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.

Please send correspondence and address corrections to the address below or email rajeev.bansal@uconn.edu.

Rajeev Bansal
University of Connecticut
Department of Electrical and Computer Engineering
371 Fairfield Way, UNIT 4157
Storrs, CT 06269-4157

The creative efforts of the School of Engineering staff members Chris LaRosa and Mary McCarthy are gratefully acknowledged.
I am pleased to share with you the Winter 2017 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. The School of Engineering celebrated its centennial year (2016) with a host of special activities including a gala in Hartford on November 11th. There I had the pleasure of meeting JAMES D. BOWEN and MILTON ROBERT PORTER, two of our EE alumni from the class of 1950. It was evident that, while a lot of things have changed in the department since those early days, one constant has been the steadfast enthusiasm of our alumni for their alma mater. 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.

MESSAGE FROM THE DEPARTMENT HEAD

Rajeev Bansal
Professor and Head

FACULTY
27 tenured/tenure track faculty

CURRENT STUDENTS
321 undergraduate students
64 BSE degrees granted
152 graduate advisees
15 Ph.D. degrees granted

RESEARCH UPDATE
131 journal articles
159 conference papers
127 active research projects
$7.9M in research expenditures

Connecticut Governor DANNEL MALLOY speaks to the guests during the UConn Engineering Gadget Gurus Gala.
ANDREW HOFFMAN (BSE ‘53) was recently inducted into the UConn Academy of Distinguished Engineers. Andy worked at the United Technology Corporation (UTC) for 34 years, eventually becoming the Executive Vice President of the Hamilton Standard Aerospace division. At Hamilton Standard, Andy led the programs for Lunar Module Life Support System, the Skylab crew equipment, and the Space Shuttle Life Support System. Andy was one of the engineers responsible for helping the Apollo 13 crew return home after a liquid oxygen tank exploded and knocked out the life-support systems to the command module.

ROBERT HOTALING (BSE ’01), the founder of Verbi Security, donated an intelligent gunshot detection and IP device unification platform to UConn. His company’s system detects gunshots or explosions, sends information to campus police through an automated system in a matter of seconds, and links the location to maps and video cameras. “That, to me is the difference here; we’re a mobile first solution. We leverage mobile devices to get instant notifications,” said Hotaling.

LOUIS PARRILLO (BSE ’64) has been a member of the National Academy of Engineering since 1996 for his contributions to device and fabrication technology for integrated circuits. We recently asked him what advice he would offer to our current students. Here are edited excerpts from that conversation:

Louis on Life at UConn: “To help guide your academic career, seek external advice from successful people in your areas of interest – most are willing to help. Participate in professional societies. Volunteer your time to help others – it will come back manyfold.”

Louis on Life Post-graduation: “Collaborate and get outside your immediate area of focus. Try to see how your department is involved with other departments. If you’re technical, make connections to the business side and vice versa. Openly share. Get others involved.”

ZHEN JANE WANG (Ph.D. ’02), currently a professor in the Department of Electrical and Computer Engineering at the University of British Columbia, Canada, was elected a Fellow of the IEEE for her contributions to statistical signal processing for multimedia security and brain data analytics.

ALUMNI NEWS

The Senior Design Day was held April 29, 2016 at Gampel Pavilion. After two semesters of hard work, 22 teams in ECE demonstrated their projects to students, faculty, corporate sponsors, and visitors.

The “Autonomous Firefighting Robot” team, advised by Professor JOHN AYERS, was awarded first place. The “Fiber Optic Control System for an Electric Motor” team sponsored by Electric Boat and advised by Professor ERIC DONKOR took second place. Third place was awarded to the “Design and Implementation of an Intelligent Sensor Network” team, advised by Professor SHALABH GUPTA.
STUDENT AWARDS

ENGINEERING GRAD STUDENT LEADS HIGH SCHOOLERS AT NASA ROVER CHALLENGE

TAOFEEK OREKAN, a UConn National Science Foundation Graduate STEM Fellow in K-12 education, served as advisor to a team of eight high school students from Hartford Public High School’s Academy of Engineering and Green Technology in the NASA Human Exploration Rover Challenge at the U.S. Space and Rocket Center April 7-9, 2016. Taofeek and his team won the Rover Challenge Race 2016 Frank Joe Sexton Memorial Pit Crew Award. This is the second year he has led the team.

The Human Exploration Rover Challenge, previously known as the Great Moonbuggy Race, is an annual competition sponsored by NASA for high school and college students. The teams designed, constructed, and tested pedal-powered rovers that had to go over a variety of landscapes designed to mimic planets, moons, asteroids, and comets. The teams also had to create their own wheels for the competition.

Taofeek also recently served as a Session Chair of MTS/IEEE OCEANS’16, Monterey, CA. OCEANS is the most prestigious conference in ocean engineering. It is an uncommon distinction for a Ph.D. candidate to be selected as session chair in a top conference.

GRADUATE STUDENT TEACHING AWARDS

WEIQIANG CHEN received the Fall 2015 Teaching Assistant Award and ZHIYANG JIA and ABDIEL RIVERA received the award for Spring 2016.

GRADUATE STUDENT CO-HOSTS A WORKSHOP

LINGYU REN, an ECE Ph.D. candidate, recently co-hosted the Energy Reliability/Microgrids for Rural Municipalities Workshop with the Connecticut Center for Advanced Technology (CCAT) in East Hartford. This microgrid workshop disseminated the study results by Lingyu and three ECE undergraduate students KEVIN BURKE, HUNTER FINNERAN and ELIA D’ONOFRIO. Their work was well received by representatives from municipalities and industries and various interested stakeholders, and they were highly complimented by the managers from US Department of Agriculture (USDA) and Connecticut Department of Energy and Environmental Protection (DEEP).
UConn and the Comcast Center of Excellence for Security Innovation (CSI) sponsored the Third Annual CyberSEED conference on October 10-11, 2016. The conference brought together information security professionals and business leaders from across the nation. The event featured 38 industry and academic speakers with a focus on rise of ransomware, geopolitical security, DevOps security, and workforce. The highlight of the conference was the panel featuring the technical team behind the hit TV show *Mr. Robot*. The panelists captivated attendees with a behind-the-scenes look at the cybersecurity themes on the show.

In addition to the conference, CyberSEED also hosted nearly 200 students on 47 teams from 26 colleges across the country, including UConn, who participated in Cybersecurity Challenges. The competitions were “Capture the Flag” where they performed various cybersecurity defense and attack tasks, “Social Engineering” which simulated identity theft, and “Secure Coding” where they identified and fixed insecure code in a web application.

Of the $80,000 in prizes, the First Place Teams were each awarded $10,000. The University of Central Florida won the Social Engineering and Secure Coding challenges. The University of Tulsa won the Capture the Flag challenge.

Professor RAJEEV BANSAL’S book of essays *From ER to E.T.: How Electromagnetic Technologies Are Changing Our Lives* was published by Wiley in January 2017 as part of the IEEE Press Series on Electromagnetic Wave Theory. The book explores the broad field of electromagnetics, including its foundations, scientific underpinnings, ethical issues, and myriad applications.

The 25th Annual Connecticut Microelectronics Consortium (CMOC) conference was held April 6, 2016 at the Dodd Research Center at UConn. Professor FAQUIR JAIN served on the conference steering committee. The invited keynote talks included:

- Huiming Bu, IBM Semiconductor Technology Research
- Lode Lauwer, Interuniversity MicroElectronic Center (IMEC), Belgium
- Robert Westervelt, Center for Nanoscale Systems at Harvard University

The 29th edition of the IEEE Defect and Fault Tolerance in VLSI and Nanotechnology Systems Symposium, DFT was held on September 19 and 20, 2016 at the UConn. This annual conference provides an open forum for presentations in the field of defect- and fault- tolerance. One of the unique features of this symposium is to combine new academic research with state-of-the-art industrial data, necessary ingredients for significant advances in this field. The conference featured two keynote presentations, and 30 technical papers with authors hailing from 12 different countries. The opening keynote speaker was Dr. Vilas Sridharan of AMD Inc. His talk was titled “Memory Errors in Modern Systems”. Professor Swarup Bhunia of the University of Florida delivered the keynote on the second day of the conference. His talk was titled “Security versus Test and Reliability: the Crossroads and Beyond.” Professor OMER KHAN served as the General Chair.
**FACULTY NEWS**

**KRISHNA PATTIPATI** has been selected as a Board of Trustees Distinguished Professor. This is the most prestigious faculty award at UConn. He is the third (after YAAKOV BAR-SHALOM and BAHRAM JAVIDI) ECE faculty member to achieve this distinction.

**ALI BAZZI** was appointed the UTC Professor of Engineering Innovation in the School of Engineering. Ali was also appointed Editor-in-Chief of the IEEE Transportation Electrification eNewsletter, Associate Editor for the IEEE Journal on Emerging and Selected Topics in Power Electronics (IEEE JESTPE), and Guest Editor for the Journal Energies for a special issue on “Power Electronics Optimal Design and Control”.


**PROFESSOR PATTIPATI’S TEAM WINS A UCONN LEVEL 1 ACADEMIC PLAN PROJECT COMPETITION**

Led by Professors George Bollas, KRISHNA PATTIPATI, Parasara Duggirala, and Ming-Hui Chen, the project entitled “the Bayesian Design of Tests for Fault Detection and Isolation in Complex Systems” has been awarded $200,000 in a university-wide competition. This project aims to seed interdisciplinary and collaborative work on active methods for hard-to-detect-and-isolate faults in complex systems generating large amounts of heterogeneous data. In collaboration with the United Technologies Aerospace Systems and with applications inspired by the aerospace industry, the investigators’ aim is to enable the cost-effective and safe operation of modern cyber-physical systems, such as transportation, commercial buildings, manufacturing, energy systems, and emergency response systems, which are all critical to the growth of the State’s industrial base.

The late Professor MARTIN D. FOX and three of his former graduate students, Chunming Li, Chenyang Xu and Changfeng Gui were given the Best Paper Award at the IEEE Signal Processing Society Conference in March 2016 for their paper entitled “Distance Regularized Level Set Evolution and Its Application to Image Segmentation”.

*At right: Professor JOHN AYERS* was recognized for 25 years of service at the Employee Appreciation Breakfast on April 12th, 2016.
NEW FACULTY AND STAFF NEWS

ABHISHEK DUTTA joined UConn in the fall of 2016. He holds a joint appointment in the department of Mechanical Engineering. He received his Ph.D. from Ghent University, Belgium in 2014. Dr. Dutta was most recently a post-doctoral fellow at the University of Illinois at Urbana-Champaign. His research interests are control systems, optimization, mechatronics, cyber-physical systems security, and systems engineering.

SHANE EAGLESON recently joined the departmental staff to support our teaching laboratories and the IT infrastructure. He previously served in the U.S. Navy, where he graduated from the Electrical/Electronic Engineering Technology School. Prior to joining UConn, he was a Senior Systems Engineer with AT&T.

ALTHEA LOZEFISKI started in the summer of 2016 as the Undergraduate Academic Advisor for the ECE Department. She will provide academic counseling to our freshmen and sophomores. She served previously as the Program Assistant for the Environmental Engineering Program in the Civil & Environmental Engineering Department.

DEPARTURES

ECE OFFERS ITS BEST WISHES TO THE FOLLOWING DEPARTING FACULTY AND STAFF MEMBERS:

Dr. EBAD JAHANGIR, Visiting Professor and Director of Operations for the UTC-Institute for Advanced Systems Engineering (UTC-IASE) during 2015-16, has returned to the United Technologies Corp. He continues his affiliation with UConn as a Research Professor.

Professor QUING ZHU relocated in 2016 to Washington University in St. Louis, Missouri. She continues her affiliation with UConn as a Research Professor and is supervising several doctoral students in the ECE Department.
STUDENT AWARDS

BEST CONFERENCE PAPER AWARDS

Gang Yao, a Ph.D. student in ECE, received the Best student paper award – 2nd runner up at the 2016 International Conference on Information Fusion, held at Heidelberg, Germany. The paper “Gyro-aided Visual Tracking Using Iterative Earth Mover’s Distance” was co-authored by M. Williams and A. P. Dani.

A paper by Lingyi Zhag, David Sidoti, Krishna Pattipati and David Castanon (Boston University) won the Best Student Paper Award at the 2016 International Conference on Information Fusion held in Heidelberg, Germany. The prize was shared by the two students.

Undergraduate Student Awards

Kelly Higinbotham won recognition as the IEEE Schweitzer Meritorious Scholar. Schweitzer Scholar designation is awarded to the IEEE Power & Energy Society (PES) Scholars based on their exceptional academic performance and interest in the field of power engineering. Kelly was ranked #1 among all applicants from the universities in the Northeastern U.S. (IEEE Region 1). Kelly also received the John W. Estey Outstanding Scholar award which is given to the top PES Scholars in each of the six IEEE U.S regions and Canada.

Ethan Freund also received a prestigious scholarship from the IEEE PES Society Scholarship Plus Initiative for 2016-2017. The initiative recognizes undergraduate students who have declared a major in electrical and computer engineering, are high achievers with strong GPAs as well as distinctive extracurricular commitments, and are committed to exploring the power and energy field.

Kelly and Ethan were among the 29 awardees from IEEE Region 1 (Northeastern U.S.) universities for this year’s competition.
ANWAR, A.F.
Professor; Fellow, SPIE; Member, CASE
Quantum size effect devices; transport in semiconductor devices; high frequency noise in electronic devices; GaN-based high power devices
a.anwar@uconn.edu

AYERS, JOHN E.
Associate Professor
Semiconductor materials, heteroepitaxial growth and characterization; defect engineering in heteroepitaxial semiconductors; semiconductor devices; VLSI fabrication
john.ayers@uconn.edu

BANSAL, RAJEEV
Professor & Head; Fellow of the Electromagnetics Academy; Member, CASE
Applied electromagnetics
rajeev.bansal@uconn.edu

BAR-SHALOM, YAAKOV M.
Board of Trustees Distinguished Professor & Marianne E. Klewin Endowed Professor in Engineering; Fellow, IEEE; Member, CASE
Target tracking with radar, sonar, and infrared sensors; air traffic control, data fusion for surveillance systems with multiple sensors
yaakov.bar-shalom@uconn.edu

BAZZI, ALI
UTC Assistant Professor of Engineering Innovation
Member, IEEE; IEEE PELS; IEEE IAS
Power electronics; motor drives; electric machinery; renewable energy integration in micro-grids
bazzi@uconn.edu

CAO, YANG
Associate Professor
High voltage engineering; HVDC materials; grid asset management
yang.cao@uconn.edu

CHANDY, JOHN A.
Professor & Associate Head
Distributed storage; clustered file systems; networking, hardware, parallel architectures; VLSI design and automation
john.chandy@uconn.edu

DANI, ASHWIN
Assistant Professor
Estimation and control theory; robotics; autonomous navigation
ashwin.dani@uconn.edu

DONKOR, ERIC
Associate Professor; Fellow, SPIE; Member, CASE
Fiber optic high-speed digital and high-frequency network implementation; quantum computing and communications
eric.donkor@uconn.edu

DUTTA, ABHISHEK
Assistant Professor
(jointly with Mechanical Engineering)
Control systems; optimization; mechatronics; cyber-physical systems security; systems engineering
abhishek.dutta@uconn.edu

ESCABI, MONTY
Associate Professor; Member CASE
Human perception of sound; neuronal processing of sound information; neuronal modeling
monty.escabi@uconn.edu

GOKIRMAK, ALI
Associate Professor
Nanofabrication, micro and nanoelectronics; thermo-electrics; electrical characterization; transport; electrical materials processing
ali.gokirmak@uconn.edu

GUPTA, SHALABH
Assistant Professor
Cyber physical systems; distributed intelligent systems; robotics; autonomous systems; statistical learning and perception; information fusion; fault diagnosis & prognosis in complex system
shalabh.gupta@uconn.edu

JAIN, FAQUIR C.
Professor; Fellow, SPIE; Member, CASE
Design & fab of sub-22nm FETs & circuits; quantum dot nanophosphor displays, lasers & modulators; CNT biosensors
faquir.jain@uconn.edu

JAVIDI, BAHRAM
Board of Trustees Distinguished Professor; Fellow, IEEE, OSA, SPIE, and AIMBE. Member, CASE
Optics for information systems; 3D imaging; 3D display; 3D visualization; information security; nano technologies for imaging; 3D microscopy; quantum imaging; bio-photonics
bahram.javidi@uconn.edu

KHAN, OMER
Assistant Professor
Computer architecture; large-scale multicores; architectures for heterogeneity, energy-efficiency, reliability, security, data and programmability; scalable on-chip communication, memory models and networks; hardware/software co-design
omer.khan@uconn.edu
FACULTY PROFILES

LUH, PETER B.
SNET Professor of Communications & Information Technologies; Fellow, IEEE; Member, CASE
Planning, scheduling & coordination of design, manufacturing and service activities; power system market design and load/price forecasting; energy smart and safe buildings
peter.luh@uconn.edu

WANG, LEI
Associate Professor
Low power, high performance integrated Microsystems; design methodologies for ASIC/SOC; VLSI signal processing algorithms and architectures
lei.3.wang@uconn.edu

PARK, SUNG YEUL
Associate Professor
Intelligent power conditioning systems; energy conversion; renewable energy integration; microgrid and smart grid applications
sung_yeul.park@uconn.edu

WILLETT, PETER K.
Professor, Associate Director, BECAT. Fellow, IEEE
Detection; target tracking; communication; signal processing
peterswillet@uconn.edu

PATTIPATI, KRISHNA R.
Board of Trustees Distinguished Professor; UTC Professor of Systems Engineering; Fellow, IEEE; Member, CASE
Optimization; prognostics and diagnostics; inference and decision making under uncertainty; multi-object tracking; adaptive organizations
krishna.pattipati@uconn.edu

ZHANG, LIANG
Assistant Professor
Systems and control with applications to manufacturing, service, and battery systems
liang.zhang@uconn.edu

ZHANG, PENG
Assistant Professor
Smart grid; power systems reliability; grid integration of wind and solar energy; real time power system simulation; power quality
peng.zhang@uconn.edu

ZHOU, SHENGLI
Professor. Fellow IEEE, Member, CASE
Wireless communications; signal processing for communications; underwater acoustic communication and networking
shengl.zhou@uconn.edu

AFFILIATED FACULTY
Balakumar Balasingam, Assistant Research Professor
Molly Brewer. Research Professor.
Anthony DeMaria. Professor in Residence; Member, NAE and NAS.
John Enderle. Research Professor.
David Tonn Adjunct Lecturer

EMERITUS FACULTY
Peter K. Cheo. Fellow, IEEE.
David Jordan
Robert B. Northrop
David Kleinman. Fellow, IEEE
Charles H. Knapp
Matthew Mashikian. Fellow, IEEE
Geoff W. Taylor. Fellow, IEEE

INDUSTRIAL ADVISORY BOARD
Zahi Abuhamdeh, Silicon DFx, Inc.
Frank Chan, Undersea Warfighting Develop. Ctr.
Anthony DeMaria, UConn-ECE Dept.
Jim Fahrny, Comcast
Charles R. Hudson, Jr., Comcast
Richard Kowalski, ISO New England
Robert Madonna, SAVANT
Diana Mahoney, Eversource Energy
Tom Martin, Phonon Corporation
Don Masters, Pratt & Whitney
Eric Mueller, Coherent, Inc
Edmond Murphy, Lumentum
Venk Mutalik, ARRIS Access and Transport
Eric Reed, Cigna
Theodora Saunders, Sikorsky System Engineering
Daniel Serfaty, Aptima, Inc.
Paul Singer, GE Consumer & Industrial Technology
Leo Veilleux, UTC Aerospace Systems
BRYAN DAVIS is a senior honors student studying Electrical Engineering with a minor in Math. He has held several internships during his time at UConn, starting with a summer internship right after his freshman year and a winter internship the following year at Eversource Energy. He continued to gain experience in the field of power engineering by working as a consultant for TRC Companies and as an intern this past summer at Burns & McDonnell. Bryan is currently involved in research with Professor Ali Bazzi in the ECE Department to develop an improved algorithm for identifying faults in induction motors.

Bryan is an active member of the UConn Outing Club, where he follows his passions for hiking, backpacking, snowboarding, rock climbing, and surfing. Bryan also loves traveling. He studied abroad at UNSW in Sydney, Australia during his sophomore year and hasn’t stopped traveling since! Last summer, he traveled to Peru to volunteer in the jungle and backpack to Machu Picchu.

Bryan applied for career opportunities across the spectrum of electrical engineering and has finally accepted a job in the Engineering Leadership Development Program at BAE Systems in Nashua, NH. This is a three year program, in which he will participate in three rotations within different departments of BAE, and will also be able to pursue a technical Master’s degree simultaneously.