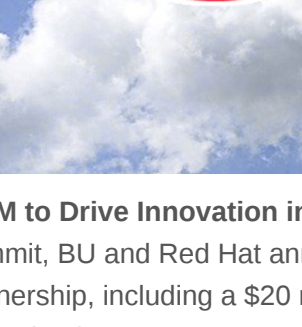
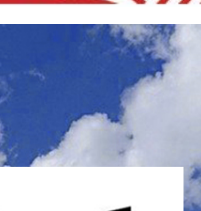


# ECE 2021 FALL NEWSLETTER

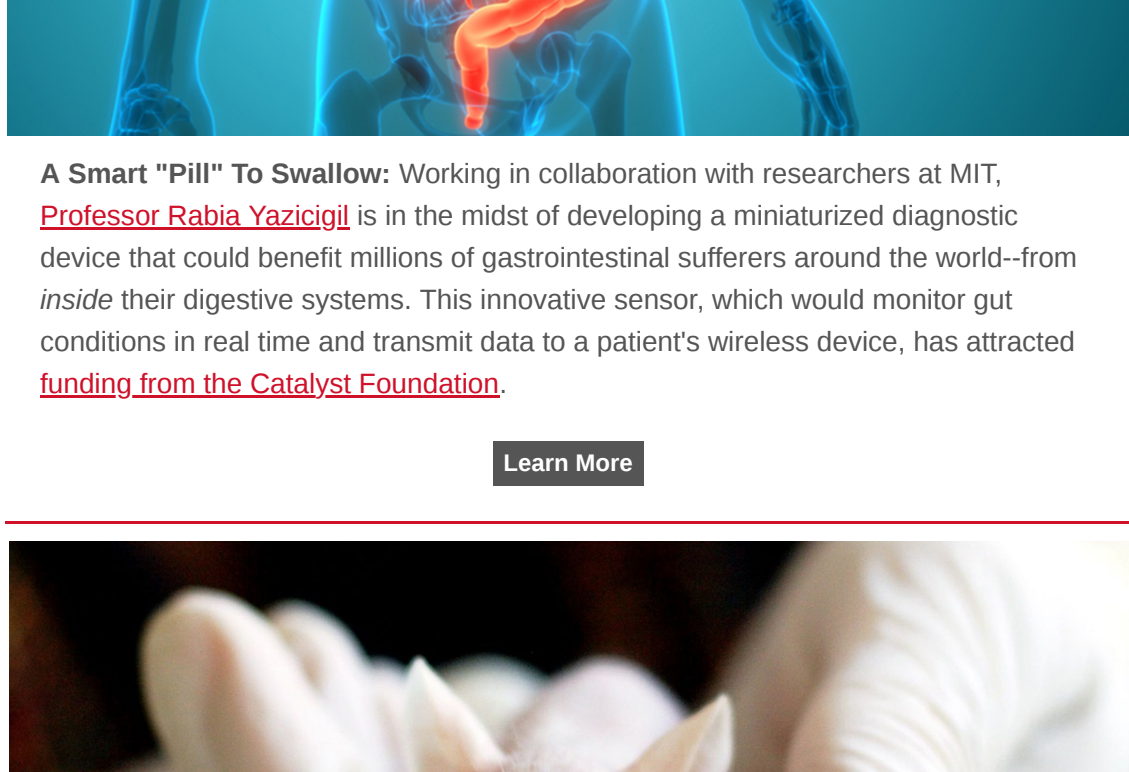
Click here to check out the BU ECE **2020-21 IMPACT REPORT!**



# Red Hat

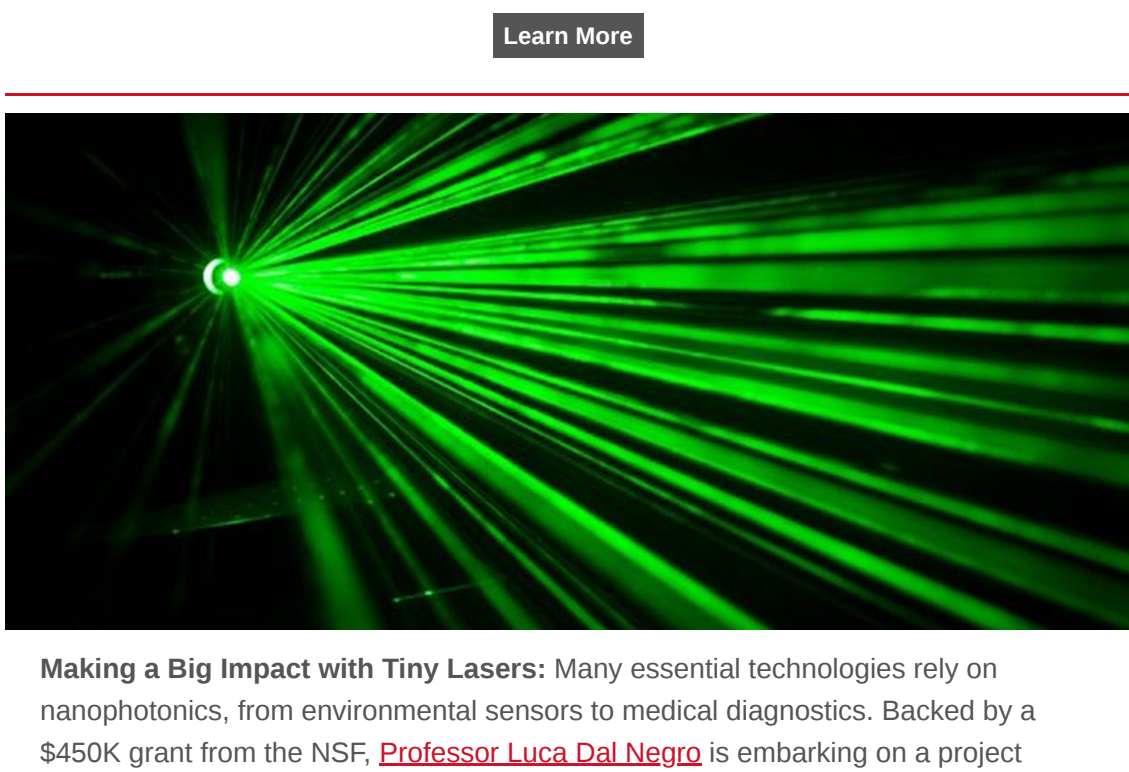
**\$20M to Drive Innovation in Open Source Technology:** At the 2021 Red Hat Summit, BU and Red Hat announced a renewal and expansion of their existing partnership, including a \$20 million contribution from Red Hat towards research and education in open source technology and cloud systems.

[Learn More](#)



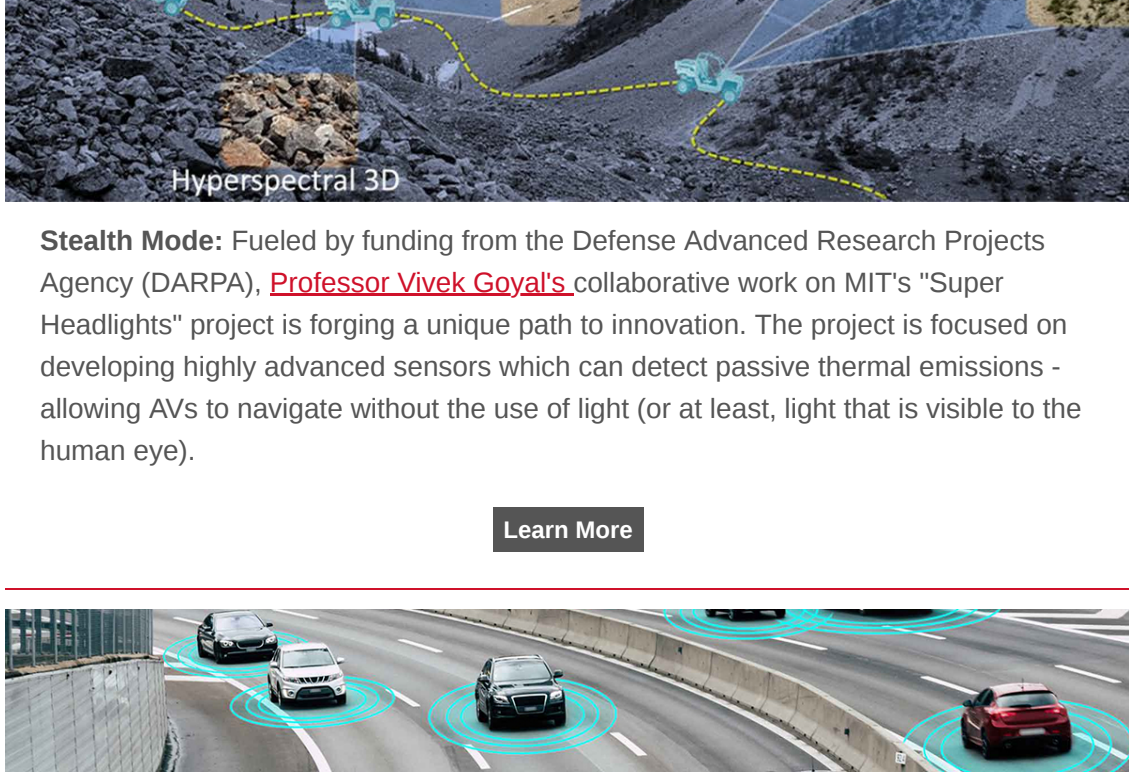
**A Smart "Pill" To Swallow:** Working in collaboration with researchers at MIT, [Professor Rabia Yazicigil](#) is in the midst of developing a miniaturized diagnostic device that could benefit millions of gastrointestinal sufferers around the world--from inside their digestive systems. This innovative sensor, which would monitor gut conditions in real time and transmit data to a patient's wireless device, has attracted [funding from the Catalyst Foundation](#).

[Learn More](#)



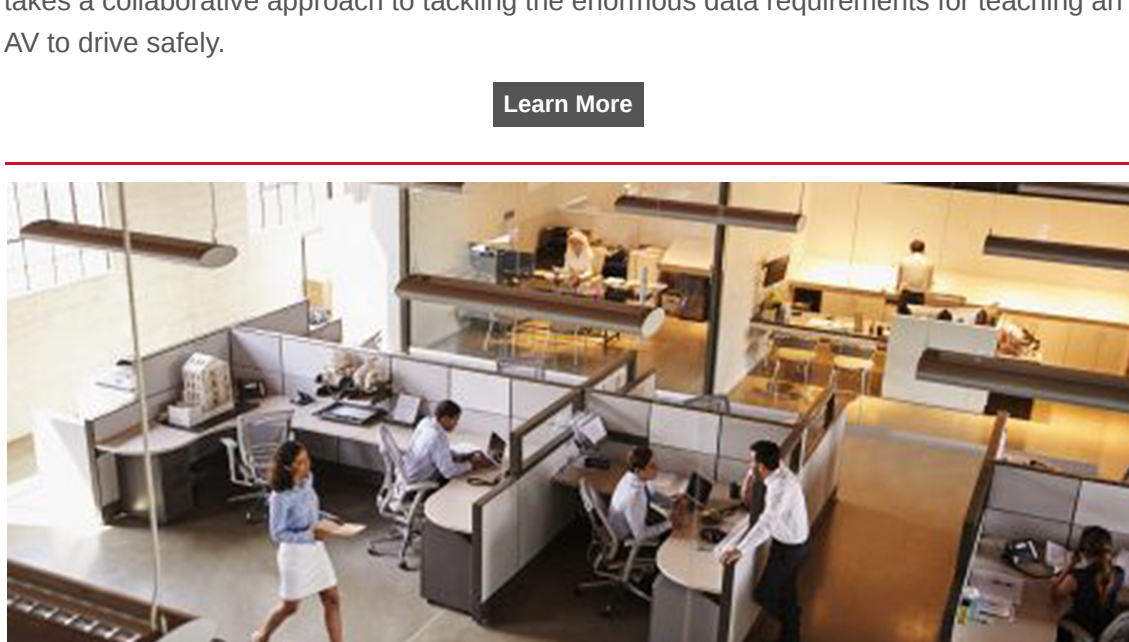
**One Small Step For A Mouse:** We know that the process of learning (and unlearning) new skills and information changes the physical structure of the brain, but the specifics remain an open question - one that Professors [Bobak Nazer](#), [Venkatesh Saligrama](#), and BME Professor Xue Han are attempting to answer through data science and statistics, with \$1.2M in support from the NSF.

[Learn More](#)



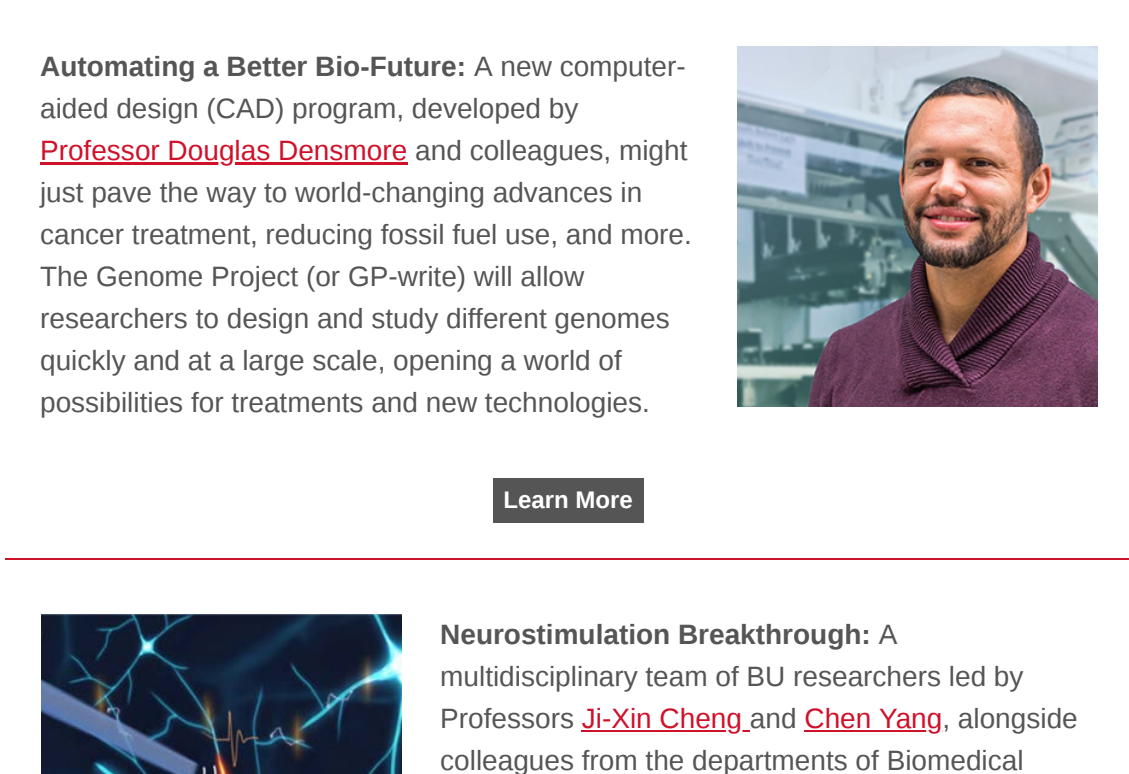
**Making a Big Impact with Tiny Lasers:** Many essential technologies rely on nanophotonics, from environmental sensors to medical diagnostics. Backed by a \$450K grant from the NSF, [Professor Luca Dal Negro](#) is embarking on a project using a novel form of mathematics--fractional calculus--to increase the efficiency of these deceptively miniscule lasers.

[Learn More](#)



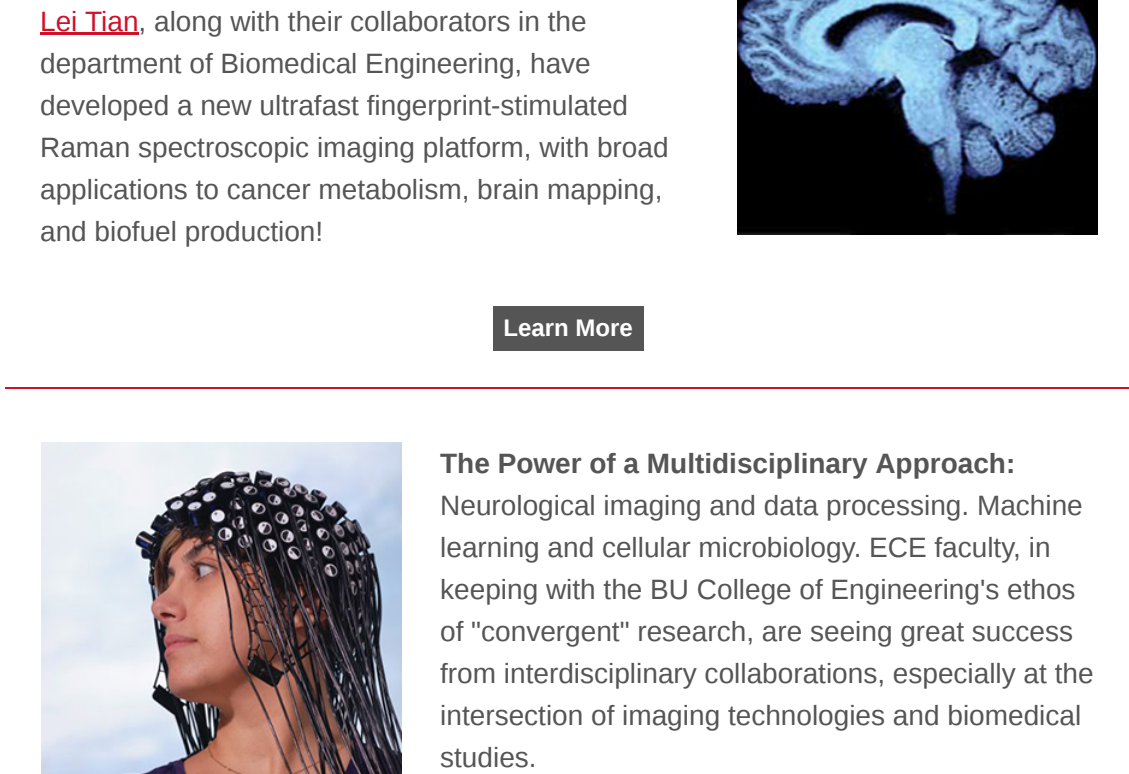
**Stealth Mode:** Fueled by funding from the Defense Advanced Research Projects Agency (DARPA), [Professor Vivek Goyal's](#) collaborative work on MIT's "Super Headlights" project is forging a unique path to innovation. The project is focused on developing highly advanced sensors which can detect passive thermal emissions - allowing AVs to navigate without the use of light (or at least, light that is visible to the human eye).

[Learn More](#)



**Automobile See, Automobile Do:** Human infants learn to walk by watching and mimicking the movements of those around them; a technique that [Professor Eshed Ohn-Bar](#) is hoping to emulate with self-driving cars. The professor's new training paradigm takes a collaborative approach to tackling the enormous data requirements for teaching an AV to drive safely.

[Learn More](#)

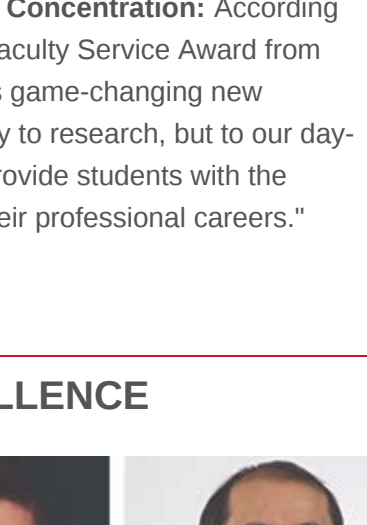


**Smart, Safe and Energy-Efficient:** Smart building technology was already a trend before the COVID-19, for its many conveniences and potential environmental impact; in the wake of a global pandemic, relevant safety measures such as ventilation systems and crowd management have become top priority. An ECE-led project called COSSY (Computational Occupancy Sensing System) is primed to address these very concerns.

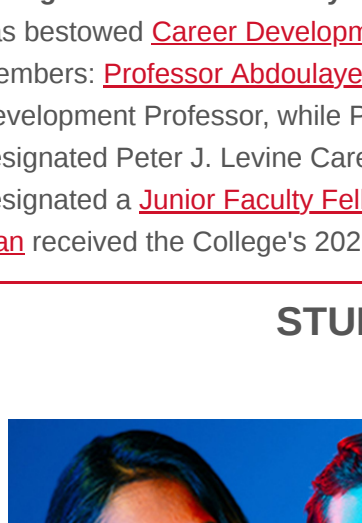
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## RESEARCH HIGHLIGHTS

**Automating a Better Bio-Future:** A new computer-aided design (CAD) program, developed by [Professor Douglas Densmore](#) and colleagues, might just pave the way to world-changing advances in cancer treatment, reducing fossil fuel use, and more. The Genome Project (or GP-write) will allow researchers to design and study different genomes quickly and at a large scale, opening a world of possibilities for treatments and new technologies.



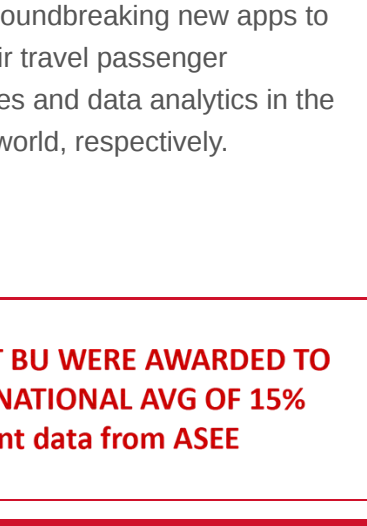
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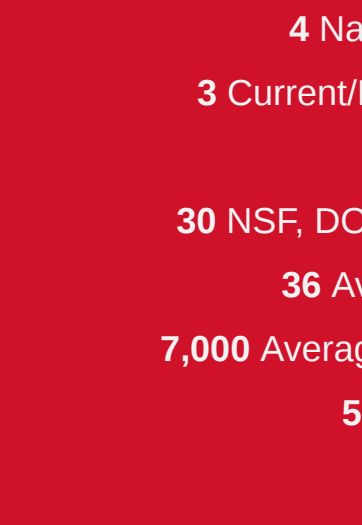
**Neurostimulation Breakthrough:** A multidisciplinary team of BU researchers led by Professors [Ji-Xin Cheng](#) and [Chen Yang](#), alongside colleagues from the departments of Biomedical Engineering and Biology, has developed a new, much more precise method of stimulating the electrical activity in the brain. This tapered fiber optoacoustic emitter (TFOE) opens pathways for myriad new research and clinical applications.

[Learn More](#)

**At the Intersection of Photonics and Synthetic Biology:** With the support of funding from the Dept. of Energy and the NIH, Professors [Ji-Xin Cheng](#) and [Lei Tian](#), along with Biomedical Engineering, have developed a new ultrafast fingerprint-stimulated Raman spectroscopic imaging platform, with broad applications to cancer metabolism, brain mapping, and biofuel production!

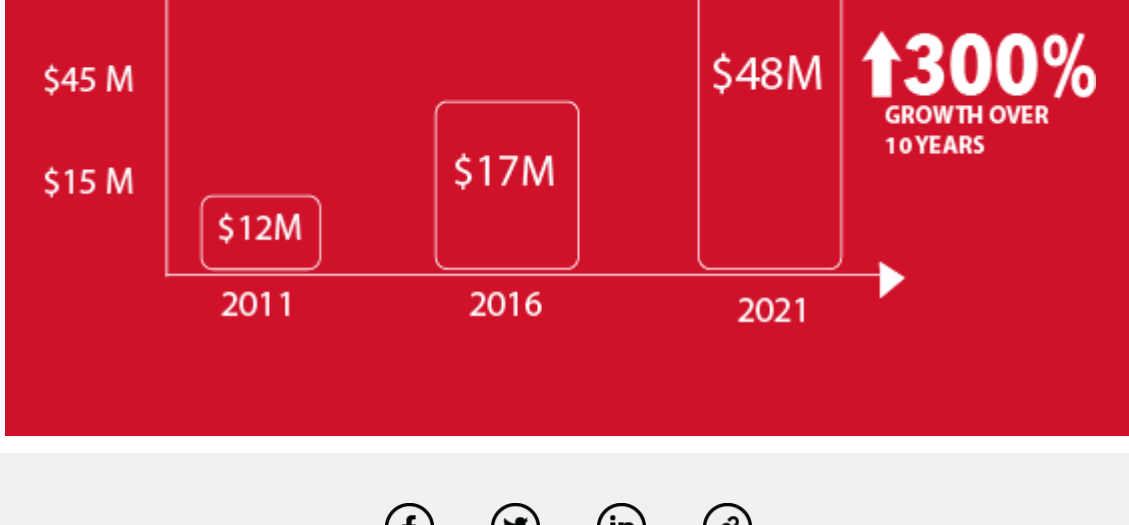


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**The Power of a Multidisciplinary Approach:** Neurological imaging and data processing. Machine learning and cellular microbiology. ECE faculty, in keeping with the BU College of Engineering's ethos of "convergent" research, are seeing great success from interdisciplinary collaborations, especially at the intersection of imaging technologies and biomedical studies.

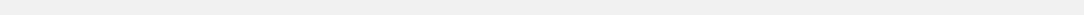
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**College of Engineering Launches Machine Learning Concentration:** According to [Professor Prakash Ishwar](#), who recently received a Faculty Service Award from the College of Engineering for his work coordinating this game-changing new program, "machine learning has become central not only to research, but to our day-to-day lives as well. Our timely new concentration will provide students with the increasingly crucial skills they will need to succeed in their professional careers."

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## JUNIOR FACULTY EXCELLENCE



**Rising Stars: Junior Faculty Receive Abundant Honors** The College of Engineering has bestowed [Career Development professorships](#) on three of the ECE faculty's newest members: [Professor Abdoulaye Ndao](#) was named the next Reidy Family Career Development Professor, while Professors [Eshed Ohn-Bar](#) and [Ashok Cutkosky](#) are now designated Peter J. Levine Career Development Professors. Professor Ohn-Bar was also designated a [Junior Faculty Fellow](#) of the Hari Institute for Computing, while [Professor Lei Tian](#) received the College's 2021 [Early Career Excellence in Research Award](#).

## STUDENT ACHIEVEMENTS



**From Engineering to Enterprise:** BU alums Saniya Shah '16 and Eduardo Portet '18 were featured in the Forbes 30 Under 30 Class of 2021, and their ECE faculty mentors could not be more proud. Leveraging their engineering studies into their start-ups, each has created groundbreaking new apps to improve air travel passenger experiences and data analytics in the business world, respectively.

[Learn More](#)



**27% OF ECE BACHELOR'S DEGREES AT BU WERE AWARDED TO WOMEN IN 2020/21 COMPARED TO NATIONAL AVG OF 15% - most recent data from ASEE**

## Distinguished Faculty

- 4 National Academy Members
- 3 Current/Former IEEE Society Presidents
- 45 Society Fellows
- 30 NSF, DOE and DOD Early Career Awards
- 36 Average H-Index per Faculty
- 7,000 Average Number of Citations per Faculty
- 51 Tenure-Track Faculty

## RESEARCH FUNDING

