

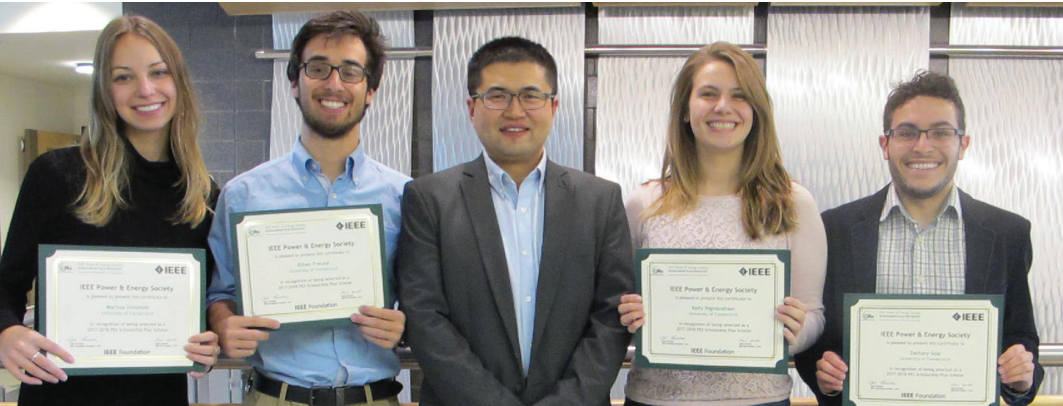
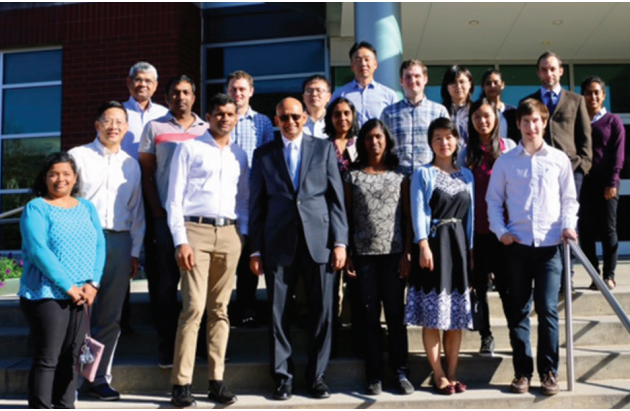
ECE

ELECTRICAL & COMPUTER ENGINEERING

UConn
SCHOOL OF ENGINEERING



WINTER 2018
WWW.EE.UCONN.EDU



FEATURES

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This newsletter is published for the alumni, faculty, students, corporate sponsors, and friends of the Department of Electrical & Computer Engineering at the University of Connecticut. Comments are always welcome.

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The creative efforts of the School of Engineering staff members Eli Freund, Chris LaRosa and Mary McCarthy are gratefully acknowledged.



MESSAGE FROM THE DEPARTMENT HEAD

I am pleased to share with you the Winter 2018 edition of our Newsletter. The data below summarizes the ECE Department activities during the past year. The following pages highlight some recent student, alumni, and faculty success stories. If you would like more information about any item in the newsletter or about our research and educational programs, please send me a note at rajeev.bansal@uconn.edu. Also, check our website (www.ee.uconn.edu) for the latest news about the department.

Rajeev Bansal, *Professor and Head*

2016-2017 SUMMARY

FACULTY

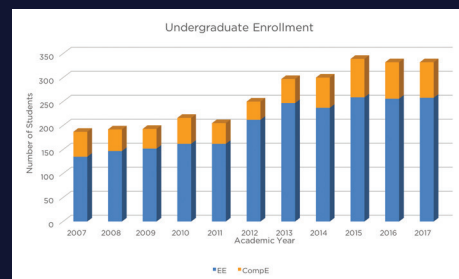
27 Tenured/Tenure-Track
1 Research Professor

CURRENT STUDENTS

342 Undergraduate Students
87 BSE Degrees Granted
15 MSE Degrees Granted
20 Ph.D. Degrees Granted
132 Graduate Advisees

RESEARCH UPDATE

126 Journal Articles
141 Conference Papers
111 Active Research Projects
\$7.9M in Research Expenditures



Left to Right: Mei Wei, Professor and Associate Dean for Research and Graduate Education, Michael Accorsi, Senior Associate Dean, Rajeev Bansal, Professor and Head of Electrical Engineering, David Zack, Academy of Distinguished Engineers inductee (story on page 4) and Kazem Kazerounian, Dean of UConn Engineering.

ALUMNI AND FACULTY EMERITUS RECEIVE UCONN AWARDS

An ECE emeritus faculty member and four alumni were inducted into the UConn **ACADEMY OF DISTINGUISHED ENGINEERS** in 2017. The awards recognize alumni and friends of the School of Engineering for their exemplary contributions to the engineering profession through research, education, or professional service.

MATTHEW MASHIKIAN (*Electrical Engineering Faculty '83-'87*), is the founder of IMCORP, the leading provider of power cable reliability assessment services. Dr. Mashikian is a Life Fellow of the IEEE and a member of the Connecticut Academy of Science and Engineering (CASE).



VENK MUTALIK (*M.S. Electrical Engineering '95*), currently at Comcast, was previously an Engineering Fellow and Vice President of Technology and Strategy for ARRIS, where he led the creation of the AgileMax platform that enabled the cable industry to transition to all-fiber deployment. He is a member of the ECE Industrial Advisory Board.



Louis Parrillo (*B.S. Electrical Engineering '64*), founder of Parillo Consulting, LLC, has over 40 years of experience in technical and business leadership. He is a member of the U.S. National Academy of Engineering and a Fellow of the IEEE.

LOUIS PARRILLO (*B.S. Electrical Engineering '64*), founder of Parillo Consulting, LLC, has over 40 years of experience in technical and business

DAVID W. ZACK (*B.S. Electrical Engineering '94*), is currently the Vice President of United States Government Defense Systems and Services (DSS). Mr. Zack serves as the primary interface between Sikorsky and the U.S. Government for all product line activities and is responsible for \$3 Billion in annual sales across all U.S. Government military production and sustainment programs.



2017 inductees and UConn Engineering Leadership.

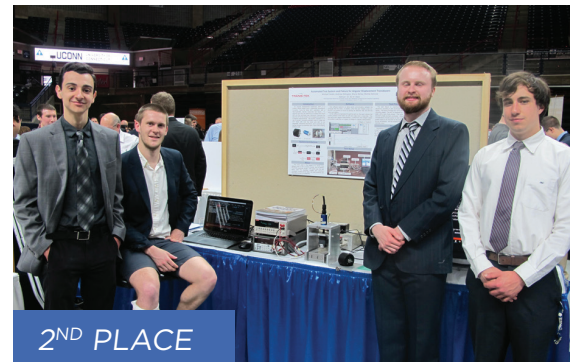
SENIOR DESIGN 2017

The School of Engineering Senior Design Day was held on April 28, 2017 in Gampel Pavilion. After two semesters of hard work, 24 teams from the Electrical & Computer Engineering Department demonstrated their projects to students, faculty members, corporate sponsors, and visitors. The **"SMART-WATCH-LIKE DEVICE AND APPS FOR CONTINUOUS GLUCOSE MONITORING"** team received the first place award. The **"AUTOMATED TEST FIXTURE FOR ANGULAR DISPLACEMENT TRANSDUCERS"** team took second place. Third place was awarded to the **"UN-CRASHABLE HELICOPTER"** team.



1ST PLACE

Left to Right: Adhmed Sugulleh, Magda Kaczynska, Evan Brown, and Brian Marquis.



2ND PLACE

Left to Right: Michael Caiafa, Shane Keney, Michal Zielinski, and Andrew DiGiugno.



3RD PLACE

Left to Right: Carlos Rodriguez, James Hubbard, Dan Fay, Tim Pelletier.

ALUMNI NEWS

TARA JOHN (M.S. Electrical Engineering '17) and her colleagues in **PROFESSOR**



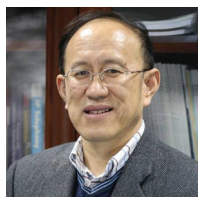
VAN DIJK'S research lab received the Best Poster Award at the HOST conference in 2017. She is now a Research and Development Engineer at Comcast, where she is exploring several ways of integrating embedded systems and security together to make real-time systems robust and resilient against cyber-attacks.

ZHAOHUI WANG (Ph.D. Electrical Engineering '13) recently received an



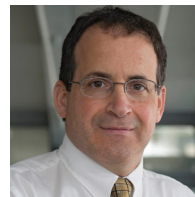
NSF CAREER Award. Dr. Wang is an assistant professor at Michigan Technological University. Her research project is entitled "CAREER: Online Learning-based Underwater Acoustic Communications and Networking."

XAIOHONG GUAN (Ph.D. Electrical Engineering '93) was elected to the Chinese Academy of Sciences. Professor Guan is the Dean of the School of Electronics and Information Engineering at Xi'an Jiaotong University. He is a renowned expert in the field of system engineering and an IEEE Fellow. He was inducted into the UConn Academy of Distinguished Engineers in 2009.



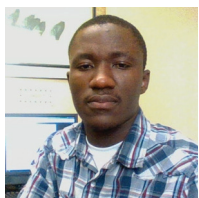
HEMCHANDRA SHERTUKDE (Ph.D. Electrical Engineering '89), a professor at the University of Hartford, was awarded the 2017 IEEE Educational Activities Board (EAB)/Standard Association (SA) Standards Award "for effectively integrating power systems and transformer standards into academic and professional development programs, and for his active encouragement of IEEE student membership." Dr. Shertukde also received the 2017 IEEE CT Chapter Outstanding Engineer Award.

EYTAN MODIANO (B.S. Electrical Engineering and Computer Science '86) is currently a professor in the Department of Aeronautics and Astronautics at MIT. His research is on communication networks and protocols with emphasis on satellite, wireless, and optical networks. He is a Fellow of the IEEE.



Left to Right: Don Wright, President, IEEE Standards Association and Hemchandra Shertukde.

SCHOLARSHIPS



ALAIN TSHIPAMBA, an electrical engineering senior, is the recipient of a Smart Scholarship from the Department of Defense.

MARISSA SIMONELLI and **ZACHARY SOLA** were first-time recipients of a prestigious scholarship from the IEEE PES Society Scholarship Plus Initiative for 2017-2018. The initiative recognizes undergraduate students who have declared a major in electrical and computer engineering, are high achievers with significant extracurricular activities, and are committed to exploring the power and energy field. Marissa and Zachary were among 19 new awardees from IEEE Region 1 (Northeastern U.S.) universities. **KELLY HIGINBOTHAM** and **ETHAN FREUND** were among 17 renewal recipients to receive the award.



Left to Right: Marissa Simonelli, Ethan Freund, Professor Peng Zhang, Kelly Higinbotham, and Zachary Sola.



RESEARCH NEWS

Zhang and His Students Look To Advance Power Systems Into The Future

Over 350 million people in the United States depend on the reliability and consistency of the 450,000 miles of high-voltage lines that form the U.S. power grid to do critical daily tasks. With stronger weather events and an increasing number of cyber-attacks, reliable safeguards and technologies are needed to protect this essential utility. The Power and Energy Systems Laboratory, run by Dr. Peng Zhang, F.L. Castleman Associate Professor of Electrical and Computer Engineering, and his graduate students, aims at tackling these critical issues.

“The goal of our research is to make our nation’s energy infrastructure resilient, reliable, secure, and sustainable.”

The lab, which focuses on smart grid technology, microgrids, and sustainable energy, has worked on several crucial projects over the past several years, including a dedicated approach to networking the

microgrid system, developing hardware-independent, software-defined smart grid, determining risk assessment models for unintentional islanding of power generators, using ocean waves to generate a sustainable power source, and many other related areas of research.

The lab’s most recent research, which focuses on national infrastructure, is looking to enhance the connectedness of the fractured U.S. grid system.

“The goal of our research is to make our nation’s energy infrastructure resilient, reliable, secure, and sustainable,” Zhang said. “One of our main areas of focus now is large systems power stability, which is important, because there is a lack of tools to really assess and predict the status of the system under uncertainties. This tool is highly needed, especially for connected systems.”

That tool, which is being developed from a \$1.05 million Department of Energy grant, is being worked on by Zhang and Ph.D. student Yan Li. The idea for the grant was inspired by the insights Zhang and his students gathered from studying

the tools used by local utility company, Eversource Energy.

“The whole U.S. and Canadian grid are connected together, and it’s a huge system, so it’s therefore very difficult to monitor, assess and control its stability,” Zhang said. “If you look at Connecticut, companies like Eversource, for the most part, use off-line tools which run many scenarios and only look at snapshots of the system, but that kind of work is not great for operations, it needs to be monitored and assessed in real-time.”

In particular, Li and Zhang will be forming a formal theory with mathematical rigor, which will be established for computing the bounds of all possible trajectories and estimating the stability margin for the entire system, including the integrated transmission and distribution network.

Furthermore, a new open-source tool via reachable set computations will be developed for real-time dynamic analysis and stability margin calculations. It will be applicable for not only forecasting and monitoring grid performance but also formally verifying various resiliency enhancement strategies, such as new schemes for system integrity protection and automation to adapt to this evolution of electric networks.

Zhang and his students are also making significant contributions to knowledge

Zhang continued on page 7

Zhang continued from page 6

Photo on opposite page, from left to right: Lingyu Ren, Yan Li, Leyang Shen, Martial Sawasawa, Wyatt VanFossan, Peng Zhang, Christopher Angi, Taofeek Orekan, Alex Slossberg, Kyle Mullins, and Zefan Tang.

advancement in the state of Connecticut and the region, with their work at the Eversource Energy Center at UConn, which conducts research related to advancing energy technology, as well as performs significant consulting work with Eversource Energy.

Zhang and his students have specifically performed work on research related to unintentional islanding, which is a phenomenon in which a distributed generator continues to be electrified and running, even when the electrical grid surrounding it is no longer active. Traditional methods of detection can often be fooled to think that grid conditions are normal, especially when multiple power generation devices are connected to the same line.

This kind of scenario is hazardous to field workers, as the lack of knowledge could cause them to be electrocuted. Zhang said that the research that's currently being done by himself and his team addresses the creation a risk assessment model to safely avoid danger.

"This kind of research is using machine learning to predict risk in the non-detection zone," Zhang said. "By non-detection, we mean that when an island occurs, there are certain scenarios where the utility company, but with this new risk assessment model, we'll be able to accurately predict when this scenario is likely to occur."

Most importantly though, Zhang is happy that the graduate students that he is mentoring, and providing hands-on opportunities to, are getting the necessary experience needed to launch their careers in research and academia.

Ph.D. student Taofeek Orekan, one of the members of the lab, is one of the students that will be using that experience, as he looks for post-grad opportunities in the next few months.

"This is a great lab to start off in," Orekan said. "I know that any lab that I launch during my career in academia will absolutely be an extension of this lab."



Siddharth Rawat, left, a Ph.D. student, and Bahram Javidi, operate a prototype device to examine blood samples for diseases. (Peter Morenus/UConn Photo)

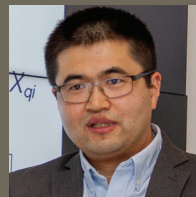
FACULTY NEWS

Professor **JOHN AYERS** received the 2016-17 ECE Faculty Award for Outstanding Teaching Achievements. Also, his recent paper, "X-Ray Analysis of Meta-



morphic $In(x)Ga(1-x)As/In(y)Ga(1-y)As$ Superlattices on $GaAs(001)$ Substrates," (coauthored with F. A. Althowibi), was chosen as an

"Editor's Pick" in the *Journal of Vacuum Science and Technology B*, and was featured on the journal website.



PENG ZHANG

was selected as a Castleman Term Professor in Engineering Innovation. This award was established to recognize outstand-

ing faculty members who embody exceptional achievements and a deep commitment to research, education and outreach. Professor Zhang also received the 2016-2017 ECE Outstanding Research Achievement Award.



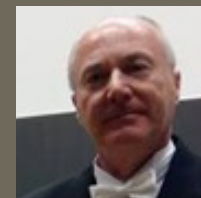
In recognition of his appointment as a Board of Trustees Distinguished Professor, **KRISHNA PATTIPATI** gave a special presentation on

September 30, 2017. His talk focused on his personal journey from India to UConn, on those who had inspired him during his illustrious career, and on his contributions to and the impact on

real-world applications of his groundbreaking research. Many of his former graduate students traveled from all over the country to show their appreciation for their former faculty advisor.

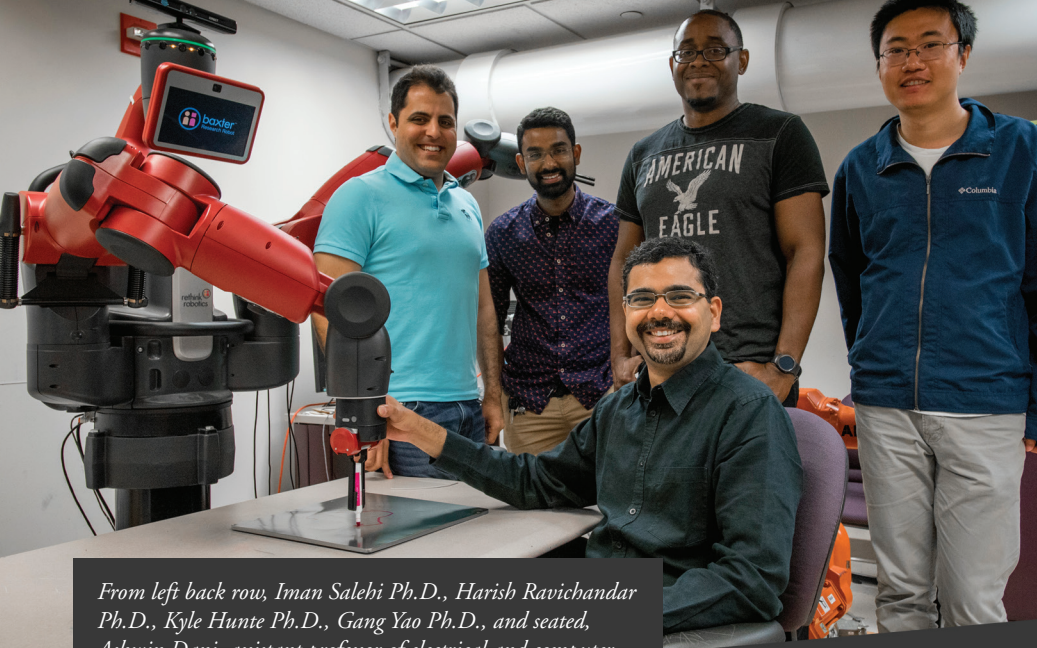
Professor **BAHRAM JAVIDI**, (above at right) along with his research students, developed a portable holographic field microscope that could provide medical professionals with a fast and reliable new tool for the identification of diseased cells and other biological specimens. The device uses the latest in digital camera sensor technology, advanced optical engineering computer algorithms, and statistical analysis to provide rapid automated identification of diseased cells. The microscope has been featured on the National Science Foundation's news website, in *The Scientist*, and in a paper published in *Applied Optics*.

Also Dr. Javidi's Paper "Optical security and authentication using nanoscale and thin-film structures" (co-authored with Artur Camicer) was one of the top downloads of *Advances in Optics and Photonics* for two months in a row.



PETER WILLETT was selected a Centennial Term Professor in the School of Engineering. The professorship, established through an anonymous dona-

tion of \$1 million, is aimed at recognizing outstanding faculty members who have left a lasting impact on the school through leadership and innovation in research, teaching, mentorship engagement and institution building.



From left back row, Iman Salehi Ph.D., Harish Ravichandrar Ph.D., Kyle Hunte Ph.D., Gang Yao Ph.D., and seated, Ashwin Dani, assistant professor of electrical and computer engineering. (Sean Flynn/UConn Photo)

FACULTY NEWS

Professor **PETER LUH** received the very prestigious 2017 IEEE RAS George Saridis Leadership Award in Robotics and



Automation from the IEEE Robotics and Automation Society (RAS). The award was presented at the ICRA 2017 conference.

Also, Professor Luh was elected by IEEE Technical Activities Board (TAB) to be the IEEE TAB Periodicals Committee Chair for 2019-2019. The Committee has oversight responsibility for most IEEE periodicals.

Along with his UConn colleagues, Professor **ASHWIN DANI** (pictured above) will play a leading role in the newly established national Advanced Robotics Manufacturing Institute (ARM) designed to advance robotics manufacturing and maintain America's global competitiveness in that area. Dani's Robotics and Controls Lab is already performing innovative research on interactions between robots and humans.



Professor **MARTEN VAN DIJK** received the Most Frequently Cited Paper Award (2000-2009) at the Symposium on VLSI Circuits, 2017 (for

J.W. Lee, D. Lim, B. Gassend, G.E. Suh, M. van Dijk, and S. Devadas, "A technique to build a secret key in integrated circuits for identification and authentication

applications," Symposium on VLSI Circuits, 2004).

The Jean-Pierre Le Cadre Best Paper Award (Second Runner-up) was presented to **BALAKUMAR BALASINGAM, YAAKOV BAR-SHALOM, PETER WILLETT AND KRISHNA PATTIPATI** at the Fusion 2017 Conference held in Xi'an, China for "Maximum Likelihood Detection on Images".



In recognition of Professor **YAAKOV BAR-SHALOM'S** long-term contributions to the field, FUSION 2017 ran a special tribute workshop "International Workshop on Fusion, Tracking and Estimation—A tribute to Professor Yaakov Bar-Shalom". It took place on July 10, 2017 in Xian, China in conjunction with the 20th International Conference on Information Fusion.

Professor Bar-Shalom also has been invited to be a member of the Board of Advisors of the Space Informatics Laboratory, Moscow Institute of Physics and Technology.

DAVID TONN, an adjunct faculty member in the department, was honored as a Senior Member of the Antenna Measurement Techniques Association (AMTA). Official recognition was given at a recent symposium and awards ceremony held in Atlanta.

UNDERGRADUATE STUDENT AWARDS



The **UConn CHAPTER OF HKN** (Eta Kappa Nu: the electrical engineering honor society) was recently honored with the 2015-2016 IEEE-

HKN Outstanding Chapter Award. This national award is presented to IEEE-HKN chapters in recognition of documented excellence in their chapter administration and programming. The UConn Chapter was one of 21 chapters selected for their outstanding performance and the value they bring to their members, peers, and the university.

The Award was presented at a reception held in conjunction with the annual meeting of the Electrical and Computer Engineering Department Heads Association (ECEDHA) in March 2017.

A UConn team of students competed in a MITRE-sponsored embedded systems security competition "Capture the flag" in 2017 and got first place. The team was led by (now graduated) ECE undergraduate students **BRIAN MARQUIS** and **PATRICK DUNHAM** and included graduate student **CHENGLU JIN** and 2 CSE undergraduate students.



Left to Right: Patrick Dunham and Brian Marquis with the award plaque.

UNDERGRAD STUDENT PROFILE & NEWS



AMY ROBINSON is a senior honors electrical engineering student, who is passionate about research in electromagnetics. She has been working in **PROFESSOR ALI BAZZI'S** Applied Power Electronics and Electric Drives lab (APEDL) since her sophomore year, starting with computer simulations to support other lab projects. Her current research in the APEDL lab is funded by an IDEA Grant. She hopes to install small-scale wind turbines on the campus to enhance the use of green technologies. Because of her experience in the lab, Amy received an internship at Otis Elevators to design a linear motor for elevator applications. She is in the process of applying for a patent on her innovative work. Amy also worked as an undergraduate summer research fellow at the University of Florida Ionospheric Radio Lab. She recently presented preliminary results from this work at the American Geophysical Union conference in New Orleans.

Amy is an active member of several UConn clubs—she was an intern on the Hunger and Homelessness Campaign for CONNPIRG, served two years as treasurer for the Formula SAE team, competed as a rower for the Women's Division I Crew team, and placed as a preliminary finalist for the Innovation Quest. She also works part time at the Center for Students with Disabilities as a tech team member, mentoring students on using assistive technology for notetaking. Amy is looking forward to continuing her studies in applied electromagnetics at the graduate level next fall.

MARTIAL SAWASAWA, a senior working with **PROFESSOR PENG ZHANG**, presented at the 18th National Role Models Conference organized by Minority Access, Inc. It was held in Washington, DC September 29th through October 1st, 2017. He received a Certificate of Achievement for his presentation titled

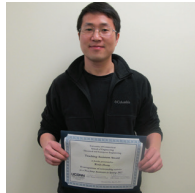
"Introduction of Synchronous converters for stable integration of Renewable energy Sources into the Current Grid."



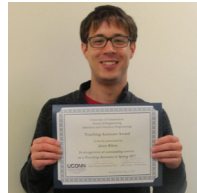
GRADUATE STUDENT AWARDS



Avnish Kumar



Wenjie Huang



James Wilson



Yiqi Liu

AVNISH KUMAR received the Fall 2016 Teaching Assistant Award. **JAMES WILSON, WENJIE HUANG AND YIQI LIU** received the award for Spring 2017.

A paper co-authored by **FATEMEH TEHRANIPOOR, WEI YAN, AND JOHN A. CHANDY**, "A Study of Power Supply Variation as a Source of Random Noise," won the Best Paper Award at the 2017 International Conference on VLSI Design held in Hyderabad, India in January 2017.

LINGYU REN gave an invited presentation titled 'Enabling Resilient Microgrid Through Programmable Network' in a Transactions Paper Session of the IEEE Power and Energy Society General Meeting at the University of Chicago's Gleacher Center on July 18, 2017. Lingyu, together with her team (**PROFESSOR BING WANG, PROFESSOR PETER B. LUH, PROFESSOR PENG ZHANG, AND YANYUAN QIN**), pioneers the use of

Software-Defined Networking technologies to enable cyber physical security in microgrids. This technology provides a powerful solution to improve the resilience of our nation's electric power infrastructures and is a key to mitigate outages caused by natural disasters such as Hurricanes Harvey and Irma.

YAN LI was named the 2017 UTC-IASE Endowed Graduate Fellow for her outstanding scholarly work in formal analysis and microgrids. She has contributed 20 peer-reviewed publications including 9 papers in leading journals and is co-authoring (**WITH PROFESSOR PENG ZHANG**) a book on microgrids to be published by Cambridge University Press in 2018.

KUSHBOO MITTAL was awarded the first prize in the doctoral symposium at a recent conference organized by the Prognostics and Health Management Society.



NIMA KARIMIAN, (above at right) a fourth year Ph.D. student, received the IAPR TC4 Best Student Paper Award from the International Joint Conference on Biometrics held in Denver, Colorado in October 2017. The paper, "On the Vulnerability of ECG Verification to Online Presentation Attached" was coauthored by **DR. DOMENIC FORTE** and **DR. DAMON WOODWARD** of the University of Florida.

EVENTS & CONFERENCES

FOURTH ANNUAL CyberSEED



Rabia Chaudry

UConn and the **COMCAST CENTER OF EXCELLENCE FOR SECURITY INNOVATION (CSI)** sponsored the Fourth Annual CyberSEED conference on October 19-20, 2017. The conference brought together information security professionals and business leaders from across the nation. The event featured 27 industry and academic speakers with talks on IoT security, privacy, networking, cybersecurity workforce diversity, and others. The highlight of the conference was a keynote speech by Rabia Chaudry, the acclaimed author of *Adnan's Story*. Her talk focused on the challenges of maintaining privacy in a world that is awash with personal data.

In addition to the conference, CyberSEED also held Cybersecurity Challenges, hosting 48 teams from 26 colleges across the country, including UConn. The competitions were "Capture the Flag" where they performed various cybersecurity defense and attack tasks, "Social Engineering" which simulated identity theft, and "Application Security" where teams built and then attacked a web application.

A total of \$68,500 was available in prizes. The First Place teams were each awarded \$10,000. The University of Central Florida won the Capture the Flag and Application Security challenges. Florida State University won the Social Engineering challenge.

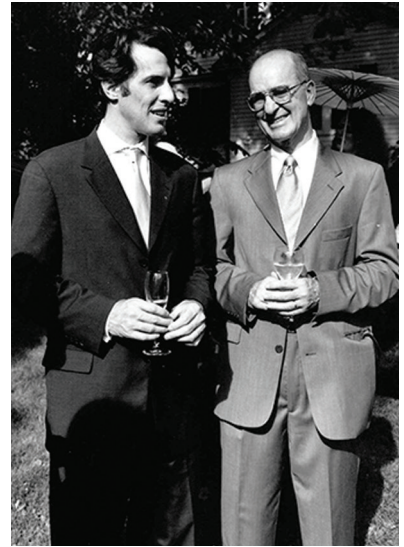


IN MEMORIAM

Professor Emeritus **CHARLES HARRIS KNAPP**, 86, passed away at home on Thanksgiving Day (2017) surrounded by his family and loving wife of 62 years, Charleen Gaudet Knapp. Over the course of his 40-year career at UConn, Dr. Knapp enriched and shaped the lives of innumerable students and inspired an imperishable legacy, The Charles H. Knapp Associate Professorship in Electrical Engineering.

As an Electrical Engineering undergraduate at UConn, Charlie was the first University Scholar from the School of Engineering and member of Tau Beta Phi, Eta Kappa Nu, and Sigma Xi engineering honor societies. Upon graduation in 1953, Charlie served two years of active duty in the U.S. Air Force before earning his Master's degree from Yale University and working for RCA and IBM. He returned to UConn in 1958 and became the first candidate awarded a Ph.D. in Electrical Engineering. He served on the Engineering faculty at UConn for his entire career conducting research, teaching, consulting, and achieving the rank of full Professor. He retired in 1992 as Professor Emeritus.

In 2012, the Knapp children honored their father with a generous donation establishing The Charles H. Knapp Associate Professorship in Electrical Engineering. Explaining the decision to create an associate professorship, typically given to newer, upcoming faculty, Charlie said, "The younger professors have the freshest education and ideas and are looking for places where they can grow. This professorship will give its holder an edge and will be very helpful in retaining the best associate professors. It is important for the university and the college if we can keep them here, and it's good for local industry, as well."



Robert (left) and Charles '53, '62 Knapp.
(Photo courtesy of The UConn Foundation)



COMMENCEMENT 2017

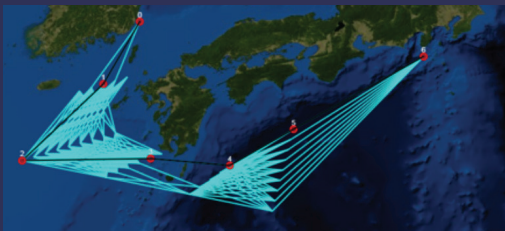
RESEARCH NEWS

Navigating Above, On, and Below the Stormy Seas

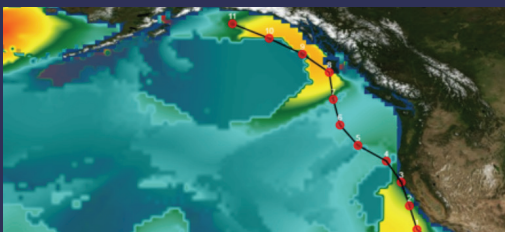
UConn Board of Trustees Distinguished Professor **KRISHNA PATTIPATI** and his research team, made up of graduate students **VINOD AVVARI, ADAM BIENKOWSKI, DAVID SIDOTI, AND LINGYI ZHANG**, and undergraduate students, junior **MATTHEW MACESKER** and senior **MICHELLE VOONG**, have worked hard the past few years developing an algorithmic tool that is gaining widespread popularity within the US Navy. The tool is called **TMPLAR** (Tool for **M**ulti-objective **P**lanning and **A**sset **R**outing).

In early October, Pattipati and student David Sidoti traveled to San Diego to demonstrate their tool's capabilities to the Space and Naval Warfare (SPAWAR) Systems Center-Pacific, where their algorithm suite was to be integrated with a soon-to-be operationalized tool for aircraft carrier strike group planning.

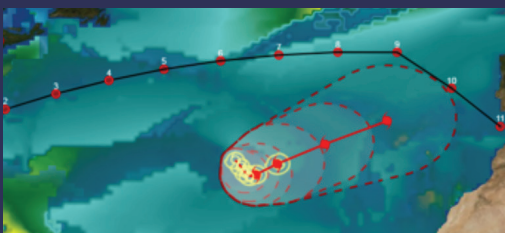
Because of the perceived importance of Pattipati's work, a team within the Naval Research Laboratory-Monterey has been dedicated to enhancing the tool's usability and applicability to position it as a web service to be used by Fleet Weather Center navigators in Norfolk, Virginia and San Diego, California. TMPLAR has garnered the interest of the Department of Energy and has even been noticed by some inside the Pentagon for its many uses, and for its potential to optimize complex problem spaces for different types of vehicles/assets, in an energy-efficient manner. It provides several capabilities previously unavailable, such as dynamic gridding of the world's oceans and route guidance that takes into consideration training objectives, while also considering the weather. The tool can be used to route ships, submarines, unmanned aerial vehicles, and even has embedded algorithms for racing sailboats.



TMPLAR creates gridded networks across the surface of the earth and, using bathymetry services provided by the Naval Research Laboratory, can route ships of various classes from start to end, while optimizing and potentially saving thousands of gallons of fuel.



Making use of various weather data available, TMPLAR intelligently recommends routes to Navy navigators.



TMPLAR suggests a route that avoids a tropical cyclone (illustrated using the "cone of uncertainty") in the Atlantic Ocean, while taking into consideration environmental impacts like sea and swell heights, wind and current directions, and even air temperature.

(Research in UCONN's Cyberlab is supported by the U.S. Office of Naval Research under contracts #N00014-16-1-2036 and #N00014-12-1-0238, by the Naval Research Laboratory under contract #N00173-16-1-G905, and by the Department of Defense High Performance Computing Modernization Program under subproject contract #HPCM034125HQU.)

NEW FACULTY

NECMI BIYIKLI joined UConn in the fall of 2017. He is also a member of the Center for Clean Energy Engineering (C2E2) and the Institute of Materials Science (IMS).



He received his Ph.D. from Bilkent University, Turkey in 2004. Dr. Biyikli's most recent position was as a Research Fellow at Utah State University. His

areas of expertise are atomic layer deposition (ALD), semiconductor thin films and (opto) electronic devices, nanoscale energy materials, flexible and wearable electronics, smart/tunable materials, environmental sensing, selective materials processing.

RETIREMENT

Professor **GEOFF TAYLOR**, Fellow-IEEE, retired in 2017 after twenty-three years of distinguished service at UConn. Not only has he generated valuable IP for UConn through his numerous patents in micro-electronics and photonics, but he has also worked tirelessly to transfer the technology for practical applications. He is currently in the process of launching a new technology venture and we wish him all the best.



Engineers Bury Time Capsule

The artifacts that we are placing in this capsule are the results of many decades, if not centuries, of the technological evolution of the human race.

— Kazem Kazerounian, Dean

A little more than 100 years after UConn Engineering first offered a four-year degree, the School sealed and buried a time capsule that will be opened in another 100 years on the grounds of the new Engineering and Science Building.

During the closing event of Engineering's year-long Centennial Celebration, more than 40 faculty, staff, deans, and emeritus faculty members watched as the time capsule – the most recent time capsule on UConn's main campus – was placed in a special cement container.

Among the officials who spoke during the ceremony, engineering dean Kazem Kazerounian discussed the importance of physical artifacts in triggering memories.

"We all believe and hope that we will continue living in memories, and nothing is a stronger key to memories than artifacts," Kazerounian said. "The artifacts that we are placing in this capsule are the results of many decades, if not centuries, of the technological evolution of the human race. I would give anything to know what people will think about these artifacts 100 years from now."

Both the time capsule itself and the ceremony were organized by Heidi Douglas '77 (CLAS and UConn Engineering Academy of Distinguished Engineers), director of alumni relations for the School.

The capsule holds some current technology developed at UConn, such as a superconductor fabricated by Materials Science and Engineering, electrodes from Biomedical Engineering, and a couple of 3-D printed objects from the Mechanical Engineering Department and the Additive Manufacturing Center.

Other items include a flag that was taken to the International Space Station by Richard Mastracchio '82 (ENG), a slide rule, a UConn recruitment video from the late 1990s, and a handheld digital multimeter routinely used by UConn EE students in 2017. More than 60 items in total were buried.

The time capsule was sealed in an ultra-high performance, fiber-reinforced concrete vault that was fabricated by associate professor of civil and environmental engineering Kay Wille's Advanced Cementitious Materials & Composites Laboratory. Wille, structural engineering

"The building has no interior walls," Accorsi said. "There's a common central area in the middle for shared facilities and shared lab space, with workbenches around the perimeter for students so they can work individually and then share the common area."



Ph.D. student Dominic Kruszewski, and senior machine shop engineer Peter Glaude fabricated the vault.

The capsule is buried in front of the new Engineering & Science Building, which opens this fall. Engineering will occupy three of the five stories of the building. Senior associate dean of UConn Engineering Michael Accorsi said the layout of the new structure will encourage collaborative research by having an entirely open working environment.

Each floor occupied by Engineering will have a different research theme: the first floor is dedicated to cyber physical systems, robotics, autonomous vehicles, and augmented reality; the fourth floor is devoted to biomaterials and biodevices; and the fifth floor will contain energy systems, and environmental and chemical processes. Each floor will support about 60 to 70 graduate students and 10 faculty members.

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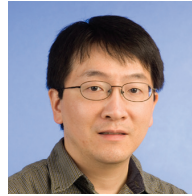
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FACULTY PROFILES

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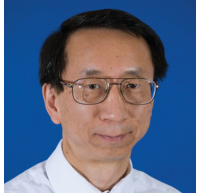
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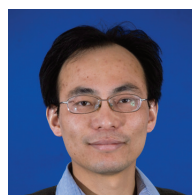
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ADAM BURNS is a senior honors student studying Electrical Engineering with a minor in Math. When Adam came to UConn in the Fall of 2014, he knew he wanted to get involved in one thing: radio. After going through the WHUS training course and passing an air-check, Adam was able to secure a slot for the Spring 2015 semester. Since then, Adam has hosted his weekly radio show on 91.7 WHUS Storrs. Every Tuesday, 7-8 a.m., listeners on campus and around Connecticut can tune in to hear the best of 20th Century Music, with musical selections ranging from Pop and Rock to Soul and Doo-Wop, along with colorful commentary by the host. After graduation, Adam plans on working in Connecticut, while saving enough money to pursue a law degree.

The Radio Man