

The Waynick Lecture is coming up this spring. Keep watching for details soon.

If you are a mentor, please don't forget to contact your student to see how the semester is going.



LOCAL ALUMNUS WINS CIVILIAN SERVICE MEDAL

Julia Erdley (BSEE '90, MSEE '97) thought she wanted to be a business major when she started attending classes at Penn State. After a brief time as an education major as well, Erdley knew she was up for a bigger challenge and found herself in electrical engineering. After receiving her bachelor's degree, she found employment at Penn State's Applied Research Laboratory (ARL) as a research assistant and research associate. Erdley worked on a number of projects involving torpedo guidance and control, acoustic signal processing, and multi-sensor fusion.

Beginning in 1990, Erdley started working toward her master's degree in electrical engineering on a part-time basis while maintaining her full-time position at ARL. In 2007, a unique opportunity presented itself to work for the Department of Defense to help counter the improvised explosive device (IED), the number one threat to our warfighters in Iraq and Afghanistan. **Col. Barry Shoop** (BSEE '80), science adviser for the Joint Improvised Explosive Device Defeat Organization (JIEDDO), visited ARL and subsequently recruited Erdley to be the deputy science adviser of JIEDDO on an Intergovernmental Personnel Act (IPA) assignment. Under the act, Erdley could spend up to four years working for the JIEDDO which is housed in the Department of Defense. Understanding the significance of this opportunity, Erdley began what she thought would be a one-year assignment working in Washington D.C.

JIEDDO was established in 2006 with the mission to lead the DoD actions to rapidly provide counter-IED capabilities in support of the combatant commanders and to enable the defeat of the IED as a weapon of strategic influence. To achieve this mission, JIEDDO executes along three lines of operation: "Defeat the Device" to include approaches to detect and neutralize IEDs, or mitigate their explosive effects; "Attack the Network" to disrupt or dismantle the adversarial networks responsible for employing the IED; and "Train the Force" to prepare our forces with the skills required to counter the IED and the networks that use them. Erdley's responsibilities included providing advice to JIEDDO on matters relating to science and technology and serving as the technical project lead for two multi-sensor fusion science and technology programs with the objective to demonstrate feasibility of using methods in multi-sensor fusion to improve IED detection performance.

Erdley's one-year assignment quickly became three and she was assigned the role of science adviser as the successor of Shoop who is a professor and deputy head of the Department of Electrical Engineering and Computer Science at the United States Military Academy. Erdley held the position of science adviser until September 2011 when the IPA concluded. Erdley comments on her time spent with the JIEDDO, "The adaptive nature of the IED threat requires an equally adaptive response by our warfighters. This requires they have access to the best and brightest minds, to include academia, to help counter this threat both at home and abroad."

For her service as deputy science adviser and science adviser to the director of JIEDDO, Erdley was awarded the Department of the Army Outstanding Civilian Service Medal in September 2011. "The true credit goes to our soldiers, sailors, airmen, and marines who confront the IED threat everyday on the battlefield. It was an honor and privilege to serve them in this mission," stated Erdley.

Erdley rejoined ARL in the fall as a research engineer and is thankful that the commute is now much shorter.

Erdley and her husband, Todd (BSEE '86, MSEE '92), live in State College.



Lt. Gen. Michael Barbero, left, and Julia Erdley.

STUDENT CHAPTER OF IEEE

Business Information Sessions

The IEEE kicked off the spring semester with a meeting and a visit from Kimberly Clark. The student chapter hosts a number of information sessions and other events to facilitate networking between companies and students. If your company would like to host an information session, please contact [Keegan McCoy](mailto:Keegan.McCoy@psu.edu), ksm5052@psu.edu.



Rube Goldberg competition

IEEE has a team in the Rube Goldberg competition that takes place on Feb. 11 at 2:00 p.m. in the ballroom at the Nittany Lion Inn. This year's challenge is to design and build a machine that inflates a balloon and pops it in 20 or more steps. The IEEE chapter has selected music as their theme. Come watch our team in action on Feb. 11.

Distinguished Speaker Series

Williams, a global energy and communications company, is sponsoring a distinguished speaker series. This bi-weekly event will showcase industry and academia representatives with varying specialties. The goal is that the speakers will provide examples of how technology is applied in the various disciplines giving the students ideas for their own careers.

Outreach Events

Lockheed Martin is sponsoring an IEEE robotics competition. The event, for K-12 students, is going to be held on an annual basis in the late spring. The IEEE students will staff the event, serve as poster and competition judges, and supply the organizational support. Last year's event was huge success and the chapter is looking forward to hosting and growing the competition.

More information on the IEEE student chapter can be found on their website: <http://www.engr.psu.edu/ieee/>

EARLY CAREER RECOGNITION ALUMNI AWARD

The Society of Penn State Electrical Engineers and the Department of Electrical Engineering is looking for nominations for the Early Career Recognition Alumni Award. This award honors outstanding Penn State electrical engineering alumni at the outset of their career. Nominations are due by May 15 and can be made by anyone with knowledge of the career progression and accomplishments of the nominee.

The nomination form as well as award criteria are available on our website here and in the electrical engineering office. The information can be mailed or faxed upon request.

Please contact Cathy McClellan, cls118@psu.edu or 814-863-0253 with any questions. We look forward to hearing all the wonderful things that our alumni have accomplished.

Last year's award winner is pictured on page 4.

FACULTY SPOTLIGHT



Noel (Chris) Giebink joined the Department of Electrical Engineering as an assistant professor in 2011. Originally from Austin, TX, Giebink received two bachelor degrees in engineering science and physics from Trinity University in San Antonio, TX, where he played on the varsity soccer team. He was always very interested in physics from an applied standpoint and electrical engineering

was a good way to merge the two.

Giebink earned his doctoral degree in electrical engineering from Princeton University. When his adviser moved to the University of Michigan, Giebink joined him there to complete his research on organic light emitting diodes and lasers. Following graduation, Giebink completed a two year postdoctoral fellowship at Argonne National Laboratory in conjunction with the Argonne-Northwestern Solar Energy Research Center, where he focused on organic photovoltaics and solar concentration.

Giebink stated that his interest in Penn State stems from the strong core of faculty in electrical engineering and other departments that complement his research and offer new opportunities for collaboration. His research interests highlight the combination of organic and inorganic materials in optoelectronic and photonic devices, with a particular emphasis on applications for solar energy conversion and storage. In addition, his group focuses on fundamental physical questions underlying the behavior of charge carriers, excited states and light-matter interaction in disordered and nanostructured semiconductors. He holds three patents and is a member of the Optical Society of America, the Materials Research Society, and the American Physical Society.

Giebink's wife, Heather, is currently completing a Ph.D. in biochemistry at the University of Michigan. Giebink lives in Lemont with his dog, Koya, and will be joined in the spring by Heather and their two cats.

The research of [Mohsen Kavehrad](#), W. L. Weiss Professor of Electrical Engineering, and electrical engineering graduate student, Zhou Zhou, is featured in a Penn State Live article. Kavehrad presented the research at the SPIE Photonics West 2012 conference in San Francisco in January.

Please read the article in its entirety here.

CONGRATULATIONS

Two electrical engineering student projects were awarded first place in the Lockheed Martin Design Award for Best Project at the Fall 2011 Project Design Showcase.

Titled “Harnessing Human Energy” and sponsored by Harris RF Electronics, the team members included electrical engineering students **Jacob Huttel**, **Fernando Lara**, **Tuan Ngo**, **Clifford Pang** and computer science and engineering student **George Fouche**. The team designed an unobtrusive way to capture waste energy from everyday human activity. The team fabricated an array of sixteen ceramic piezoelectric devices for mounting under the heel of a shoe. A high-efficiency circuit gathered and conditioned the low-power output of the piezoelectric devices in order to charge a lithium polymer battery, also mounted on the user’s shoe. When fully charged, this battery could deliver 100mA of current at 3.3V. Their Harris RF Electronics technical adviser is **Michael Vanderwege**.



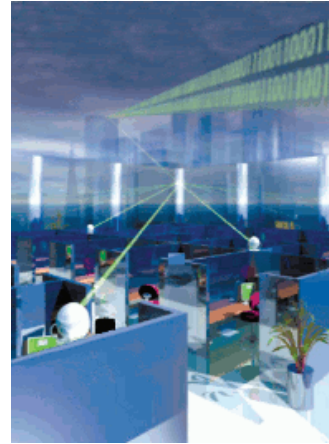
Lockheed Martin’s Paul Mittan, left, Clifford Pang, Tuan Ngo, Fernando Lara, Harris RF Electronics’ Michael Vanderwege, Jacob Huttel, George Fouche, and electrical engineering faculty member Timothy Wheeler at the design showcase.

Titled “4 Carrots - The Fitness Regulator” and sponsored by entrepreneur, Jonathan Tabolt, the team members including electrical engineering students **Jorge Calderon**, **Matt Quigley**, **Aaron Walters**, and computer science and engineering student **Bill Orosz**. Parents are often in the position of controlling their children’s overuse of video games. The team developed a device to monitor a child’s physical activity and to award “carrots” for that exercise time which could be used to unlock a favorite video game. The 4 Carrots Fitness Regulator is the first prototype of Tabolt’s dream to bring such a device to market.



Bill Orosz, left, Matt Quigley, sponsor Jonathan Tabolt, Jorge Calderon, Aaron Walters, industrial and mechanical engineering faculty member Tim Simpson, electrical engineering faculty member Tim Wheeler, and Lockheed Martin’s Paul Mittan at the fall showcase.

KAVEHRAD WINS APPROVAL FOR CENTER



The National Science Foundation (NSF) has approved an Industry/ University Cooperative Research Center for Optical Wireless Applications housed in the Department of Electrical Engineering. The center, which will be directed by **Mohsen Kavehrad**, W.L. Weiss Chair Professor of Electrical Engineering, is a joint project with Georgia Institute of Technology. The five-year NSF grant will substantially impact

research and innovation of optical wireless systems and applications designs. The goal of the center is to generate technology that enables manufacturing of specific devices with larger communications capacity, employing integrated opto-electronics device design with interfaces necessary to facilitate collaborative device, system, and network design.



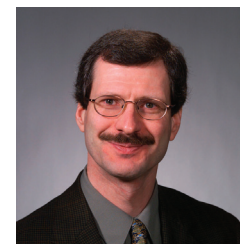
Members of the Penn State College of Engineering faculty who will participate in the center include **Kevin Houser**, associate professor of architectural engineering; **Tim Kane**, professor of electrical engineering; **Zhiwen Liu**, associate professor of electrical engineering; and **Shizhuo Yin**, professor of electrical engineering. For more information, see here.



The Institute of Electrical and Electronics Engineers (IEEE) named **John Mathews**, professor of electrical engineering, an IEEE fellow.

Mathews was cited for his contributions to radar observations of meteors.

Douglas H. Werner, professor of electrical engineering, was named the John L. and Genevieve H. McCain Chair in Engineering. Established in 2005, the McCain Chair is designed for a distinguished faculty member in the College of Engineering to continue his or her scholarly excellence through contributions to teaching, research, and public service.



MORE DEPARTMENT NEWS

Dheeraj Mohata, doctoral candidate, presented a paper, titled "Demonstration of MOSFET-Like On-Current Performance in Arsenide/Antimonide Tunnel FETs with Staggered Hetero-junctions for 300mV Logic Applications," at the International Electron Devices Meeting in Washington D. C., in December. The research, under the direction of Professor **Suman Datta**, reports the fabrication of a heterojunction field effect tunnel transistor with a 650 percent increase in drive current. See here for more information.

EARLY CAREER RECOGNITION ALUMNI AWARD



From left, Dale Hoffman, president of Penn State Electrical Engineering Society; Paul Mittan, last year's award recipient; Brandon Ritrovato, award recipient; Kultegin Aydin, interim department head

Brandon Ritrovato, senior software engineer at Lockheed Martin, is presented with the Early Career Recognition Alumni Award during the fall graduation reception in December.

CAREER FAIR PREPAREDNESS EVENT

The Penn State Electrical Engineering Society sponsored an afternoon activity to help ready the students for a successful career fair experience. On Jan. 24, local alumni were on hand to review resumes, provide interviewing tips, and conduct mock interviews. The successful event was well attended and the students appreciated the assistance. Thank you to the alumni who donated their afternoon: **Jim Blazer, Eric Kline, Dale Hoffman, Doug Schultz, David Beyerle, John Keenan, and Mike Erdman**.



CONGRATULATIONS TO OUR FALL 2011 M.S. AND PH.D. STUDENTS

M.S.

Divij Bhatia
Aarti Chandrashekhar
Jason Dalenberg
Chaitanya Kamath
Sina Khaleghi
Chanakya Mehta
Poonam Suryanarayan
Khoa Tran
Yuhao Wang

Ph.D.

James Basham
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Please submit news items to: Cathy McClellan at cls118@psu.edu

This publication is available in alternative media on request.

Penn State is committed to the affirmative action, equal opportunity, and the diversity of its workforce.

U.Ed. ENG 12-24