2019-2020 ANNUAL REPORT – DATA COLLECTION TEMPLATE -- DEPARTMENTS

Please provide the following information for your department. This information will be used to develop the SoE Annual Report, which will be submitted to the provost. In addition, the information you provide will be used throughout the year for the school's marketing and government relations initiatives, so please be as accurate as possible. Please also submit any photos or information graphics that might help illustrate your department's achievements.

Please provide your data by June 10. If you have questions, please contact Donna Thibault (donna.thibault@uconn.edu) and/or Bethany Javidi (bethany.javidi@uconn.edu).

Name of Department: Electrical and Computer Engineering

Mission Statement. Please provide your department's mission statement

The mission of the Electrical & Computer Engineering (ECE) Department is fourfold:

- *To provide educational programs in Electrical and Computer Engineering and related fields at the bachelor's, master's and doctoral levels of high quality and sufficient breadth and depth to serve industry, government and academic institutions of our State and Nation.*

- *To conduct research and pursue scholarship to advance knowledge and apply that knowledge in areas relevant to our State and Nation in order to meet the demands of the coming information age and global competition.*

- *To serve the State and Nation by making available the accumulated expertise, knowledge and experience of the faculty to industry and government.*

- *To recruit and provide educational opportunities to underrepresented minorities, women and physically disabled students.*

OVERVIEW

In a few paragraphs, please describe your department's strategic activities for the 2019-2020 academic year.

Strategically, the department continues to pursue long-term goals of sustained excellence in research and teaching. A particular focus is increasing undergraduate enrollment through proactive outreach with summer enrichment programs, demonstration projects and targeted calls. Undergraduate students created projects that would be interesting and attractive to high school and middle school students as an introduction to electrical engineering. A robotics engineering undergraduate degree is under development with a target start date of Fall 2021 and it is expected to attract significant number of students. On the research side, the systems group has transitioned over to UTC-IASE from BECAT. The remnants of BECAT have been merged with C3 to create the new Connecticut Advanced Computing Center (CACC). CACC will consolidate all computation related activities in the school including several faculty from ECE.

The department lost Peng Zhang to Stonybrook University and in the upcoming year will be losing Marten van Dijk to CWI and Peter Luh to retirement. A search was initiated at the senior level to replace Peng Zhang, but to date has not produced a sufficiently qualified and diverse pool of applicants. We will continue this search in the upcoming year along with hopefully initiating replacement searches for Marten van Dijk and Peter Luh.

EDUCATION

AY 2019-2020 Student Data: **NOTE: Student data will be obtained by the Undergrad Office and shared with you when it is received.**

Includes EE/CompE	Enrollment*					Degrees Awarded AY19-20	
	Total Enrolled	Male	Female	US minority	Int.		
Undergraduate							
Freshmen	43	28	3	9	4	B.S	71
Sophomores	69	50	8	25	6		
Juniors	97	83	10	36	8		
Seniors	146	120	16	41	7		
Total	355	282	37	111	26		
Graduate							
M.S.	27					M.S.	11
M.Eng.	2					M.Eng.	
Ph.D.	93					Ph.D.	16

*Counting half of CompE

AY 2019-2020 Senior Design Information

# Projects/ Teams	32
# Students Participating	98
# Company Sponsors	25
$ Revenue from Sponsors	$90,333

Please list (and briefly describe, if needed) your department's most important initiatives or accomplishments in undergraduate education.

(1) ECE Mentorship Program with alumni initiated using UConn Handshake
(2) Started creation of undergraduate robotics engineering degree program
(3) Using initiative funds from School of Engineering, seven electrical and computer engineering demonstration projects were created to use at open house and high school events.
(4) **John Ayers**, **Rajeev Bansal** and **Helena Silva** created a new required senior level course, ECE4900W: Communicating Engineering Solutions in a Societal Context. The objective of the course is to strengthen student skills of technical communication, both written and oral communication.
(5) Senior **Evan Faulkner** won best poster award *("Comparison of Coherent and Noncoherent Receivers for IEEE 802.15.4 OQPSK Modulation based on SDR Platforms")* at NEWSDR 2019-9th New England Workshop on software Design. Also, seniors **Brittany Smith**, **Camden Craigie**, and **Samuel Pevsner** presented their paper, *"Whopper Popper: A projectile-Launching System for Self-Feeding Using Facial Recognition and Tracking"* at the IEEE MIT Undergraduate Research Technology Conference held October, 2019
(6) **Joseph DiBenedetto**, a sophomore, was selected to receive the IEEE Power and Energy Society Scholarship Plus Initiative.

(7) **Brittany Smith** has been awarded the prestigious National Science Foundation Graduate Research Fellowship for 2020. She also received the UConn Women's Center Outstanding Senior Women Academic Achievement Award.

Please list (and briefly describe, if needed) your department's most important initiatives or accomplishments in graduate education.

(1) **Yishu Bai**, a Ph.D student advised by Liang Zhang, was selected as a Finalist of the Best Student Paper Award of the IEEE International Conference on Automation Science and Engineering (CASE 2019) for their paper entitled *"An Accurate and Robust Algorithm for Performance Evaluation of Exponential Serial Lines with Finite Buffers"* by **Yishu Bai, Jiachen Tu**, Mengzhuo Yang, Liang Zhang and Peter Denno.

(2) A paper written by graduate students **Andrew Finelli, Zachariah Sutton** and Professors Peter Willett and Yaakov Bar-Shalom was awarded the Best Paper Award at 2019 IEEE Aerospace Conference Track six-"Remote Sensing": *"Taking advantage of Group Behavior When Tracking Multiple Threats in Cluttered Surveillance Data".*

(3) **Qian Yang**, a Ph.D student, was the second recipient of the Vijaya G. Raghavan Fellowship.

(4) Graduate students **Aalvee Kausani** and **Elizabeth Baranovic** were awarded GAANN (Graduate Assistantships in Areas of National Need) fellowships with funding from the U.S. Department of Education.

(5) **Md. Tashfiq Kashem**, Ph.D. student, and **Ryan Saltus**, M.S. student, received the Fall 2019 Teaching Assistant Award

RESEARCH

AY 2019-2020 Research Development Data

Through May 2020 From Kerrie	Expenditures	Proposals Submitted thru May 2020		New Awards **From OVPR quarterly Reports Q1, Q2, Q3**	
		Number	Value $	Number	Value$
Industry	520,204	4	309,791	4	167,904
Federal	5,859,452	36	15,931,840	8	2,201,119
State					
Other	190,730	3	450,418	1	148,009
Total	6,540,386	43	16,692,049	13	2,517,032

AY 2019-2020 Research Products Data

	Number
# Patents Awarded	2
# Journal Papers and Book Chapters	109
# Conference Papers	204

Major Faculty Awards and Honors. *Please include the name of the faculty member and the name of award or honor. Use as many lines as needed.*

(1) **Thomas C. Katsouleas** and **Yang Cao** were inducted into the Connecticut Academy of Science and Engineering (CASE) in May 2020.
(2) **Peter Luh** and **Shalabh Gupta** along with graduate student Danxu Zhang and collaborator Junqian Fan won the 2019 *IEEE Transactions on Automation Science and Engineering* Best Paper Award for their paper "Chiller Plant Operation Optimization: Energy-efficient Primary-only and Primary – secondary Systems."
(3) **Peter Luh** and **Shengli Zhou** were inducted into UConn chapter of National Academy of Inventors (NAI) in December 2019.
(4) **Peter Willett** was awarded the 2020 AAUP Excellence in Research and Creativity Career Award in April 2020.
(5) **David Tonn** received the 2020-21 CETL Outstanding Adjunct Teaching Award in April 2020.
(6) **John Ayers** was awarded the School of Engineering Distinguished Engineering Educator Award in May 2020.
(7) **Rajeev Bansal** received the 2018-2019 ECE Faculty Award for outstanding teaching achievement. He has also become associated with the Consortium for Science, Policy and Outcomes (CSPO) as a Policy Research Scholar.
(8) **Bahram Javidi** received the 2019 William Streifer Scientific Achievement Award from the IEEE Photonics Society. He also received the 2018-2019 ECE Outstanding Research Achievement Award.
(9) **Abhishek Dutta** received the 2019 IEEE Humanitarian Activities Committee Award.

Most Significant Faculty Professional Leadership Positions, *including society officer, journal editorships. Please include the name of the faculty member and the name of leadership position. Use as many lines as needed.*

(1) **Yaakov Bar-Shalom** gave a number of invited IEEE Distinguished Lectures in 2019 include at Tel Aviv University, the Naval Surface Warfare Center and the Naval Information Warfare Center in San Diego.
(2) **Yaakov Bar-Shalom** selected as IEEE Aerospace and Electronics Systems Society Distinguished Lecturer (2020-2022)
(3) **Necmi Biyikli** appointed Chair of the American Vacuum Society - New England Chapter
(4) **Bahram Javidi** served as conference chair for the 2020 SPIE 3D Imaging, Visualization, and Display Conference
(5) **Omer Khan** serving as conference chair for the 2020 International Conference on Computer Design
(6) **Peter Willett** selected as IEEE Aerospace and Electronics Systems Society Distinguished Lecturer (2020-2022)
(7) **Peter Willett** elected as member of IEEE Aerospace and Electronics Systems Society Board of Governors
(8) **Peter Willett** was selected to serve as a member of the National Research Council's Panel on Information Sciences at the Army Research Laboratory (ARL).

OUTREACH

Please list (and briefly describe, if needed) your department's top achievements and initiatives in outreach.

(1) Prepared and distributed a **newsletter** highlighting ECE achievements during the previous year.
(2) Created new summer program in robotics (canceled because of COVID19)
(3) Organized effort to have a few current students to call all admitted female and minority students to help in recruitment
(4) Organized graduate student recruitment booth at national IEEE HKN honor society annual meeting

DEVELOPMENT

Please list (and briefly describe, if needed) your department's top achievements and initiatives in development.

(1) ECE Alumni LinkedIn group has over 300 members. 1/3 of class of 2020 have already joined.
(2) Alumni event at Avery Point was planned for late April. Will be rescheduled.
(3) Explored with Don Swinton the possibility of renaming SNET Professorship

PERSONNEL

Please provide the numbers of faculty and staff in each category.

	FT	PT	Total
Faculty			
Tenured/ Tenure Track	27*		
Research Faculty	2		
Post-Docs	3		
Teaching (In-Residence, Visiting, etc.)			
Adjunct		2	
Total			
Staff			
Administrative	3		
Lab/ Technical	1		
Other			

*includes Thomas Katsouleas

Alumni Accomplishments:

(1) **Robert Eckel** (B.S. '80) named President and CEO of Aware, Inc. in Andover, MA
(2) **Dipayan Ghosh** (B.S. '10), a senior fellow at the Shorenstein Center at Harvard University, published a new book, *Terms of Disservice: How Silicon Valley is Destructive by Design*
(3) **Kuo-Wei Liu** (Ph.D. '94) was appointed President of MingHsin University of Science and Technology (MUST) in Taiwan starting August 1, 2020.
(4) **Sadeed Muneer** (Ph.D. '19) joined United International University in Bangladesh as Lecturer and Undergraduate Program Coordinator in 2019.
(5) **Nafisa Noor** (Ph.D. '19) joined North South University as an Assistant Professor in 2019.
(6) **Jacob Scoggin** (Ph.D. '19) joined the CSE Department at the University of Connecticut as an Assistant Professor in Residence in 2019.
(7) **David Tonn** (B.S. '90, M.S. '94, Ph.D. '07), an engineer at the Naval Undersea Warfare Center (NUWC) Division Newport, won the Vice Adm. Harold G. Bowen Award for Patented Inventions for design improvements to the Submarine Mast Antenna Controller.
(8) **Wei Yan** (Ph.D. '18) will be joining academia as a new Assistant Professor this fall at Clarkson University.