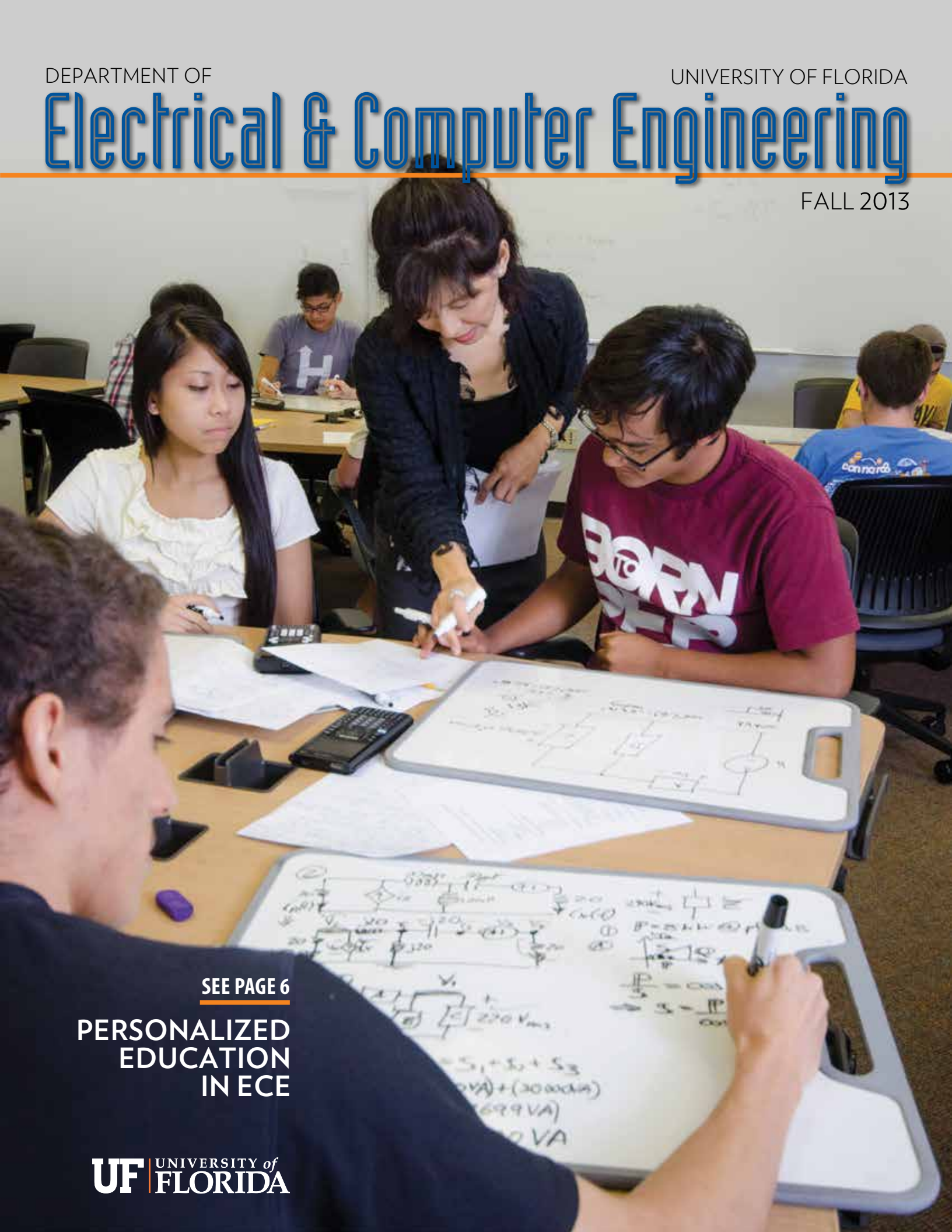
DEPARTMENT OF

UNIVERSITY OF FLORIDA

Electrical & Computer Engineering

FALL 2013



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PERSONALIZED EDUCATION IN ECE

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In This Issue

On the Cover: ECE Assistant Research Professor Gloria Kim guides students in Circuits I.

Photo by Eric Zamora

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Message from the Department Chair

This issue of the ECE newsletter highlights our efforts in personalizing education through flipping the classroom in undergraduate Circuits 1. In this course, all lectures are posted online and watched at home while classroom sections are dedicated to group problem solving under the watchful eye of the professor. The lecture is not dead (as some claim), but will become part of an online adaptive learning experience, personalized for each student.

Circuits 1 is not merely an online course since the professor is present in the classroom guiding the students and answering individual questions. Numerous studies have shown that active student learning in collaborative settings is more effective than traditional lectures. Online technology is advancing rapidly but is still no match for a professor guiding students in the classroom. There is no substitute for a professor actively engaging students.

Some experts view Massive Open Online Courses (MOOCs) as a threat that could put many universities out of business. However, without personalization, it is not surprising that MOOCs suffer from massive student failure and dropout rates. In contrast, we have seen the failure and dropout rates in the flipped classroom dramatically reduced, which can be directly attributed to a professor actively engaging students.

Our success in Circuits 1 occurred even though our online component offers simple recordings of traditional lectures with adaptive learning components yet to be added. Much work remains to be done to fully personalize both the online and classroom learning experiences in all our courses. Computerized TAs and academic advisors are being developed, not to replace the humans doing these jobs, but to eliminate tedium and leave students with more time to discuss higher level issues in person with their professors, TAs, and advisors.

I am proud of our faculty, students, and staff for seeing the vision and for pioneering personalized education in ECE.

Best Regards,
John Harris
Professor and Chair

Controlling Mosquitoes With Technology

Mosquitoes carry pathogens that cause diseases such as the West Nile virus, malaria, encephalitis, and Dengue Fever. These diseases come with some startling statistics: since 1999, the West Nile Virus has sickened 30,000 people in the United States; encephalitis has a 33% mortality rate, and in 2010, 216 million malaria cases have occurred worldwide, according to the CDC. Not all mosquitoes, however, transmit deadly disease but are a nuisance to human comfort; these are pests that buzz and bite while humans try to mow the lawn, have a picnic, or go fishing. The greatest concentration of these nuisance pests can be found in Florida's coastal marshes. Efforts to control both disease bearing and nuisance mosquitoes have been ongoing at ECE Professor William Eisenstadt's Wireless Integrated Test Systems and Sensors (WITSS) lab group.

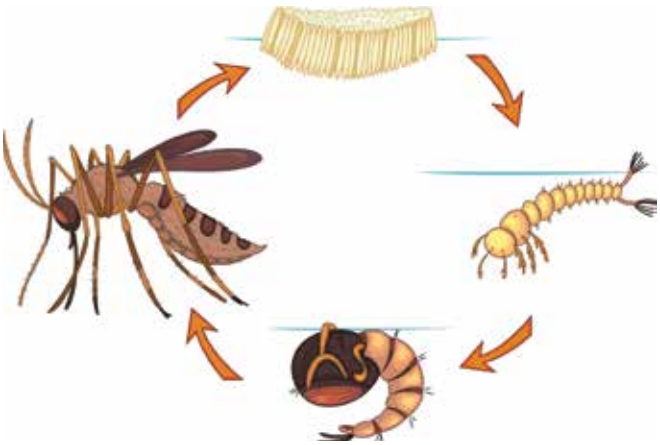


Figure 1
Mosquito Lifecycle.

Mosquitoes can lay eggs in almost any body of water and Florida's warm humid climate makes it a perfect location for mosquito breeding. Florida is home to 80 mosquito species.

The key to fighting mosquitoes is to develop more effective mosquito control by regulating the use of pesticides, which can harm the environment and can be rendered less effective through weather conditions. Mosquitoes require standing water to lay eggs; the water temperature affects the rate at which the mosquitoes grow; thus, there is a link between weather patterns, mosquito populations, and mosquito-borne illnesses. According to the Florida Medical Entomology Laboratory web site, an extension of UF's Institute of Food and Agricultural Sciences, "Knowledge of weather patterns is important during ground and aerial mosquito control applications. High winds, low temperatures, rainfall, and high humidity can deter the product from getting to the target, influence the dispersal of the material applied, and deter it from reaching its target, thereby affecting the efficacy of the application" (Connelly and Carlson 2009).

Professor Eisenstadt and WITSS research and develop technologies that can responsibly monitor and record environmental conditions and make the data easily accessible. This technology - a wireless sensor system - monitors, stores, and transmits temperature data at low power using radio frequencies. Temperature logging facilitates effective spraying to combat mosquito reproduction, which helps stop the spread of deadly mosquito borne diseases. When mosquito populations are sprayed, data is acquired during mosquito surveillance; this surveillance must be accurate to effectively control mosquitoes. Additional sensors for wind, rain, humidity, and water level add improved surveillance.

Professor Eisenstadt's research group has developed remotely accessible sensors capable of delivering diverse and accurate data upon command. The goals of the system are to consume low power, be easy to use, and have expansion capabilities. Sensors detect ambient temperature, which is stored using a microcontroller that sends the data to an antenna allowing it to be accessed by a computer within the antenna's effective range. At the heart of the system is a microcontroller that fetches data from the temperature sensor, stores the data, and communicates with the wireless module, allowing the data

Figure 2
Spot Weather System Electonics

to be transmitted (see Figure 2). The data acquisition software runs on a Windows computer or tablet that wirelessly logs data from multiple sensors from 25 to 50 feet. Sensors can report up to 2 months of data with significant temperature change; data is then uploaded to an Excel or Access file, which can be transferred to a web server to generate data graphs to PC's, smart phones, and other devices.

The multi-sensor board can be modified for 4, 12C digital sensors and 4 analog sensors. The off-board sensor location connects via tethering.

Professor Eisenstadt's group is partnering with several organizations including the US Department of Agriculture to develop testing of a prototype for use with flytraps and mosquito cages and the Anastasia Mosquito Control District to develop prototypes for mosquito surveillance. The development of mosquito-control equipment and software for commercialization is being supported by the UF Office of Technology Licensing.

For the commercialization effort, Professor Eisenstadt and his group are developing equipment and software applications to record wind conditions, sense humidity, extend thermal probe distance, add an interface to provide data for mosquito surveillance maps and use GPS data.

Currently, Professor Eisenstadt works with his post doctorate assistant Byul Hur, programmer Shaan Sengupta and with a team of graduate and undergraduate volunteers who are trained and perform research in the practical aspects of wireless systems design and programming. A key goal is to provide learning experiences and future job training for the UF students. Additional collaborators working on the commercial development of this technology include Adam Kinsey and Dr. Sean McCoy.

Mosquito Myths

Many myths exist about mosquitoes; here are a few:

MYTH: Bug zappers are effective against mosquitoes

FACT: Bug zappers do not control mosquitoes and can reduce the populations of beneficial insects.

MYTH: The Citrosa plant repels mosquitoes

FACT: Although citrosa oil (citronella) has been used widely as a mosquito repellent, the undisturbed plant itself does not release these oils and is thus not effective as a repellent.

MYTH: Lemon dishwashing liquid will repel mosquitoes.

FACT: It will not repel mosquitoes; it will simply attract mosquitoes and cover them with soap.

MYTH: Bats and owls, and other birds can control mosquitoes.

FACT: Although they may include mosquitoes in their diet, they do not consume enough mosquitoes to make an appreciable difference in their populations.

MYTH: Mosquitoes can transmit AIDS.

FACT: Mosquitoes digest the virus that causes AIDS and completely destroy any virus particle that could cause an infection. Also, they do not ingest enough HIV particles to transmit AIDS. Because the virus does not survive or reproduce in mosquitoes, it is not transmitted in the saliva.

FACT: Female mosquitoes bite while the males do not because females feed on blood for the nutrients it provides to developing eggs.

Source: Florida Medical Entomology Laboratory at UF - IFAS: http://edis.ifas.ufl.edu/in652

Personalized Education in ECE

Diverse student learning styles require educators to find new ways to offer personalized education for students inside and outside of the classroom while new technology impacts the way students stay connected to their classes. Professors in the Electrical and Computer Engineering Department at UF have found effective ways to facilitate active learning and offer personalized education to meet the needs of the individual students.

The Flipped Classroom Trend

Traditional teaching styles maintain that students come to class prepared for a lecture from the professor; then the students do homework on their own time. This traditional teacher acted as the "sage on the stage," a designation that first appeared in 1993 in Alison King's article "From Sage on the Stage to Guide on the Side" in the periodical *College Teaching*. Since that publication, many have suggested that the conventional teacher should be replaced by "the guide on the side," who acts as a facilitator of learning. Simply put, a flipped classroom is one that reverses the typical lecture-to-homework method of teaching; instead of the professor simply transmitting information to students as if they are empty containers waiting to be filled with knowledge, the professor "guides" learning through student engagement. This model of teaching proposed by King has expectedly evolved to enhance student engagement and personalize student learning.

Personalized Education and the "Guide on the Side"

ECE Assistant Research Professor Gloria Kim, Professors Ramakant Srivastava, Mark Law, and Erin Patrick are engaging students and offering personalized education in the Circuits I course, the first of several planned flipped courses. In the videos, Professor Srivastava presents traditional "blackboard" style lectures. The material is dense, but the videos allow the students to pause, rewind, and re-watch at their own time and pace. Students then attend a scheduled class for 50 minutes; a quick video overview is presented by the professor and a "retention" quiz is given at the beginning of class.

Inside the classroom, specially designed desks on wheels are moved into 4 desk units equipped with removable whiteboards. The mobility of the desks allows for the physical space in the room to be integrated with the pedagogical approach. Instead of rows of desks with little contact between students and professor and between students and students, the face-to-face seating encourages student interaction and problem solving. Students divide into 5 groups of 4 students at the whiteboard enhanced desks and work on a problem set (see Figure 1). The professor acts as a learning facilitator while the students work collaboratively to solve the problems.

This enhanced classroom and the engaged teaching methods have significant benefits for both the professor and the student. According to Professor Kim, this mode of teaching results in "productive conversations, low distractions, and risk free learning." Since students are allowed to work on the problems with no grades, the fear of failure is removed. One of the greatest benefits, however, is the opportunity to identify students who are lagging behind and offer immediate remediation to get the student on-track. The desk arrangements facilitate personal interaction, and Professor Kim notices that the students are "in charge of their own learning" in the sense that they aren't dependent on the professor to tell them what to do; they aren't waiting to be filled with knowledge. These potential engineers can see what it's like to work in a team based environment and have the opportunity to make their own contributions. If they need help from the professor, he or she can quickly address the problems individually with the student or give

a short "just-in-time" lecture to explain any universal problems that arise.

For those who question whether this type of teaching will result in attendance issues since class lectures are offered online, Professor Kim asserts that she rarely has attendance issues because students see that the videos can take the concepts only so far; it is the classroom that fosters the greatest exchange of ideas. Advanced students fearful of being bored can get insight into what it feels like to be a team leader as they help others solve problems. Peer interaction often continues outside the classroom where students work on assignments and projects from other classes. Potentially lifelong collaborative relationships are forged in these young engineers' formative years. These relationships translate into networking opportunities once students graduate.

Figure 1
Student Collaboration inside the Classroom / Photo by Eric Zamora

Promising Results

As ECE Associate Dean Mark Law indicates, this teaching model has shown promising results in student retention and learning outcomes. According to data collected by Drs. Law, Srivastava, Kim, and Patrick during the Fall 2012 Circuits I course, 32 of 141 students (28%) withdrew from the course while in Spring 2013 (the flipped course) only 3 of 168 students (2%) withdrew resulting in a 26% decrease in attrition. The pass rate is increasing as well; 85% of the retained students passed the flipped class while 76% of the retained students passed the non-flipped classroom. In a satisfaction survey designed by Dr. Albert Ritzhaupt at the UF College of Education with input from Drs. Law and Srivastava, the Circuits I students prefer this model as well; of the students surveyed, 80% prefer the flipped class to a traditional class primarily because of the immediate feedback and collaborative environment.

Future Implications

Certainly, this model of teaching presents a role change for professors used to traditional teaching. However, the flipped model places the responsibility for learning squarely on the shoulders of the student. For an industry such as engineering that depends on collaboration, this teaching style encourages students to work together toward a common goal. In an academic perspective, this hands-on style of learning shifts the priorities of the student from passive learning to actively seeking mastery of the material. The videos provide more personalized education as they suit the students' schedules and learning styles.

With the advent of advanced educational technology, this method of teaching is bound to grow. Technology such as mobile devices allow for a wide range of educational resources at the fingertips of the student, and educators are sure to utilize more of these innovate methods to meet the needs of students. The ECE department has embraced a more personalized and engaged teaching approach, and is already bringing the flipped classroom approach to more undergraduate courses.

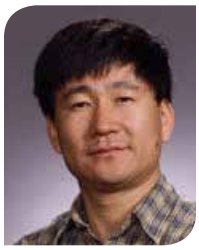
FACULTY NEWS

WELCOME JACK JUDY, Professor and Director of the Nanoscience Institute for Medical and Engineering Technologies. Dr. Judy earned his Ph.D. in electrical engineering from the University of California, Berkley in 1996. Dr. Judy's primary research area is devices; his research primarily focuses on the development of novel microscale and nanoscale systems technologies and their use in a wide variety of engineering, scientific, biological, and medical applications. Dr. Judy has developed and delivered courses on microscale and nanoscale device fabrication, design, and systems integration, as well as courses on neuroengineering technologies, systems, and applications. His research interests include the development of novel micro/nanoscale systems and their use in a wide variety of engineering and biomedical applications. Dr. Judy was awarded an NSF Career Award, an Okawa Foundation Award, and a Fulbright Senior Scholar (Australia).

DR. SCOTT THOMAS NAMED IEEE FELLOW: for his contributions on submicron and nanoscale MOSFETs. Dr. Thompson focuses on advanced transistor technologies and started a low power technology company called SuVolta. He is responsible for developing SuVolta's advanced low power technology platforms. Dr. Thompson was an Intel Fellow, Director of Logic Technology and responsible for next generation process integration, technology yield and transistor design at Intel. Dr. Thompson has published 80 papers and holds 25 patents all relating to transistor design

PROF. JENSHAN LIN and his students, Jaime Garnica and Raul Chinga, published an invited paper "Wireless Power Transmission: From Far Field to Near Field" in the June 2013 special issue, *Wireless Power Transmission, Technology & Applications, of the Proceedings of the IEEE.*

DR. ALAN GEORGE served as the keynote speaker at the Military and Aerospace Programmable Logic Devices (MAPLD) conference held in San Diego, CA, on April 10-12, 2013. The title of the keynote was "The Forthcoming Renaissance in Reconfigurable Space Computing."



DR. YUGUANG "MICHAEL" FANG has been selected as the Editor-in-Chief of the *IEEE Transactions on Vehicular Technology.*

DR. VLADIMIR A. RAKOV was appointed a Member of the Group that re-evaluated the National Athletic Trainers' Association (NATA) Position Statement on Lightning Safety. The Group has completed its work, and the resultant statement can be found on the ECE web site: www.ece.ufl.edu.

DR. DAVID ARNOLD was selected as one of four recipients of the 2012-13 Doctoral Dissertation Advisor/ Mentoring Award by the UF College of Engineering. This award encourages and rewards excellence, innovation and effectiveness in mentoring doctoral students through their final dissertations.

DR. PRAMOD KHARGONEKAR was selected as a 2013 Fellow of the International Federation of Automatic Control (IFAC) "for fundamental contributions to the theory and practice of robust and H-infinity control."

Staff Spotlight

IT Experts Serve the Department

Nestled on the second floor of the New Engineering Building, a computer center controls the flow of data among the faculty and staff of the electrical and computer engineering department. The ECE department appreciates the diligence and dedication of IT experts Jason Kawaja and Brian Smith, who oversee this thriving community of networks, servers and resources.

> *"Seeing researchers' work continue once we step in to resolve problems is a great feeling; it's a reminder of why we do what we do."*
>
> – Jason Kawaja

Jason Kawaja earned his Bachelor of Science in Electrical Engineering from the University of Florida in 2000 and quickly transitioned to IT Expert. As an electrical engineering student, Jason worked at ECE supporting the teaching labs before beginning his full time job. Since that time, he has witnessed the evolution of the computer infrastructure in the ECE department. Jason and his team developed a data center into what is now an integrated and localized environment for secure and accessible ECE computer services. Instead of enduring the incessant sounds of individual servers, ECE researchers can hook up their own research computers to one central location and log in remotely. The data center has its own cooling and emergency power, so the IT team can instantly move data in case of power failure.

Since joining the ECE department in 2000, Jason has enjoyed "being able to offer in-house solutions that are customized per faculty and student requests. Quite often the needs of researchers are fairly specific and what works for one group might not work for another, so providing a personalized computing environment results in better research and more effective student lab work."

Jason Kawaja & Brian Smith, IT Experts

Brian Smith has been working in the IT field for 16 years with a wide range of expertise: Windows and Unix based server and network infrastructure, virtualization, mobile and thin client computing. Brian is a Microsoft Certified Systems Engineer. Before joining ECE, Brian worked at RTI Biologics, Inc. in Alachua and NCTAMS LANT at Naval Air Station Pensacola as a systems engineer.

While at ECE, Brian implemented a fully automated imaging system that allows IT staff to rapidly wipe out and reload the operating systems and applications on the lab and some staff workstations. Prior to this implementation, it took up to 2 weeks to upgrade the operating system and workstations. Now, with a few clicks, all the lab computers will reboot, format the hard drives, and reinstall the operating system and applications from scratch, all without IT staff stepping a foot in the lab. This process can automatically run to ensure the users have a consistent, fresh experience.

> *"I love the creative freedom given by ECE to actively research and find new potential services or hardware to provide to staff, faculty and students."*
>
> – Brian Smith

STUDENT NEWS

ECE Students Work In Antarctica

ECE students Michael Mitchell (right) and Daniel Kotovsky (left) completed work on a VLF (3-30 kHz) receiver and antenna (shown in the picture above) at Palmer Station, Antarctica. The United States operates 3 research stations in Antarctica – McMurdo, South Pole, and Palmer, yet UF is the only university to maintain equipment at all 3 stations. Palmer Station is the farthest of the 3; to get to it, researchers must fly from Miami to Chile then take a 4-5 day trip by ship through the ice laden sea. Michael and Daniel had a successful trip, having worked on VLF research with Prof. Robert Moore, focusing on the energetic and electrodynamic coupling of lightning energy to the lower ionosphere and upper mesosphere (~60-120 km altitude). Michael and Daniel are members of Dr. Moore's Ionospheric Radio Lab, which focuses on quantifying highly nonlinear electrodynamic interactions that occur between high power radio waves and the lower ionosphere. To learn more about research in Antarctica and read the Palmer Station field report, visit the lab at www.vlf.ece.ufl.edu.

PropaGator Team Comes in First

Congratulations to the PropaGator team Andrew Wegener, Forrest Voight, John Phillips, Navid Shahrestani, Daniel Frank, Andrew Gray, William Rolke, Cory Penuel, Daniel Nowery, Mitchel Rabsatt, and Laura Smith for winning the AUVSI Foundation and ONR's 6th Annual International RoboBoat Competition on July 14, 2013 in Virginia Beach, Virginia. PropaGator is an autonomous surface vehicle designed and built by students at the Machine Intelligence Lab (MIL) at the University of Florida. This is the first year the University of Florida has participated in the Association for Unmanned Vehicles Systems International (AUVSI)'s surface vehicle competition. The PropaGator team is comprised of graduate and undergraduate students of the Department of Electrical and Computer Engineering, Mechanical and Aerospace Engineering, and the Department of Computer and Information Science and Engineering. You can read more about PropaGator at www.mil.edu/propagator.

Team members (Left to right): Andrew Wegener, Forrest Voight, John Phillips, Navid Shahrestani, Daniel Frank, & Andrew Gray prepare a test run before the finals.

DesignCom 2013

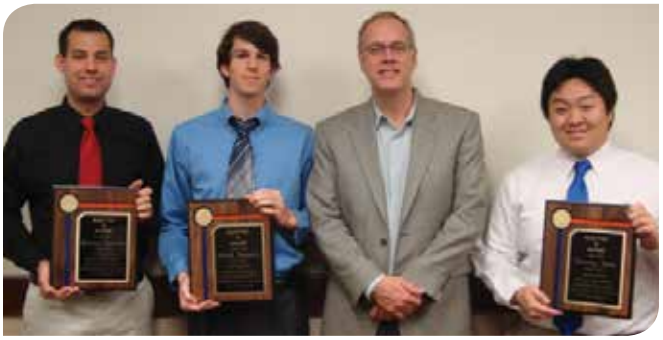
Andrew Milluzzi, a PhD student under Dr. Alan George, participated in a panel discussion at DesignCom 2013 in Santa Clara, California. Andrew and 4 other young engineers discussed their love of engineering and credited their parents and teachers for helping them realize their career and educational goals. Andrew is one of the youngest LabView architects certified by National Instruments. Read the full article from EE Times at http://www.eetimes.com/document.asp?doc_id=1263021.

Audio Engineering Society Wins Award

The Audio Engineering Society received the Best Society Social Event award for their Flavet Festival held February 22, 2013. Co-sponsors of the event were the Reitz Union Board Entertainment and the Benton Engineering Council. The event was set up and run entirely by the Audio Engineering Society. Other organizations such as the American Institute of Chemical Engineers, Society of Women Engineers, and Engineers Without Borders displayed their impressive work. You can follow the "Audio Engineering Society at UF" on Facebook.

Spring 2013 Electric E Recipients

Congratulations to the Spring 2013 Electric E recipients Zachary Kaufman, Jerrod Langston, Timothy Tang, and Kyle Steiner. The Electric E Award is the most prestigious award granted by the department. To receive this award, a student must have a minimum upper division grade point average of 3.90 as well as a 3.90 or higher grade point average in all electrical engineering courses.



(Left to right) Zachary Kaufman, Jerrod Langston, ECE Chair John Harris and Timothy Tang.

IEEE UF Chapter holds Annual Banquet

On April 21, the UF Chapter of IEEE along with HKN held its annual banquet to recognize the achievements of its students and to present awards to ECE faculty and staff. Edwina McKay was honored as Staff Member of the Year, Dr. Eric Schwartz received Faculty of the Year accolades, and Dr. Gijs Borman accepted the Lifetime Achievement Award for his 25 years of service to the ECE department. Congratulations to all recipients.

SPRING AND SUMMER 2013 GRADUATION

The Department of Electrical and Computer Engineering offers congratulations to all of the Spring and Summer 2013 ECE Graduates. Special accolades go to the following ECE PhD graduates:

SPRING 2013 GRADUATES:

- Jikai Chen
- Bilal Fadlallah
- Wen-Chin Hsu
- Adam Jacobs
- Te-Yu Kao
- Youngjoon Lee
- Lin Liu
- Leenhapat Navaravong
- Christopher Paulson
- Dohyung Seo
- Wei Zang
- Pingping Zhu

SUMMER 2013 GRADUATES:

- Divya Agrawal
- Jihye Bae
- Nilanjan Goswami
- Eric Graves
- Amit Gupta
- Yuejia He
- Yige Hu
- Xiaoyuan Li
- Paul Muri
- Yuan Rao
- Sean Samuelson
- Viswanath Sankar
- Chunming Tang
- Zheng Yuan
- Justin Zito

ECE PhD graduate Wei Zang

ECE Entrepreneurs Unite Academia and Industry

Engineering students often grapple with the question, academia or industry? Fifteen years ago, that question was easy to answer, but today, industry works closely with academia through corporate funding of research projects and industry supported internships. Likewise, universities connect with industry by acting as feeders to fill job openings. The perceived gap between academia and industry is bridged through productive academic and industry partnerships. Two collaborations in the ECE department - one between faculty and industry and one between students and industry - highlight the success of these partnerships.

ECE Professor Develops and Markets Technology

What began as a working prototype has flourished into a fully realized product that accentuates the connection between research, education, and industry. The idea sprung from the desire to help elderly patients experiencing mobility problems. ECE Professor Jenshan Lin, along with colleagues and students, developed technology that monitors vital signs and transmits them remotely to health care providers.

TruVitals, Inc., a start-up company "committed to improving the quality of human and veterinary care worldwide," sponsors Dr. Lin's research with a matching grant from the Florida High Tech Corridor council. TruVitals, Inc. is licensing and developing a non-contact, non-invasive continuous heartbeat and respiratory monitor based on the technology developed by Dr. Lin. The technology uses a low-power microwave radar, 100 times less than a single cell phone power, to detect tiny movements in the body – an ultra-sensitive motion detector. According to Dr. Lin, the fundamental principal of the technology is the measurement of back-and-forth motion similar to vibration.

Dr. Lin, a world renowned expert on Doppler radar, built a working prototype in 2005 for a small portable system that can monitor a person's breathing and heart rate, not through typical leads that attach to the person's body, but through a wireless signal that transmits to a remote device. The device uses Doppler radar wherein high-frequency waves from the radar bounce off a person, scanning the movements of the chest and detecting respirations and heartbeats.

Currently, TruVitals is marketing the monitor as VitalOne, which is being targeted toward the $40 billion equine industry. According to Tim Toppen, CEO of TruVitals, this device allows veterinarians and owners to non-intrusively monitor the vital signs of animals. Instead of invading the space of the animal to attach leads, which increases the stress of the animal, VitalOne remotely monitors the animal's condition without endangering the animal or the care givers.

The potential for Dr. Lin's technology can be far reaching in the animal care, human health care, and security industries. Using research to solve societal problems is one of the missions of the UF Department of Electrical

Dr. Lin with VitalOne at the UF Large Animal Hospital.
Photo by Eric Zamora

and Computer Engineering; Dr. Lin's technological innovations, coupled with his entrepreneurial acumen, illustrate the achievement of this goal.

To learn more about Dr. Lin's research, visit his Radio Frequency Circuits and Systems Research lab at www.lin.ece.ufl.edu. To see a demonstration of VitalOne and learn about future market developments, visit www.truvitals.net.

ECE Students Spend the Summer Innovating

ECE students Juan David Rios and Peter Borenstein aspire to be entrepreneurs once they earn degrees in electrical engineering from the University of Florida. Juan, a graduate electrical and computer engineering student, wants to "change the world" by helping people with the use of robots and artificial intelligence. During the course Cyber-Physical Systems with Dr. Andy Li, Juan created an autonomous robot called GatorAid that takes care of the elderly by doing things like finding, retrieving and removing the caps from pill bottles. He wants to use his hi-tech skills and experiences at ECE to create products that will help as many people as possible.

Peter, from nearby Jacksonville, is a BSMS student in electrical engineering with an interest in embedded applications. Peter wants to use his electrical engineering knowledge to create innovative embedded digital applications. Peter wants to collaborate with creative people who share his desire to generate unique ideas.

Juan and Peter, armed with their entrepreneurial spirits and academic knowledge in electrical and computer engineering, entered HackerHouse, the incubator that is the brainchild of ECE alumnus & UF Young Alumnus award recipient, Augi Lye. Juan and Peter, along with their team members, traveled to AngelHack in Atlanta and created the first prize winning prototype in 24 hours. The "chime," a dodecahedron shaped wind chime, uses wireless motion sensors to detect weather conditions such as wind speed, temperature, and humidity. Via data sent to a computer algorithm, a pre-determined "chime" sound such as bamboo, metal, or shells can be heard by the occupants of the physical location.

Peter Borenstein, left, and Juan Rios, right, in front of HackerHouse with a much enlarged image of "Chime," which they hope to one day turn into a viable product. Photo by Eric Zamora

Juan and Peter recently presented their finished "chime" to potential investors at the HackerHouse Demo Day. Peter even combined his summer innovating with engineering coursework as an independent study in partial fulfillment of his degree requirements.

The ECE department facilitates academic and industry partnerships in a number of ways. It encourages faculty to invent products that will solve important societal problems and reach out to industry partners for funding and marketing. In addition, ECE alumni who have become successful entrepreneurs, such as NVIDIA Corporation co-founder Chris Malachowsky, are invited to share their experiences with students. ECE students take courses such as Introduction to Electrical Engineering, which helps them learn about career opportunities and prepare for jobs in engineering industries. The department holds a series of seminars, some of which focus on industry – academic partnerships.

Dr. Lin, Juan Rios and Peter Borenstein are just three of the many examples of ECE innovators engaged in productive collaborations with industry partners. No longer are engineering majors limited to a single path.

ECE Graduate Augi Lye Receives Young Alumnus Award

ECE graduate and Trendy Entertainment CEO Augi Lye (BSEE '05, BSCEN '03) received an outstanding young alumnus award from the University of Florida on April 6, 2013.

The Outstanding Young Alumni Awards program was created to celebrate and honor Gators who are making names for themselves early on in their careers. Augi has certainly done that by founding numerous startup companies with over $20 million in Angel and Venture Capital funding, all before the age of 35.

(Left to right) UF Alumni Association Board Member Mark Criser, Augi Lye, ECE Chair John Harris.

Augi came to UF on a music scholarship, but after leaving school to pursue a career in music, he returned and graduated with degrees in computer and electrical engineering. After graduation, Augi worked for Prioria Robotics, founded by another ECE alumnus, Jason Grzywna.

Augi's research in acoustical physics and vision processing was the foundation for ToneRite, Accelerond and Trendy Entertainment. As current CEO of Trendy Entertainment, Augi oversaw the creation of Dungeon Defenders which climbed to the top 10 sales charts for PC, Android, iPhone, iPad, Mac, Xbox, XBLA, and PlayStation PSN. Just 3 months after its release, it reached 1 million downloads on IOS.

Augi is an active investor and philanthropist in the Gainesville community with over $1 million invested locally in both private and non-profit organizations including HackerSpace, HackerHouse, Startup Hour and The Gator Incubator.

In December, 2012 Augi purchased a Victorian house on 6th Avenue in Gainesville and created HackerHouse with the vision of creating a tech hub in Gainesville where entrepreneurs work together designing and creating prototypes. The first crop of "cadets" recently presented their designs with the hope of winning $50,000 in startup cash from Lye himself and an opportunity to get their product on store shelves.

Through his startups, particularly HackerHouse, Augi mentors and encourages young inventors; he recently told The Gainesville Sun, "If I had the opportunity to invent whatever was in my head without having to worry about how I am going to eat, how I am going to sleep, it would change my life," Lye said.

Augi Lye exemplifies what it means to be an outstanding young alumnus; people are going to be hearing about his contributions for years to come, and Augi wants to make them here in Gainesville where he can draw from a bright young crop of University of Florida engineering students like he once was.

UPCOMING EVENTS

2013 NANOFLORIDA CONFERENCE

SUNDAY AND MONDAY, SEPTEMBER 29-30, 2013 UF and NIMET will host the 6th annual NanoFlorida Conference. Nanoflorida, a student-organized conference, enters its 6th annual meeting of scientists and engineers throughout the sunshine state who are working in the area of nanotechnology and nanotoxicology. The conference aims to bring together the best and brightest of the field in order to harbor an atmosphere of academic networking and the promote collaboration between the various groups to further our knowledge of nano-scale phenomena. The goal of NanoFlorida '13 is to continue with the traditions of NanoFlorida with the aims of bringing all of the researchers from Florida working in nanotechnology together to help the state as a whole advance in the field.

The conference will be divided into three broad tracks including "Advances in Nanomaterials and Nanotechnology", "Nanoscale Energy Storage and Harvesting", and "Nanotoxicology and Nanoscale Biomedical Applications".

Visit the NanoFlorida 2013 Website at http://nanoflorida2013.org for complete information.

UFAA BLACK ALUMNI REUNION WEEKEND:

OCTOBER 10 – 13: Coinciding with the 50 year anniversary of Dr. Martin Luther King's 50th anniversary of his "I have a dream" speech with the theme "Celebrating Dreams Fulfilled"

GRAND GUARD 2013:

NOVEMBER 21 – 23: Class of 1963. Grand Guard recognizes the 50th anniversary of one's graduation from UF with the following events:

THURSDAY EVENING, NOVEMBER 21: Welcome Reception

FRIDAY, NOVEMBER 22: Breakfast of Memories, Distinguished Alumni Lecture, Campus tours, Afternoon with representatives from different colleges, Induction Dinner and Dance

SATURDAY, NOVEMBER 23: Tailgate party at Emerson Alumni Hall before the Florida – Georgia Southern game

For more information about alumni events, visit www.ufalumni.ufl.edu

HAVE A PHOTO OR NEWS YOU WISH TO SHARE?

If so, please send photos and/or news via email to Kathie Russell, managing editor, at krussell@ece.ufl.edu or via mail at:

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NEB 429
P.O. Box 116200
Gainesville, FL 32611

Dean Cammy Abernathy presents Gov. Rick Scott with a silicon wafer containing his portrait that was engraved using the Nanoscale Research Facilities' Raith ionLiNE tool, one of only six in the world. Photo by UF News Bureau

Governor Rick Scott Visits the Nanoscale Research Facility

IN FEBRUARY, 2013 Governor Rick Scott visited the UF Nanoscale Research Facility to lend support for UF President Bernie Machen's quest to make UF a top-10 university. Scott pledged to give UF about $15 million annually for the next 5 years.

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