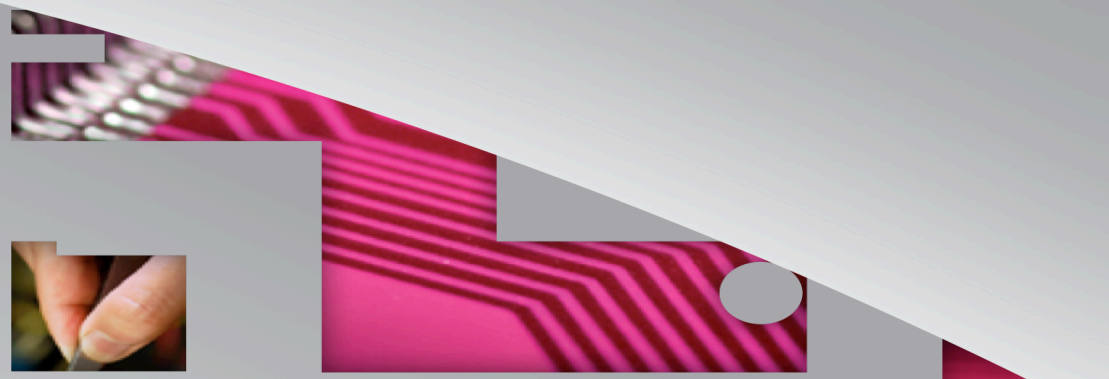
Department of Electrical and Computer Engineering
University of Maryland
December 11, 2020

Joseph JaJa

MERGING LEARNING AND INNOVATION TO SERVE THE NEEDS OF THE STATE, THE NATION, AND THE GLOBAL COMMUNITY



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SCHOOL OF ENGINEERING

ECE under the Pandemic

- All activities and business operations continuing as usual:
  - Online and Hybrid Teaching is going well overall – roughly 20% in person
  - All the research activities continuing almost as before, including experimental research
  - Doing very well in research funding and enhancing collaborative efforts
- New Enrollment Numbers for Fall 2020 are stronger than last year except for international students.

Fireside Chat Series

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

ENEE 408I

CAPSTONE DESIGN PRESENTATION: AUTONOMOUS CONTROL OF INTERACTING ROBOTS

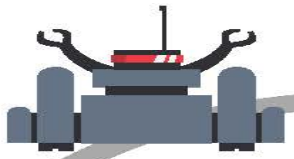
Thursday, December 11, 2020
4:30-5:30 PM
RSVP: go.umd.edu/408

This Fall, students in the Capstone Design Course ENEE408I designed and developed autonomous robotic systems. The robots are wheeled vehicles with on-board sensors (cameras, acoustic sensors), Amazon Echo devices, computers, and wireless communication capabilities. The students worked in teams of three to program their robots to accomplish individual tasks and to program the three team robots to coordinate their activities even though they are in different locations.

Join us on Thursday, December 11th to view student projects and learn more about their experience pivoting from the laboratory to working virtually building their robots at home, during COVID-19.

Session Schedule

4:30-5:00 PM: Student Group Presentations
5:00-5:20 PM: Entrepreneurship, Robotics, and The Maryland Development Center, a Presentation by Professor Gilmer Blankenship
5:20-5:30 PM: Q&A



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Department Updates

- Rankings: U.S. News&World Report – 2021 Best Colleges for Undergraduate Programs:
  - Computer Engineering 17 (up 5 from last year)
  - Electrical Engineering 20 (up 4 from last year)
- Both Graduate Programs ranked 14th
- Significant Enhancements to our Computer Engineering Program

EE Curriculum Review

- Add flexibility and modernize curriculum
  - One required ECE course per area in junior year plus new elective courses at the junior and senior years with hands-on experience.
- Allow possibility of area/specialization tracks
- Increase retention and facilitate graduation rates
- Prepare students for real world and life-long learning
- Satisfy ABET and University Requirements

Major Recent Faculty Awards

- Prof. Ray Liu elected **IEEE President**!
- Dinesh Manocha: **Distinguished University Professor**
- Tom Murphy: 2020-2021 **Distinguished Scholar Teacher** Award
- Prof. Ed Ott elected Foreign Member of the **Academia Europaea**.
- Professors Bruce Jacob and Gang Qu elected **IEEE Fellows**.
- Prof. Yanne Chembo, Member of the **Board of Governors of the IEEE Photonics Society**.

Major Recent Faculty Awards

- Prof. Ray Liu recipient of the **2021 Fourier Award for Signal Processing** for “leadership in and pioneering contributions to signal processing for wireless sensing and communications.”
- J. Gary Eden inducted into the **College of Engineering Innovation Hall of Fame**.
- Major new research awards in hardware security, quantum, communications, biosensors, computational neuroscience, and AI.

New Programs: Good Start

B.S. in Embedded Systems and IoT at Shady Grove – students already enrolled in 5 courses and staffing is progressing nicely.

Undergraduate Academy of Machine Learning, in collaboration with CS – considerable student interest

M.S. in Machine Learning, joint with CS, up to a very good start

Current Plans

- Developing plans for improved teaching, research and operations after the pandemic
- Strengthening our faculty ranks in the areas of quantum, machine learning, cybersecurity, AI/ robotics, IoT, communications/signal processing, and microelectronics.
- Enhancing research portfolio and continue to build capacity and partnerships.
- Enhancing efforts in diversity, equity, and inclusion.

Improved Operation

Teaching and Learning

- Hybrid model using the best of in-person and online teaching
- Different types of courses – shorter modules, year around?
- Student support and advising

Research

- Hybrid professional conferences and meetings that allow remote participation
- Online seminars by distinguished speakers
- Online recruiting and interviews

Current Educational Efforts

Improved EE Curriculum Requirements

- More flexibility and elective courses in emerging areas
- Track oriented

Enhanced Senior Level Courses in Computer Engineering

Improved infrastructure for the Embedded Systems and IoT Program.

Working on a new Professional MS in Cloud Engineering

Enhancing Faculty Ranks (**Under Hiring Freeze !!!**)

Hiring priority areas:

- Machine Learning Algorithms and Applications
- Quantum Information Processing and Technology
- Internet of Things (IoT)
- Cybersecurity joined with MC2
- AI and Robotics

Serious Budget Challenges

Budget Shortfall – FY21:

- Base Budget Cut: $423K
- Expected Loss of Revenue from MS Professional Programs (ENTS and MAGE): $500K
- Fund Balance Sweep: $100K

Help Needed

Fellowships to recruit students from under-represented groups.

Support for mentoring undergraduate students, many of whom are already quite challenged in dealing with the pandemic

Support for equipment upgrades in design and project oriented courses – Machine Learning program

Graduate fellowships in emerging strategic areas

Conclusion

- Department doing very well overall in terms of education and research: more students, new and revised courses, more proposals, and more outreach efforts.
- All new programs are up to a very good start, and currently developing new programs and enhancing existing ones.
- Confronting major challenges due to budget shortfall and hiring freeze.