

A. JAMES CLARK SCHOOL OF ENGINEERING Department of Electrical and Computer Engineering 2455 A.V. Williams Building University of Maryland College Park, MD 20742

### Solar Decathlon Inspires Sustainable Career Aspirations

David Daily, EE '12, sought out the next step toward his career at the University of Maryland. While studying electrical engineering, Daily worked as the engineering project manager for WaterShed, UMD's winning Solar Decathlon entry. In this role, he oversaw all engineering groups and helped them stay on-course during the design and building processes. He also represented the WaterShed team as a subject matter expert for engineering—speaking at many presentations and interfacing with the professional engineers on the project.

"My education in ECE and the Clark School prepared me extremely well to apply my knowledge eithin WaterShed's engineering systems. Simultaneously, the experience helped to enhance my understanding of classes and coursework."

This formative experience, in tandem with practical application of his studies, helped Daily realize he wanted a career in sustainability. After graduation, Daily chose to pursue a Master of Science in Systems



DAVID DAILY WIRES WATERSHED

Engineering under the advisement of Professor John Baras (ECE/ISR). He chose this Institute of Systems Research program "because the University of Maryland had resources available that would expand my knowledge and interest in sustainability research." His current research project involves interfacing the Smart Grid with building energy models and simulations. The research is funded by NIST and



Electrical & Computer Engineering Faculty & Staff Lounge Established 2012

is helping to update the Smart Grid's demand response capabilities.. He hopes the outcome will allow corporations to automate energy conservation in their buildings by implementing the smart grid.

Today, Daily is part of the MESA lab as a graduate student advisor. He is also working on an independent research project on photovoltaics and green roof integration. In another nod to his hard-earned campus fame, Daily has also been invited to take part in the Sustainable Buildings aand Energy Sources workgroup which will work to ensure UMD meets goals set forth in the Climate Action Plan.

Above all, Daily was encouraged to apply his education to the problem's in today's world during his undergraduate experience in ECE. He is now discovering ways he would like to make an impact during a future career in the industry.

> **CONNECTIONS** is published for alumni and friends of the Department of Electrical and Computer Engineering at the A. James Clark School of Engineering, University of Maryland.

Your alumni news and comments are welcome. Please send them to: Carrie Hilmer, ECE Department, 2455 A.V. Williams Building, College Park, MD, 20742. Visit our web site at: www.ece.umd.edu

Department Chair: Dr. Rama Chellappa Editor: Carrie Hilmer Photography: J. Consoli, C.Hilmer, J. Molina, A. Santos



CONNECTIONS **DEPARTMENT of ELECTRICAL & COMPUTER ENGINEERING** A. JAMES CLARK SCHOOL of ENGINEERING

UNDERGRADUATE WOMEN EXCEL IN ECE





IN THIS ISSUE:

RAMA CHELLAPPA NAMED CHAIR OF ECE DEPARTMENT NEW FACES IN UNDERGRADUATE OFFICE, p. 3

INAUGURAL DISTINGUISHED **ALUMNI AWARDS BESTOWED** FOUR ALUMNI HONORED FOR NOTABLE AND MERITORIOUS CONTRIBUTIONS TO FEILD, p. 6

#### **ECE INNOVATION WINS INVENTION OF THE YEAR**

**RESEARCH IDENTIFIES ENVIRONMENTAL** SIGNATURES ON DIGITAL MEDIA, p. 9

**UNDERGRAD TEACHING FELLOWS INTEGRAL TO STUDENTS' SUCCESS** FACULTY AND STUDENTS BENEFIT FROM

EFFECTIVE PEER TO PEER TEACHING. p. 10

#### **ECE GRAD PASSIONATE ABOUT SUSTAINABILITY**

STUDENT STRIVES FOR SUSTAINABLE DESIGN CAREER FOLLOWING EXPERIENCES IN SOLAR DECATHLON p. 16





IN ECE ARE DRIVEN TO SUCCEED, p. 4



**FALL 2012** 

www.ece.umd.edu













# message from the chair



RAMA CHELLAPPA

#### A BRIGHT FUTURE FOR UNDERGRADS

I am honored to have been selected to serve as the Chair of the Department of Electrical and Computer Engineering (ECE) for the period of July 1, 2012 – June 30, 2017. I have served as a Professor at the University of Maryland since 1991, and have also been a member of the Center for Automation Research and the Institute for Advanced Computer Studies. As I undertake this responsibility, I wanted to share my goals to RECOMMIT, RECONNECT, and RESTORE.

RECOMMIT: I am strongly committed to improving the quality undergraduate and graduate education, and will work to enhance the undergraduate experience in ECE. I will increase the number of Undergraduate Teaching Fellows; bring more undergraduate students into our research laboratories; and help students take advantage of our Pesearch Experiences for

Undergraduates programs, such as Undergraduate Research Fellows, MERIT-BIEN, and the Gemstone program.

In 2012, we piloted a fellowship program for deserving U.S. citizens who wish to complete an M.S. degree in ECE. This is the pool from which many companies recruit our students. I plan to expand this program; improve summer internship opportunities for graduate students; and foster more collaborative education/research programs with other departments in the College and University so our graduate students gain experience in interdisciplinary research efforts.

RECONNECT: The department is blessed with many successful programs sponsored by companies. Programs such as the Booz Allen Hamilton Colloquium series, SAIC summer internship program, fellowships from Northrop Grumman, L-3 and the Career Fair exemplify these collaborative efforts. Last year, the department held its first Corporate Affiliates Day. Our Corporate Affiliates were invited to tour labs, attend faculty and student presentations and host an interactive panel attended by our students. I will continue to build on these efforts and vigorously engage our corporate affiliates through many forums and avenues.

ECE has the largest alumni base in the College. Many alumni are quite successful in their professions. Scores of our alumni are leaders in academia, industry and government. I will engage our alumni by continuously keeping them abreast of the happenings in the department, solicit advice and guidance on moving the department up and forward, and host special events to celebrate their achievements. In May, we held our inaugural Distinguished Alumni Award presentation where four of our outstanding alumni were recognized. Alumni are our ambassadors and we will engage them fully in years to come.

RESTORE: During my term as Interim Chair, we began many projects such as creating a faculty/ staff lounge, the ECE student lounge, and the ENTS/ECE teaching laboratory; all of which are complete as the semester begins. Next, we will renovate a conference room, with generous funds gifted by the Jimmy Lin Trust.

We have increased the level of annual philanthropic funding to the department by a factor of 15 in the last nine years. I hope to continue increasing the level of philanthropic funding to ECE. I will work with our staff and faculty to seek out additional support to enhance our educational programs, make new scholarships available to students, and to improve the quality of our facilities and laboratories.

In this newsletter, we welcome Prof. Mike Rotkowitz, who recently joined the controls group. Prof. Rotkowitz's research interests are in the areas of decentralized control, optimization and sparse estimation. We also welcome Mr. Neruh Ramirez, the director of undergraduate studies. Mr. Ramirez is largely responsible for the welfare of our undergraduate students!

One of our eminent faculty members, Prof. Tony Ephremides was named Distinguished University Professor, a recognition given to the very best of UMD faculty. Prof. Carol Espy-Wilson was honored as a Distinguished Scholar-Teacher. Prof. Ray Liu was named a Honorary Chair Professor by the National Chiao Tung University in Taiwan. Congratulations Profs. Ephremides, Espy-Wilson and Liu!

I look forward to contributing to our department's continued advance as one of the very finest programs in the country. If you would like to contact me about any of the priorities I have outlined, please share your thoughts with me by sending them to our Coordinator for External Relations, Carrie Hilmer, at chilmer@umd.edu. Thank you for supporting our department.

Kama Chelleppa

#### CLARK SCHOOL: 23<sup>RD</sup> UNDERGRAD PROGRAM IN NATION

The 2013 U.S. News & World Report Best Undergraduate Engineering Programs Ranking lists the Clark School's program as 23rd in the nation, up one position from last year. The Clark School is ranked 11th among public universities.

#### CLARK SCHOOL RANKS 14<sup>TH</sup> IN WORLD RESEARCH

The Clark School falls at #14 among engineering schools ranked in the 2012 Academic Ranking of World Universities annual list of engineering/technology and computer science schools by the Institute of Higher Education and Center for World-Class Universities. Among all public university programs, the Clark School was ranked 8th. The ranking is purely objective based on quantitative measures of productivity with no reputation component.

#### ELECTRICAL & COMPUTER ENGINEERING PROGRAMS ACCREDITED BY ABET

The Engineering Accreditation Commission (EAC) of ABET recently held its 2012 Summer Meeting to act on the program evaluations conducted during 2011-2012. The undergraduate programs to acquire a Bachelor of Science degree in both Electrical and Computer Engineering have been accredited through 2018. C

4.25

The average GPA of the Fall 2012 incoming class.

## Chellappa Named Chair of ECE Department

Minta Martin Professor of Engineering Rama Chellappa has been named interim Chair of the Department of Electrical and Computer Engineering (ECE). Dr. Chellappa, who has an affiliate appointment in both the University of Maryland Institute for Advanced Computer Studies (UMIACS) and the Department of Computer Science, was appointed to the position effective July 1, 2012, succeeding Professor Patrick O'Shea, Vice President for Research at the University of Maryland.

"Dr. Chellappa will bring to his new position the leadership skills that have made him so effective as Director of the Center for Automation Research, the first President of the IEEE Biometrics Council and the Editor-in-Chief of the prestigious IEEE Transactions of Pattern Analysis and Machine Intelligence," said the Dean of the Clark School of Engineering, Dr. Darryll Pines. "We are fortunate to find such an

able researcher and educator to ensure the department's continued progress during this transition."

A faculty member at the University of Maryland since 1991, Dr. Chellappa received his B.E. (Hons.) in Electronics and Communication Engineering from the University of Madras; his M.S. in **Electrical Communication Engineering** from the Indian Institute of Science in Bangalore; and his M.S.E.E and Ph.D. in Electrical Engineering from Purdue University. He has authored and co-authored numerous publications, served as an associate editor for four IEEE Transactions, is a fellow of IEEE, IAPR and OSA, and has received numerous awards, including an NSF Presidential Young Investigator Award, four IBM Faculty Development Awards, the 1990 Excellence in Teaching Award from School of Engineering at USC,

the Society, Technical Achievement and Meritorious Service Awards from the IEEE Signal Processing Society and the Technical Achievement and Meritorious Service Awards from the IEEE Computer Society.

At the University of Maryland he has been elected as a Distinguished Faculty Research Fellow and Distinguished Scholar-Teacher and received numerous awards for research, innovation, mentorship and teaching, including the Outstanding Invention Award from the Office of Technology Commercialization, the Faculty Outstanding Research Award from the College of Engineering and an Outstanding GEMSTONE Mentor Award. Purdue University recently recognized him with its Outstanding Electrical and Computer Engineer Alumni Award. 🧲

### **New Undergraduate Office Staff Welcomes Students**

Three new staff members have joined the Office of Undergraduate Studies-a Director of Undergraduate Studies, an academic advisor, and a program coordinator. Associate Chair for Undergraduate Studies Professor Mel Gomez welcomes Mr. Neruh Ramirez, Ms. Becky Baltich Nelson, and Ms. Lissa Snyders to the department.

Mr. Ramirez will serve as the Director of Undergraduate Studies. He joins us after a well-respected tenure at the University of Maryland School of Nursing in Baltimore, where he was the Assistant Director of the Student Success Center.

Neruh is intimately familiar with the University of Maryland-he holds a Master of Arts in Higher Education Administration and a dual Bachelor of Arts in History and Government & Politics which he earned at our flagship institution in College Park. He

will be a strong asset to our department with more than 11 years of experience in academic

affairs. He is working on his Doctorate degree in Education Policy.

Becky Baltich Nelson fills the role of academic advisor. Mrs. Baltich Nelson found inspiration for her career in the advice of an advisor. She has a Master's



degree in College Counseling

& Student Development from St. Cloud State University (SCSU) in Minnesota and Bachelor of Science in Psychology from the University of Wisconsin-Superior. She comes to us with more than three years of experience in undergraduate advising, and extensive

experience in counseling.

Becky is looking forward to "interacting with students face-to-face, attending lectures, watching UMD sporting events, and enjoying all of the benefits that working at a university has to offer!"

Ms. Lissa Snyders joins the office as Program Coordinator. She has an extensive background in STEM education initiatives and looks forward to applying that knowledge while helping students and working toward the development and recognition of the ECE Department.

The collective experience of the undergraduate office staff will bolster an already successful ECE department by sharing their passion for helping others and guiding our students through the successes and challenges of their undergraduate careers. ⊂

### **COVET** STORY

### It Computes! Undergraduate Women Embrace ECE Experience

The students in Electrical and Computer Engineering often find themselves explaining why they wanted to be engineers—and more specifically, how they came to join the ECE community at the University of Maryland. Many beginnings share common themes—a love of math or science, a great physics teacher, an interest in how things work, a love of science fiction—sometimes their story involves an ordinary object.

For **Triana McCorkle**, a rising sophomore, two objects served as signposts on her journey to ECE. Triana loves technology, more specifically computers. As a senior at Frederick Douglas High School in Prince George's County, Maryland, she was considering a college career in Computer Science. After receiving a postcard in the mail, she learned that computer engineering would give her hands-on opportunities to work with computer hardware instead of spending hours programming code in front of a computer screen.

McCorkle's interest was immediately piqued. Attending a STEM conference for engineers through the Navy Junior ROTC confirmed her choice to study computer engineering. Triana chose the University of Maryland because of its highly ranked engineering programs and was accepted into the Digital Cultures and Creativity Honors Program. Earned advanced placement credits meant she began college with a courseload of engineering classes.

"My first impression of the engineering program was that being successful would require a different level of work and dedication—the assignments require you to think and understand at an accelerated rate. The program is also competitive; I like that."

The first semester of freshman

year challenged McCorkle, "it was a process to readjust and realize that I was capable as long as I dedicated myself," she said. By building relationships with her advisors or professors (even via e-mail), and



stopping by during office hours, Triana knew she had support when her studies challenged her. "My professors helped to build my confidence by encouraging me, and reminding me that I am capable and will be successful if I dedicate myself to my work and my goals."

As sophomore year begins, McCorkle knows that ECE is right for her and looks forward to being more involved in the Clark School Ambassadors Program, the Black Engineers Society, and the Association of Women in Computing.

"The ECE department at UMD is here to help; they want to see you do well. There are so many resources to aid in your success and the environment is extremely welcoming. At such a large university, it's good to be able to partake in a smaller, more intimate experience."

McCorkle expresses excitement to "implement the skills I've gained in ECE as I takes computer science courses proving I can be successful in that field too—even as a girl!"

Teressa Ferraro, a third year

student, transferred to electrical and computer engineering from chemical engineering. She realized while working on a Gemstone team with Professor Pamela Abshire, that she enjoyed the hands-on aspects of electrical engineering. Having graduated from a humanities-driven program at Urbana High School in Frederick, Maryland, Ferraro was nervous about the technical curriculum. She said, "I felt hesitant switching to ECE because my high school curriculum was very focused on humanities and most of the fiddling with code or electronics happened in my free time."

Ferraro felt intimidated without a role model in engineering, she did not have references to understand "oh okay, that's how you ought to go about this." She was heartened by Professors Abshire and Yeung who took time to reassure her and to offer guidance. "Overall the professors, TAs, and other students are just so involved and supportive that I'm much more confident in myself now. I've also learned to speak up more because the professors are so responsive." In Ferraro's class with Prof. La, students were struggling with communication and understanding material. "After we alerted him, our problems were addressed within a week! ECE has given me a "home" at UMD, and helped me become stronger and more confident because I found a sense of belonging," she said.

Currently in their final year of study, both **Kelly Ripple** and **Lydia Lei** discovered that often the support of their peer groups help them to achieve success. Lei said, "Early on in our experience as electrical and computer engineering students, we decided to support and encourage each other and prove to ourselves that we could excel in this program just as well as our male peers," Lei said.

A sophomore year experience of Lei's illustrated the commitment and dedication of the women in the program. During ENEE 244 with Professor Nakajima, Lei recalls a statement he made following an exam, "After this first exam; seven of the top ten scores were women." The tenacity, determination, and drive of the women in ECE is evidenced by their success and determination to help each other. Lei and Ripple are both proud of their accomplishments and attribute their achievements to their hard work and the standard their professors expect of them.

**Saara Khan**, a 2012 graduate, feels that building relationships within electrical and computer engineering is a strong factor in her success. "The department is truly a community; throughout my years in ECE I often felt a need to give back by mentoring incoming students or volunteering for recruitment events, because so many people enabled me to be successful."

Khan recalls the challenges of taking ENEE 241 and 244. "They were my first introduction to being responsible for my own path in engineering. I had to take the initiative to learn. I was excited to push myself and discover what I was capable of [accomplishing]." Saara took advantage of many opportunities: she served as an undergraduate teaching fellow; participated in TREND (an undergraduate research experience); attended conferences, researched with various professors; and published as a first author in her fourth year.

Reflecting on her success in the department, she said, "it is because of the close relationship with my mentors and my determination, motivation, and excitement that I was able to be successful. I'm happy to have studied at the University of Maryland." C

A. JAMES CLARK SCHOOL of ENGINEERING . GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

### **Transfer to Transform: ECE Trains Students to Optimize Capacity**

Franklin Nouketcha first stepped into the Electrical and Computer Engineering department as a student participant in the MERIT, an National Science Foundation-funded Research Experience for Undergraduates. As a student at Montgomery College, he aspired to become a part of the ECE community permanently. In the fall of 2011, Nouketcha's dream became reality—a challenging one.



FRANKLIN NOUKETCHA

Accepted as a junior in Electrical Engineering,

Nouketcha found himself adapting to a new environment, unfamiliar processes, and ultimately an entirely different system of learning.

"In the first weeks, my classmates were incredibly helpful in the transition. Just getting to classes was a challenge—I used the UMD map and Google constantly!" Nouketcha felt fortunate to know students from Montgomery College who already transferred. Their assistance was invaluable in "finding my way around, navigating the academic system, and determining which professors to take for classes."

Traditional students play a role in helping academic transfer students, too. "Four-year students told me about student organizations like IEEE that provided study materials on different topics. When coursework was brand new, they helped because they may have covered it in a previous class."

The Office of Undergraduate Studies is also a vital resource for transfer students—often helping them to plan their course of study. The staff gives advice, helps with scheduling, and will track a transfer's academic progress in hopes of ensuring their success.

In that initial semester, Dr. Bell, the former Director of Undergraduate Studies gave Noutcheka sound advice: "Go to office hours!" "Once I did that, I saw immediate improvement," Noutcheka said. "Professors got to know me and understood that I was working hard—they could explain concepts in new ways to help me apply the knowledge I had."

Starting a new semester, Nouketcha is on track to graduate. He knows how to work hard to achieve his goals.

"As an Electrical Engineering student at the University of Maryland, I am being trained to optimize my capacity," said Nouketcha. Dedication and hard work have developed his skillset beyond what he thought he was capable of—the standard demanded of him helps him to exceed his expectations. "My experiences as a student in ECE have taught me to regard the process of doing [a task, project]; to be thorough, and most importantly, to accomplish a task with all of my attention, strength, and abilities." c

# spotlighton<sub>n</sub>LUMNI

### **Department Recognizes Inaugural Distinguished Alumni**

In May, the Electrical and Computer

Engineering Department within the Clark School of Engineering honored four alumni for their leadership and meritorious contributions to the field of engineering at an inaugural award presentation ceremony. Faculty, staff and recipients gathered at Riggs Alumni Center to honor the awardees. Faculty members were invited to nominate former advisees or other ECE alumni to receive this distinction in the fall. The nominees were unanimously approved by the department council then invited to return to campus for a celebration in their honor.

The first recipients of the ECE Distinguished Alumni Award were Professor David A. Bader (Ph.D., '96), Mr. Robert Briskman (M.S.E.E., '61), Professor Naomi Leonard (M.S., '91; Ph.D., '94), and Professor Ramesh Rao (M.S., '82; Ph.D., '84).

#### **PROFESSOR DAVID A. BADER**

**David Bader**, a Full Professor in the School of Computation Science and

Engineering, College of Computing at Georgia Institute of Technology, was nominated by his Ph.D. advisor, Professor Joseph JaJa. Additionally, he is the Executive



Director for High Performance Computing



FROM LEFT TO RIGHT: ROBERT BRISKMAN, NAOMI LEONARD, RAMESH RAO

Ubiquitous High Performance Computing program. Dr. Bader's research interests focus on the intersection of high-performance computing and real-world applications, including computational biology and genomics and massive-scale data analytics. A Fellow of IEEE and AAAS, Bader is a National Science Foundation CAREER award recipient and has received many industrial awards.

#### MR. ROBERT BRISKMAN

Mr. **Robert Briskman**, currently Technical Executive of Sirius XM Radio, also served the company as Chief Technical Officer and Executive Vice President of Engineering since Sirius' founding in 1991. He has been active in the field of communication satellite systems since their inception and was recognized for his leadership and meritorious contributions in that field. Briskman, the technical innovator of mobile satellite radio services was responsible for the development, implementation and operation of Sirius Satellite Radio's broadcast distribution system. Briskman is a Fellow of IEEE, the AIAA and the Washington Academy of Science. He is also former President of the Washington Society of Engineers and has received significant recognition: 2008 IEEE AESS Pioneer Award; the **IEEE** Centennial Medal: inductions into the SSPI Hall of Fame, the Space Technology Hall of Fame, the Clark School of Engineering's Hall of Fame, and most recently,

the Consumer Electronics Association Hall of Fame.

Mr. Briskman expressed his pleasure at being selected for the award and wanted to share his appreciation with the ECE community. He said, "The award was a true honor and humbling. Hopefully all recognize that my accomplishments were the result of the superb engineering education I received at the Clark School."

#### **PROFESSOR NAOMI LEONARD**

Professor **Naomi Leonard** graduated from the University of Maryland with her Ph.D. in 1994 under the advisement of Professor P.S. Krishnaprasad. She joined Princeton University following graduation and is now the Edwin S. Wilsey Professor of Mechanical and Aerospace Engineering and an associated faculty member of the Program in Applied and Computational Mathematics.

In the five years following her graduation, Leonard received the National Science Foundation CAREER Award in 1995, the Office of Naval Research Young Investigator award in 1999. Her career continued to

# spotlighton<sub></sub>LUMNI

be marked by milestones. In 2004, she was awarded a John D. and Catherine T. Award in 1998, the Automatica Prize Paper MacArthur Foundation Fellowship, commonly known as The Genius Award. In 2007, the Institute for Electrical nic Engineers elected Professor Leonard IEEE Fellow and the American Society of Mechanical and Electronic Engineers elected her IEEE Fellow and the American Society of Mechanical Engineering named her a ASME Fellow in 2011. She was the Lise Meitner Guest Professor at Lund University, Sweden in 2001 and a Visiting Professor at University of Pisa, Italy in 2007. She has delivered many keynote and plenary lectures and edited a number of journals.

#### **PROFESSOR RAMESH RAO**

Professor Ramesh Rao is the director of the University of California, San Diego division of the California Institute for Telecommunications and Information Technology (Calit2). In 2004, he was the first professor appointed to the Qualcomm Endowed Chair in Telecommunications and Information Technologies in the department of Electrical and Computer Engineering of the Jacobs School of Engineering where he has been a member of the faculty since 1984. After completing his M.S. degree at the University of Maryland, Rao was advised by Professor Anthony Ephremides during the completion of his Ph.D. degree in Electrical Engineering.

Rao is currently involved in a wide variety of interdisciplinary and collaborative research initiatives including various projects to bridge emerging technologies with medicine and healthcare. He investigates the power of utilizing information technologies to enhance and possibly transform healthcare resources, knowledge bases, and outcomes.

Professor Ephremides congratulated Rao on his award, saying, "I have had the pleasure (and honor) to continue my association with [Rao] through the years and am thrilled that he received the deserved recognition as one of our distinguished alumni." 🧲

#### CAREER AMBITIONS & BEGINNINGS OF ELECTRICAL & COMPUTER ENGINEERING GRADUATES' IN 2011-2012:





#### COMPANIES WHO RECRUITED & HIRED ECE GRADUATES IN THE PAST FIVE YEARS:

**BOOZ ALLEN HAMILTON** NORTHROP GRUMMAN ACCENTURE NASA GODDARD LOCKHEED MARTIN JHU APPLIED PHYSICS LAB **CISCO SYSTEMS** INTEL CORPORATION NAVAL RESEARCH LAB **US PATENT & TRADEMARK OFFICE** NATIONAL SECURITY AGENCY

QUALCOMM **US ARMY RESEARCH LAB** PEPCO MICROSOFT THALES COMMUNICATION SAIC HUGHES NETWORK SYSTEMS BAE **IBM CORPORATION GENERAL ELECTRIC** MOTOROLA

A. JAMES CLARK SCHOOL of ENGINEERING . GLENN L. MARTIN INSTITUTE OF TECHNOLOGY



# **Awards and Honors for ECE Faculty**

#### LIU HONORED BY CHINA'S NORTHWESTERN POLYTECHNICAL UNIVERSITY

Christine Yurie Kim Eminent Professor of Information Technology K. J. Ray Liu received the honor of Advisory Professor, the highest honorary professorship bestowed by Northwestern Polytechnical University (NWPU) in the ancient capital city of Xi'an, China. The ceremony appointments were conferred by the President of the University, Chengyu Jiang. Dr. Liu was recommended by the NWPU faculty and leaders of the university, which was met with the approval of administrators from the Dean to the University President.

It is President Jiang's hope that inducting "the internationally renowned professor [Dr. K. J. Ray Liu] can help in the training of young teachers, school personnel and advancing research disciplines; to give guidance to and increase the opportunities for cooperation offered to NWPU's professors, and promote NWPU's cooperation with world class universities."

8

NWPU is China's only researchoriented university of science and technology, simultaneously excelling in the fields of aeronautics, astronautics, and marine technology. The university emphasizes science and technology while developing complementary fields of study in management, humanities, economics and law.

#### DAVIS NAMED MINTA MARTIN PROFESSOR OF ENGINEERING

ECE Professor Christopher Davis has been selected as one of six new Minta Martin Professors of Engineering. Minta Martin Professors are full professors who have made significant scholarly contributions in their areas of research. Minta Martin was the mother of Glenn L. Martin, the aviation pioneer for whom Martin Hall and the Glenn L. Martin Wind Tunnel are named,

along with the Glenn. L. Martin Institute of Technology.

#### MURPHY NAMED DIRECTOR OF PHYSICS INSTITUTE

Associate Professor Thomas Murphy was named Director of the Institute for Research in Electronics and **Applied** Physics (IREAP) effective August 1, 2012.



Murphy joined the department and the Clark School in 2002. Murphy's research interests include nonlinear optics, optical communications, nonlinear dynamics, microwave photonics and terahertz technology. His research broadly aims to explore new devices and techniques that improve the speed, sensitivity, resolution and efficiency of optical communication and sensor systems.

#### MUNDAY WINS NASA EARLY CAREER AWARD

Asst. Professor Jeremy Munday was awarded the inaugural Space Technology Research Opportunities for Early Career Faculty "Radiation Pressure on Tunable Optical Metamaterials for Propulsion and Steering Without Moving Parts." This project explores a new concept in solar sails, a form of propulsion for deep space exploration.

NASA will provide each of the 10 recipients with grants as much as \$200,000 per year for up to three years in support of their research in specific, high-priority technology areas. Recipients will conduct research in areas closely aligned with NASA's Space Technology Roadmaps and priorities identified by the National Research Council.

Dr. Munday's research project focuses

on the active control of photon pressure and the ability to steer a craft without the need for mechanical motion. When a photon reflects from a surface, it imparts a pressure due to the transfer of momentum. This radiation pressure can be exploited to propel small crafts and is the working principle behind solar sails.

NASA's Early Career Faculty efforts are an element of the agency's Space Technology Research Grants Program. It is designed to accelerate the development of technologies originating from academia that support the future science and exploration needs of NASA, other government agencies and the commercial space sector.

#### ECE FACULTY EARN PROMOTIONS

ECE Professor Edo Waks was promoted to Associate Professor with tenure. This appointment has been approved by President Wallace Loh, effective July 1, 2011.

#### MARTINS NAMED DIRECTOR OF MARYLAND ROBOTICS CENTER

Nuno Martins, an associate professor of electrical and computer engineering who is affiliated with the Institute for Systems Research and the Maryland Robotics Center, has been named Maryland Robotics Center director.

The center seeks to advance robotic systems, underlying component technologies, and robot applications through interdisciplinary research and educational programs based on a systems approach. Center faculty members, who are based in multiple Clark School departments, as well as departments of Biology and Computer Science, develop robotic sensors, actuators, structures, and communication; novel robotic platforms; and intelligence and autonomy for robotic systems.

#### ESPY-WILSON NAMED DISTINGUISHED SCHOLAR-TEACHER OF THE UNIVERSITY

Professor **Carol Espy-Wilson** was appointed to the National Advisory Board on Medical Rehabilitation Research. This board advises the National Center for Medical Rehabilitation Research (NCMRR), part of the Eunice Kennedy Shriver National Institute of Child Health and Human Development at the National Institutes of Health (NIH).

NCMRR fosters the development of scientific knowledge needed to enhance the health, productivity, independence, and quality-of-life of people with disabilities. Professor Espy-Wilson is developing an approach to speech recognition based on phonetic features to address the limitations of present recognizers.

Espy-Wilson was also selected for the position of ADVANCE Professor in the A. James Clark School Of Engineering. She will serve as the ADVANCE Professor for Women Faculty of Color in science, technology, engineering, and mathematics (STEM). The ADVANCE Program for Inclusive Excellence aims to transform the institutional culture of our university by facilitating networks, offering individual mentoring and support, and offering information and strategic opportunities for women faculty in all areas of academia.

#### EPHREMIDES NAMED DISTINGUISHED UNIVERSITY PROFESSOR

Cynthia Kim Eminent Professor of Information Technology **Anthony Ephremides** was recently named a Distinguished University Professor at the University of Maryland. He has a joint appointment in the Clark School's Electrical and Computer Engineering Department and Institute for Systems Research. This official title is the highest academic honor that our university confers upon a faculty member. It is reserved for a small number

### ECE Innovation wins annual Invention of the Year Awards

Professor **Min Wu**, her Ph.D. student **Ravi Garg** and her former advisee **Avinash L. Varna** won the 2012 University of Maryland Invention of the Year Award in Information Science for "Environmental Signatures for Forensic Analysis and Alignment of Media Recordings." The researchers created a novel natural timestamp for audio and visual recordings.



MIN WU

Without cryptographic protection and watermarking techniques during initial data acquisition, such modifications can be difficult to detect. Developing forensic tools to authenticate data using natural timestamp in the stored digital data presents an attractive direction to complement the existing technologies.

Wu, Garg and Varna devised a timestamp for audio and visual recordings. By detecting the natural interference caused by the 50/60 Hz electrical network frequency (ENF), an audio/visual recording can be authenticated in time and even location. Additionally, it will allow users to determine if a recording has been tampered with or edited in any fashion and will enable new alignment and stitching methods in professional A/V editing software, creating an easy way to synchronize various recordings. C

. . . . . . . . . .

Engineering, Physics and the Institute for Research in Engineering an Applied Physics, has been elected as a fellow of the Institute of Electrical & Electronic Engineers.

Antonsen was honored for contributions to the theory of magnetically confined plasmas, laser-plasma interactions and high-power coherent radiation sources. The title of IEEE Fellow is conferred by the IEEE Board of Directors upon those with an outstanding record of accomplishments in any of the IEEE fields of interest. IEEE Fellow is the highest grade of membership and is recognized by the technical community as a prestigious honor and an important career achievement.

The IEEE is the world's leading professional association for advancing technology for humanity. ⊂

other sensor recordings are stored on disks and other storage devices, metadata describes the time and place of recording. However, digital tools can modify the stored information. For example, digital editing softwares can be used to cut a clip from an original audio or insert a clip from one audio into another audio, or manipulate the metadata field to alter the recording date. This can also occur with video surveillance and other recordings.

When digital audio, image, video, and

of exceptionally distinguished scholars. Distinguished University Professors are selected from faculty who have been recognized nationally and internationally for the importance of their scholarly or creative achievements, and who have demonstrated the breadth of interest characteristically encompassed by the traditional role of scholar, teacher and public servant. Ephremides has been recognized for founding the field of ad hoc wireless networks, and as a leading international scholar in communication.

#### ANTONSEN, SCHNEIDERMAN ELECTED IEEE FELLOWS

Professor **Thomas Antonsen Jr**. who is affiliated with Electrical and Computer

9

# spotlightonT≣ACHING

### **Teaching Fellows Bolster Fellow Students' Confidence**

Exceptional students collaborate with Professors to acheive excellent results in the undergraduate classroom

There is a time for every student during each semester, when a particular assignment is challenging them or they need the help of a fellow student to understand a concept. Even though there are many ways to seek help, students most often turn to their peers.

The Electrical and Computer Engineering Department recognizes the value of peer-to-peer teaching by establishing a team of Undergraduate Teaching Fellows (UTFs) each semester. Students, who perform exceptionally in their academic pursuits, can apply to be teaching fellows. Professors often invite their students to serve as a teaching fellow for a particular class.

Choosing to be a teaching fellow as an undergraduate requires a significant commitment, but is a rewarding experience. Adopting a leadership role, the fellows plan recitations, grade homework, hold office hours, and create quizzes for the material they teach.

Professor Donald Yeung, Director of Computer Engineering, is careful about inviting students to be UTFs in his classes. He takes time to be thoughtful and selective because he has high expectations. Many of the students have taken his class before and are at the top of the class. He says, "Many of my UTFs maintain a 4.0 and earn high marks each semester." Professor Yeung's UTFs meet with him weekly to discuss grading, the direction of recitations, and examples that illustrate course material in a new way.

Yeung feels the students who take part in the UTF program are extremely dedicated and altruistic. "They are connected and have a desire to help. Their enthusiasm, coupled with helping their peers understand a difficult concept, gives them an extreme sense of fulfillment."

Due to the relationships Dr. Yeung develops with his UTFs, he often mentors them beyond the undergraduate program. He says, "I love to see 'UTF is better than professor' on a course evaluation. I make sure to review them with



REBECCA GAGNON & KEVIN CHEN

my UTFs. The department is doing a service to its students with this program."

Two of Professor Yeung's teaching fellows, Rebecca Gagnon and Kevin Chen have inspiring perspectives on why they choose to serve their peers as UTFs.

"It is rewarding to help people. When your own classes are stressing you out, it's refreshing to help other students come to an understanding," says Gagnon, a junior. Gagnon enjoys the sense of leadership she has gained as a UTF and feels the program is a worthwhile initiative for the department.

She also realized that she prefers the computer side of electrical engineering and desires to advance in that field, "I might consider research and graduate school because of my UTF experience."

Kevin Chen, also a junior, applied to be a UTF because he, "enjoyed turtoring others; teaching; and helping people to 'get it'." He also feels that his experience as a UTF has allowed him to make connections and form friendships with students he would not have met otherwise. "We become equals no matter what year we are—because we all know what it is like to work hard or struggle to learn something."

Both Chen and Gagnon share the rewards of being a UTF. Through the experience, you become more responsible and prepared, you can better manage your time, and you develop non-technical skills in communication and presenting.

Chen also enjoyed working as a UTF because, "the experience will provide more opportunities in the future, you always have someone you can talk to about your career, and you might receive a good recommendation letter!"

He said, "Peer-peer teaching allows people to come to an understanding more easily. Teaching fellows have been in students' shoes; their experience is more applicable and easier for students to incorporate their imparted knowledge into understanding."

The department is rewarded by this initiative in numerous ways. The teaching fellows gain a better sense of their future aspirations and develop unique relationships with mentoring professors. Professors find their workload to lighten slightly. Most importantly, there is a strengthened sense of community among undergraduates in electrical and computer engineering as they all strive to help each other be successful.  $\square$ 

10

# FUTUR**Eofece**

## **Bare, Khan & Sandborn Earn NSF Graduate Fellowships**

continue his education to his professors'

abilities to impart their knowledge in a

Justin Bare, Saara Khan, and Phil Sandborn were three of seventeen students in the A. James Clark School of Engineering to be awarded a

National Science Foundation (NSF) Graduate Research Fellowship. This number doubled since last year. The Graduate Research Fellowship Program recognizes and

fun, enthusiastic and engaging way. "My

both through course work and research opportunities, have inspired me to pursue my education further."

Khan feels that the excellent mentorship she received

as an undergraduate fueled her success. She says, "If you have the iniative and

motivation to do well in ECE, you will. Professors recognize that." Her experiences through the TREND experiences as an undergraduate in ECE, program led her to publish a paper as first author based on her research with Professor Patrick O'Shea. Khan headed to Stanford to continue her studies in electrical engineering, while Sandborn joined her on the west coast at the University of California, Berkeley. He is currently studying silicon photonics under Professor Ming Wu. This niche research area is relatively new. Sandborn plans for a career in academia. He chose Maryland as his starting point because of its technical strength and diversity in education. C

supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees at accredited US institutions.

Bare and Khan previously participated in MERIT-BIEN and TREND, unique, 11-week summer research programs for top undergraduate engineering, mathematics, and physics students. They received accolades for their work- in 2010 Khan won Best Overall Project for TREND and in 2011Bare won Best Overall Project for MERIT. All three students served as department leaders. Sandborn and Bare also served various student groups as executive board members, including IEEE and HKN.

Bare will continue his studies in artificial intelligence at Washington University. He attributes his desire to

### **Undergraduate Research Fellows Program Debuts**

The Department of Electrical & Computer Engineering (ECE) launches an Undergraduate Research Fellows (URF) program this fall. In this inaugural semester, it supports 10 fellows who are rising ECE seniors. The students receive a stipend of \$5,000 for the year—a cost shared by the department and faculty researcher. The initiative provides undergraduate ECE students the opportunity to participate in cutting edge research with faculty members thereby enhancing future employment or graduate school opportunities.

Some of the research opportunities offered in the URF program are: quorum sensing theory as a basis for the synthesis of collective behavior in

robots; determining the time a still image was captured; and investigating and quantifying how music is represented in the auditory cortex. Participants are in the last year of their program and carry a minimum GPA of 3.3. Each student is required to dedicate a minimum of 12 hours per week to their fellowship. This research experience may be counted as one course in the honors program. As the academic year ends, the department will host presentations by all URF participants. The best presentation will be recognized with an award.

With the inception of this program, the ECE department supports an NSF initiative for education outreach.



A. JAMES CLARK SCHOOL of ENGINEERING . GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

# faculty&staffnews

## **Two Staunch Supporters of Undergraduates Retire**

As the academic year drew to a close, two long-time employees closed their

office doors for a final time. Mrs. Dolores Harris, Coordinator of Undergraduate Studies, helped the ECE faculty navigate university policies in order to provide their students with the best opportunities for 31 years. Dr. Judith Bell led more than 1610 ECE students into commencement over her 10 years as Director of Undergraduate Studies. She proudly walked at the head of the Electrical and



MICHAEL ROTKOWITZ

Computer Engineering procession guiding the students she advised to the culmination of their successes in the department. Both Harris (1990) and Dr. Bell received ECE's Staff Service Award for demonstrating the highest level of dedication, excellence and service. **Dolores Harris** 

Harris arrived at the Department of Electrical and Computer Engineering in 1980. She witnessed change in the department under the leadership of five

esteemed chairs and was incredibly efficient and effective in her work assisting a number of Associate Chairs for Undergraduate Studies. The Department's undergraduate program is the largest in the Clark School. Dolores was the steady hand in the office for faculty and, most importantly, the students. She made the Undergraduate Office a model of

professionalism and efficiency.

Harris was often acknowledged for the effect she had on many members of the university community that went beyond the boundaries of the Electrical and Computer Engineering Department.

Harris retired in May 2012. *Dr. Judith Bell* 

Dr. Bell has a profound impact on

the students in electrical and computer engineering during her decade of service to them. She worked tirelessly with her staff, to expand services offered to students including professional development programs that educated students about the many options available after graduation; academic success programs and workshops; and greater involvement with undergraduate student organizations.

Dr. Bell has fond recollections of her work within the department. "It was extremely rewarding to have had the opportunity to work in the ECE Department with undergraduates for a decade. I worked with students from the beginning of their college experience through their graduation; whom I met while they were still in high school or community college at recruitment events. I saw those students on a regular basis each semester to assist them with their course planning and help some, who struggled academically, find the strategies and tools necessary to be successful students. Watching those students graduate was the most rewarding and exciting part of my ECE career!"

Dr. Bell retired in June 2012. 🧲

# **Michael Rotkowitz Joins Controls Faculty**

Assistant Professor Michael Rotkowitz joined the electrical and computer engineering

department in the spring of 2012. This past summer, he was invited to be an affilate faculty member of the University of Maryland Institute of Systems Research (ISR). His research is in decentralized control, optimization and sparse estimation. He is teaching courses this year in probability and in convex optimization..

Rotkowitz received a B.S. degree in Mathematical and Computational Science (with Honors and with Distinction) from Stanford University in 1996. After working for J.P. Morgan Investment Management, New York, until 1998, he returned to Stanford and received his Ph.D. in Aeronautics and

Astronautics in 2005. During that time, he also received an M.S. degree in Aeronautics and Astronautics and the M.S. degree in Statistics, and worked for NASA Ames Research Center.

Dr. Rotkowitz was a Postdoctoral Fellow in the School of Electrical Engineering at the Royal Institute of Technology (KTH), Stockholm, Sweden from 2005-

6, and a Research Fellow in the Department of Information Engineering at the Australian National University in Canberra, Australia from 2006-8. He then joined the University of Melbourne where he held the positions of Queen Elizabeth II Fellow and Future Generation Fellow in the Department of Electrical and Electronic Engineering, as well as Honorary Fellow in the Department of Mathematics and Statistics.

His awards include the 2007 George S. Axelby Outstanding Paper Award, given for the best paper in the IEEE Transactions on Automatic Control over a 2-year span, and the 2011 SIAM Control and Systems Theory Prize, which was conferred: "for Contributions to the theory of optimal controller synthesis for decentralized systems subject to information and control constraints. <sup>C</sup>

# alumninews

## **ACCOMPLISHMENTS, AWARDS & HONORS FOR ALUMNI**

#### ENGLAND INDUCTED INTO NAE

Alumnus **Hon. Gordon England** (B.S., EE '61) has been inducted into the National Academy of Engineering. England is a former U.S. deputy secretary of defense. He served as executive vice president of General Dynamics Corporation from 1997 - 2001. Prior to that, he was executive vice president of the Combat Systems Group, president of General Dynamics Fort Worth aircraft company (later Lockheed), president of General Dynamics Land Systems Company, and principal of a mergers and acquisition consulting company.

#### GASKE IS 2012 DISTINGUISHED ENGINEERING ALUMNUS

The Clark School has honored **T. Paul Gaske** (B.S. EE, '76) with its 2012 Distinguished Engineering Alumnus award for his professional accomplishments and service to the school and UMD. He is executive vice president and general manager for the North American Division at Hughes Networking Systems, LLC, where he focuses on broadband products and services. He is a member of IEEE; a published author on satellite networking technologies and markets; and the holder of numerous patents in satellite communications and broadband networking. Gaske is a member of the ECE Advisory Board and the Clark School Board of Visitors.

#### ALUMNA ZHOU WINS AFOSR YOUNG INVESTIGATOR AWARD

Alumna **Enlu Zhou** (Ph.D., EE, '09) is one of 48 national recipients to win a 2012 Young Investigator award from the Air Force Office of Scientific Research (AFOSR). She will be investigating "Dynamic Decision Making under Uncertainty and Partial Information." Zhou is an assistant professor in the Industrial & Enterprise Systems Engineering Department at the University of Illinois Urbana-Champaign. Her research is in stochastic control, Markov decision processes, and simulation optimization. She was advised by Professors **Steve Marcus** and Michael Fu and was part of the A. James Clark School of Engineering's Future Faculty Program.

#### ALUMNUS CHEN WINS ROSENBLUTH AWARD

Dr. Yu-Hsin Chen (Ph.D., EE, '11) won the 2012 Marshall N. Rosenbluth Outstanding Doctoral Thesis Award. Chen was awarded "for measurements and theory of the ultrafast, high field, nonlinear response of gases near the ionization threshold, characterization of femtosecond plasma filaments, and demonstration that femtosecond filamentation requires plasma stabilization." Chen is the third student mentored by Professor Milchberg to have won this award. APS-DPP established the Marshall Rosenbluth Outstanding Doctoral Thesis Award to recognize exceptional young scientists who have performed original doctoral thesis research of outstanding scientific quality and achievement in the area of plasma physics.

#### ALUMNUS XIAOBO TAN FEATURED IN NSF HIGHLIGHT

ECE/ISR Alumnus Xiaobo Tan (Ph.D., EE, '02), an associate professor at Michigan State University, recently had his work on robotic fish featured as a Highlight on NSF's "SEE Innovation" website. "Artificial Muscle-Enabled Robotic Fish" has resulted in innovative ideas for developing energy-efficient robotic fish, which could potentially revolutionize the way aquatic environments, drinking water reservoirs and aquafarms are monitored. Tan and his colleagues modeled, designed and constructed fish that use electro-active ionic polymer-metal composites (IPMCs) for locomotion. Similar to muscle tissue, the IPMCs change shape when a voltage is applied. The fish fins are integrated with a control system to provide the robot with energy-efficient, fish-like maneuverability. He was advised by Professors John Baras and P.S. Krishnaprasad.

#### ECE ALUMNUS-OWNED TRX SYSTEMS WINS AWARD

Alumni **Carol Politi** and **Carole Teolis** of TRX Systems, Inc. announced the company is one of 18 to receive the Tibbetts Award. This award is presented to participating companies in the SBA's Small Business Innovation Research Program (SBIR) that represent "beacons of promise and models of excellence in high technology." The criteria for selecting winners are based on the economic impact of their technological innovation; practicing diverse participation in technological innovation; and increasing the commercialization of federal research. The TRX indoor location system uses sensor fusion and mapping technology to deliver precision personnel location in indoor environments without pre-installed infrastructure. It delivers safety to first responders and navigational support for soldiers and urban training operations in locations that are GPS-denied.

### FACULTY APPOINTMENTS & ALUMNI PROMOTIONS

SEAN ANDERSSON Advisee of Dr. Krishnaprasad PHD, EE '03 ASSOCIATE PROFESSOR WITH TENURE BOSTON UNIVERSITY

MUSTAFA BEYAZ Advisee of Dr. Ghodssi PHD, EE, '11 ASSISTANT PROFESSOR ANATAYLA UNIVERSITY

JIE CHEN Advisee of Dr. Liu PHD, EE '98 FULL PROFESSOR WITH TENURE UNIVERSITY OF ALBERTA

MINGYAN LIU Advised by Dr. Baras MSSE, '97; PHD EE, '00 FULL PROFESSOR UNIVERSITY OF MICHIGAN

ASWIN SANKARNARAYANAN Advisee of Dr. Chellappa PHD, EE, '09 ASSISTANT PROFESSOR CARNEGIE MELLON UNIVERSITY

H. VICKY ZHAO Advisee of Dr. Liu PHD, EE, '04 ASSOCIATE PROFESSOR WITH TENURE UNIVERSITY OF ALBERTA

C

# class of 2012NEWS

#### ECE STUDENT SELECTED AS A. JAMES CLARK SCHOOL OF ENGINEERING COMMENCEMENT SPEAKER

**Brennan Keegan**, a graduate of the 2012 class of Electrical Engineering, was selected to deliver the Clark School of Engineering Commencement Address for the Spring 2012 graduation ceremony. His clever delivery claimed that engineering students had been "transformed over the past four years with the goal of reaching near optimal phase state equilibrium." From Damascus, Maryland, Keegan completed his Electrical Engineering degree and pursued a piano performance minor. Throughout his academic career, he maintained a 4.0 GPA and has been an active member of Engineers Without Borders and Maryland



Sustainability Engineering, including co-leadership of a major project and is a Leader of ECE. He pursued research with Dr. Ray Liu's Signals Information Group and the WatchDog project at North Carolina State University.

Post-graduation plans will take him to China where he will be studying at Hopkins-Nanjing Center. He joins a Master of Arts program in International Studies. This programs brings Chinese and international students together in the classroom, allowing all students to develop their understanding of the complex relationships at work between China, the United States and the global environment. Keegan's interests focus on Chinese energy policies and how they relate to and affect the United States.



#### ECE USC LOUNGE RETURNS TO A.V. WILLIAMS

THE UNDERGRADUATE STUDENT COUNCIL RECENTLY BENEFITTED FROM A GENEROUS GIFT GIVEN BY LOCKHEED MARTIN. UNDERGRADUATE ELECTRICAL AND COMPUTER ENGINEERS NOW HAVE A LOUNGE SPACE TO ACCOMODATE GATHERINGS, STUDY SESSIONS, MEETINGS, AND OPPORTUNITIES TO RELAX BETWEEN CLASSES. OUR ENGINEERS HAVE RETURNED HOME TO A COZY SPACE IN THE A.V. WILLIAMS BUILDING. JUST A FEW STEPS AWAY FROM UNDERGRADUATE LABS, IT IS SURE TO BE A SPACE WHERE IDEAS GERMINATE AND STUDENTS BUILD COMMUNITY. MANY THANKS TO BRYAN QUINN AND THE OPERATIONS STAFF FOR ASSISTANCE IN RENOVATING THE SPACE TO SUIT OUR STUDENTS' NEEDS. VISIT 1131 A.V. WILLIAMS.

## Dual Degree Program Suits Industry-Bound Graduate

Nick Kratzmeier, a 2012 Electrical and Computer Engineering graduate, is curretnly working on his MSEE in the dual degree program. As defined by the university, the program should, "be developed according to the individual career interests and goals of the student and should be an integrated learning experience rather than merely the completion of a certain number of graduate and undergraduate credits." Students with an exceptional academic record are invited to apply for this program in the second semester of their junior year.

**Q:** Why did you choose to enroll in the dual degree program?

A: As a junior, I was recommended to take part in the program. I knew that I wanted to pursue a career in industry, but also understood the benefits of continuing my education. I wanted to maximize my career opportunities.

**Q:** What makes this program appealing to students who wish to pursue an MSEE?

A: As an undergraduate you have an opportunity to take classes which will be counted toward both degrees. For me, the program is convenient. I am experiencing a great opportunity in the field of research which is helping me to better define my career goals and interests. Now, I am able, due to my research and internship experiences, to make connections between my education and practical application.

# Your education in ELECTRICAL & COMPUTER ENGINEERING led to success.

## Be a foundation for future engineers.

Paul Gaske, the A. James Clark School of Engineering's 2012 Distinguished Alumnus, attributes his success in part to his undergraduate education in electrical engineering, "I developed the intellectual discipline to organize problems in a manner that facilitated analysis and ultimately led to an engineering solution. This is perhaps the essence of engineering." Now, Executive Vice President and General Manager for the North American Division of Hughes Network Systems, Gaske continues his relationships with the Electrical and Computer Engineering Department and the Clark School.

He serves as an ECE Advisory Board Member and sits on the Board of Visitors for the A. James Clark School of Engineering. These responsibilities provide a unique perspective on ECE, "Today, ECE is a very dynamic environment. The faculty's academic interests span a tremendous range of technologies. It is pleasantly surprising to see their focus on real word problems and the innovative paths they are taking to finding solutions." Gaske also said ECE provides a lively atmosphere that is very welcoming to students, faculty and visitors who cannot help but notice the dynamic relationship between faculty and students.

In addition to committing his time and energy, Gaske and his wife, Ellen, contribute to scholarship funds for students, stipends, and laboratory support.

"We feel this is a good way to give back to an institution that influenced our lives, and it helps ensure a new generation of well educated graduates to help fill the needs of our society."



DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

To learn how you can make a charitable contribution today and have a measurable impact on the future of the Electrical & Computer Engineering Department, or to explore other options, contact Asante Shakuur, associate director of external relations.

askhakuur@umd.edu | 301.405.8189

Twelfth Annual University of Maryland Alumni Association