safety technologies with actuators and sensors for monitoring and recovering the nuclear chamber.

Sven G Bilén, associate professor of electrical engineering, was awarded the AIAA Space and Missile Group’s Exceptional Service Award at the SPACE 2012 Conference held in Pasadena, CA, in September.

Iam-Choon Khoo, W. E. Leonhard Professor of Electrical Engineering, presented a keynote paper at the Third International Workshop on Advanced Nano- and Biomaterials and Their Device Applications that is organized jointly with the French-Romanian Topical Meeting on Nano and Biomaterials at Timisoara, Romania in September. The subject of his presentation will be on his recent discovery, reported in Optics Letters August issue, of the nonlinear all-optical response of blue-phase liquid crystals - the first manifestation of a truly bulk-size 3-D photonic crystals with extraordinary reflective/transmissive properties.

John Metzner, professor electrical engineering, recently published “Soft Information Single Error Correction for Interactive Concatenated Codes,” in the IEEE Transactions on Communications.

Yanxi Liu, associate professor of electrical engineering, was the leading co-director of the 4th US-Sino Summer School of Vision, Learning and Pattern Recognition (VLPR). This is an annual event supported by the National Science Foundation, National Natural Science Foundation of China and industry sponsors. VLPR 2012 focused on an interdisciplinary theme of “Computer Vision in Biomedical Image Applications”, and was hosted jointly by the schools of life sciences and computer science of Fudan University, Shanghai, China.

During the week-long summer school, the more than 200 attendees heard lectures given by 16 speakers from the United States and China, including computer vision researchers working on the frontiers of computer vision and image analysis, machine learning, and large multimedia databases, as well as scientists working on C-elegans, zebrafish, rats, plants, human/animal perception and on interface tools in biology and computer science.

For more details and the upcoming publication of a multimedia book on this event, please check this site: http://vision.cse.psu.edu/vlpr2012/vlpr2012.html

Congratulations

Pam Stauffer, administrative support coordinator and John Metzner, professor of electrical engineering, received their 25 year chairs at a ceremony in September. Thank you both for your service to the University.

Years of Service

The following faculty and staff members have reached the following milestones (anniversaries in July, August, September or October):

- Suman Datta, professor: 5 years
- Ji-Woong Lee, assistant professor: 5 years
- Tom Jackson, Robert E. Kirby Chair Professor: 20 years
- Tim Kane, professor: 20 years
- Andy Mayers, instructor: 20 years
- John Mathews, professor: 25 years

(He’ll get his chair next year.)
Congratulations to the Summer Graduate Program Graduates:

M.S.
- Brady Bickel
- Michael Conway
- Michael Ferster
- Philip Gorman
- Mengran Gou
- Serdar Kizildaya
- Allen Kummer
- Spencer Martin
- Timothy McManus
- Apoorva Vakil
- Pramod Vemulapalli
- Ran Zhao

Ph.D.
- Ashka Aliyaru Kunju
- Ertugrul Ciftcioglu
- Feng Li
- Min Li
- Yang Liu
- Hang Beum Shin

Thank You Alumni for Your Generous Support

Your gift to the Penn State Department of Electrical Engineering ensures that we can continue to focus on our mission of serving society through excellence in education, research, scholarship, and public outreach. You can contribute to the department in the following ways:

Make a gift online

Go to Giving to Penn State to make a gift online through Penn State's secure giving portal. To ensure that your gift goes directly to the department, select the checkbox at the bottom of the page to view a list of giving opportunities. Locate the “College of Engineering Future Fund” in the list and select the small triangle to the left of it. This allows you to view the various engineering departments and scholarship funds that you may select.

Mail your gift

Make your check payable to “Penn State” and mail it to the Director of Development, Penn State College of Engineering, 101 Hammond Building, University Park, PA 16802. Write “Department of Electrical Engineering” in the memo line of your check.

Make a deferred gift or establish a named endowment

An endowment is a gift that is held in perpetuity and provides dependable support for a specific need. Penn State invests the initial gift and spends only a portion of the average annual investment return. The remainder is added to the principal as protection against inflation. Endowments can be set up to support a wide range of purposes depending on the donor’s area of interest—from scholarships to professorships, from degree programs to research laboratories, and more. For more information on deferred gifts or endowments, please contact Mark Sharer, Director of Development, at msharer@engr.psu.edu.

College of Engineering Hosting Tailgate

All Penn State engineering alumni and their families are invited to attend the Engineering Alumni Tailgate on Saturday, Nov. 17, starting 3 ½ hours before the Penn State vs. Indiana football game.

Location: Founder's Lounge, ground level of the Bryce Jordan Center

Registration: $20 for adults/$5 for students/children 12 and under are free

Come in out of the cold, enjoy a hearty brunch buffet, and visit with special guests including engineering deans, students, and representatives from our nine engineering alumni groups.

Engineering students will host fun, engineering games and activities for the kids.

Now, more than ever, our Penn State engineering students need your support. Show your commitment to them by participating in our silent auction. All proceeds go directly to the Penn State Engineering Alumni Society Endowed Scholarship.

The auction will feature the best of Happy Valley including:
- Penn State Elms Collection mantel clock
- Winter Weekend Getaway Penn Stater Conference Center
- Penn State jewelry from Moyer Jewelers
- Tickets to 2013 Penn State football games
- Gift baskets local artisan, cheese, wine, and chocolate
- Gift certificates to State College restaurants
- And much more!

Registration is limited to 350 people so sign up today:
http://www.engr.psu.edu/tailgate/

Speakers Bureau

The department is starting a speakers bureau. We are creating a database of alumni who are willing to come to campus and talk to a class or a student group. If you are interested in being on the database, please email Cathy McClellan with your expertise and availability (such as evenings only, Mondays only, September – October, Fridays before home games etc).

If you have already sent me an email to be added to the database, I've got you on the list and you don't need to resend the information. We hope to have something formal in place in the next month or two.

Contact Information:
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Web: www.ee.psu.edu
Please submit news items to: Cathy McClellan at cls118@psu.edu

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U.Ed. ENG 13-09