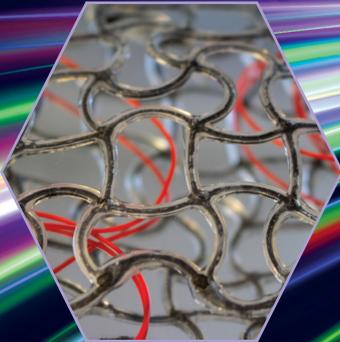


Engineered for  
**Impact**



2023-2024  
Highlights

**BOSTON**  
**UNIVERSITY**



The Boston University College of Engineering entered an exciting new era when the 2023-24 academic year began under new leadership. Elise Morgan—the Maysarah K. Sukkar Professor of Engineering Design and Innovation, and inaugural director of the Center for Multiscale and Translational Mechanobiology—became the College’s dean ad interim. Leading the evolution of the College’s strategic plan that she helped craft two years earlier, Dean Morgan is keeping the College’s research and education on the cutting edge as technology pushes society forward at breakneck speed.

This report offers an overview of some of the major developments in the Boston University College of Engineering last year. As demonstrated by convergent research breakthroughs and our faculty’s major accomplishments, we are Engineered for Impact.



## Six Convergent Research Themes

These themes transcend disciplines across Boston University and the College of Engineering, drawing upon diverse thinking to solve societal challenges.

- Energy, Sustainability, & Climate
- Intelligent, Autonomous & Secure Systems
- Materials by Design
- Neuroengineering & Neuroscience
- Photonics & Optical Systems
- Synthetic Biology, Tissue Engineering & Mechanobiology

31

Rank among all graduate engineering programs in the U.S.

Source: *US News & World Report*

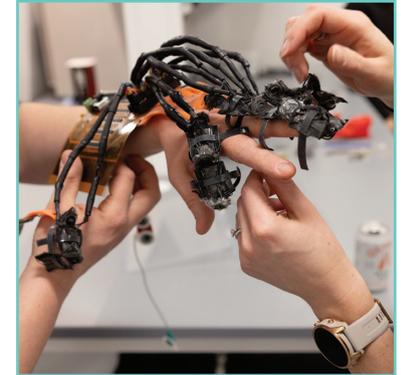


## Skin Cancer Detection Device Cleared by FDA

The US Food & Drug Administration cleared for US markets DermaSensor, which uses light and artificial intelligence to examine skin lesions and assess whether a patient should be referred to a specialist. DermaSensor's underlying sensing technology, elastic scattering spectroscopy (ESS), was developed and refined by Professor **Irving J. Bigio** (BME, ECE). Named a *Time* Invention of the Year, the device has the potential to reduce missed skin cancers by half.

## A State-of-the-Art Robotics Lab

The new Robotics & Autonomous Systems Teaching and Innovation Center (RASTIC) boasts state-of-the-art equipment for industry-aligned training and hands-on learning. In RASTIC, students can design, build, and test all kinds of robots, from simple consumer 'bots to GPU-fueled, AI-powered cutting-edge marvels. Aerial and ground-based robots can navigate dynamic landscapes, assisted by Hollywood-grade motion-capture technology. Students can custom-mold silicon to create the flexible robots that are rapidly emerging in medicine, Industry 4.0, and beyond.



8

Rank in research expenditures per faculty member among private engineering schools

Source: *US News & World Report*

## NSF-Funded Training Grant Tackles Climate Change

The National Science Foundation is investing nearly \$3 million to facilitate a first-of-its-kind graduate training program in biological control at BU. Run by Associate Professor **Emily Ryan** (ME, MSE) and others, the program will feature new courses, boot camps, workshops, co-mentored research, and industry internships, all geared to advancing both the field of biological control and the position of BU graduates within it. The program will recruit students from underrepresented demographic groups as well as varied academic backgrounds.

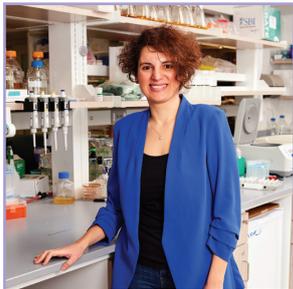
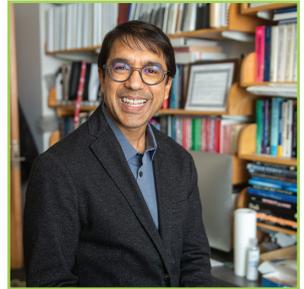


## New AI Program Could Predict Likelihood of Alzheimer's

Distinguished Professor of Engineering **Ioannis Paschalidis** (ECE, BME, SE) and his team have designed a promising new artificial intelligence computer program, or model, that could one day help predict who will develop dementia associated with Alzheimer's—just by analyzing a patient's speech. With an accuracy rate of 78.5 percent, this model can predict whether someone with mild cognitive impairment is likely to remain stable over the next six years—or fall into the dementia associated with Alzheimer's disease.

## Bringing Snapshot Speed to Non-Line-of-Sight Imaging

Associate Professor **Vivek Goyal** (ECE) has created a new and much faster method of non-line-of-sight (NLOS) imaging—that is, reconstructing a picture of something that lies hidden from view. Beyond military and spycraft applications, Goyal hopes that eventually the technology will be used to enhance vehicular safety for civilians.

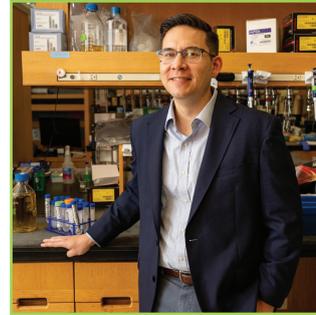


## A 'Smart' Pill that Can Predict Imminent Inflammation

Assistant Professor **Rabia Yazicigil** (ECE) and colleagues invented a smart pill no bigger than a blueberry, that can withstand the stomach's acidic fluids, detect signs of gastrointestinal trouble, and send warning signals to an ordinary smartphone. This novel technology has the potential to make a world of difference for the seven million people who suffer from inflammatory bowel diseases like Crohn's disease and ulcerative colitis.

## Research Funding Highlights

- The U.S. Defense Advanced Research Projects Agency has awarded \$17.7 million to Associate Professor **Alexander A. Green** (BME) to develop a predictive saliva test to analyze performance readiness.
- The U.S. Department of Energy has awarded \$5 million to professors **Srikanth Gopalan**, **Soumendra Basu**, and **Uday Pal** (all ME, MSE) to make green hydrogen.
- The Chan-Zuckerberg Initiative has awarded a \$2.5 million CZI Deep Tissue Imaging Phase 2 grant to Assistant Professor **Tianyu Wang** (ECE) to advance the field of deep tissue imaging.
- The U.S. Department of Defense has awarded Assistant Professor **William Boley** (ME, MSE) \$2.23 million under the Defense University Research Instrumentation Program (DURIP) to accelerate the discovery and fabrication of advanced 3D printing inks.
- The Hevolution Foundation has awarded a \$2 million grant to Research Assistant Professor **Jeroen Eyckmans** to develop a novel approach to improve tissue repair in aging patients.



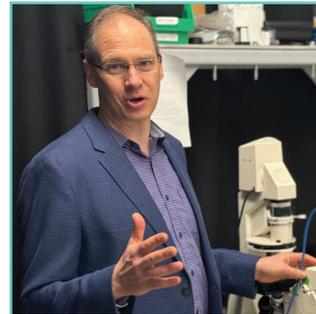
Alexander A. Green



Tianyu Wang



Uday Pal, Srikanth Gopalan, Soumendra Basu



Jeroen Eyckmans



William Boley



# Major New Fellowships and Awards

• Professor Vivek Goyal (ECE)	Guggenheim Fellowship
• Distinguished Professor Siddharth Ramachandran (ECE, MSE)	Fellow of the American Association for the Advancement of Science (AAAS)
• Assistant Professor Hadi Nia (BME)	Sloan Research Fellowship
• Associate Professor Miloš Popović (ECE)	National Academy of Inventors
• Professor Joyce Wong (BME, MSE)	Fellow of Biomaterials Science and Engineering
• Professor Roberto Paiella (ECE, MSE)	Optica Fellow
• Associate Professor Darren Roblyer (BME, ECE)	Editor-in-chief of <i>Biophotonics Discovery</i>
• Distinguished Professor of Engineering Xin Zhang (ME, ECE, BME, MSE)	European Academy of Sciences and Arts and Sigma Xi's Chubb Award for Innovation
• Assistant Professor Joerg Werner (ME, MSE)	U.S. Defense Advanced Research Projects Agency Young Faculty Award
• Assistant Professor Andrew Sabelhaus (ME, SE)	NSF CAREER Award
• Assistant Professor Michael Albro (ME, MSE, BME)	NSF CAREER Award
• Assistant Professor Rabia Yazicigil (ECE, BME)	NSF CAREER Award
• Assistant Professor Wenchao Li (ECE, SE)	NSF CAREER Award
• Professor Ji-Xin Cheng (ECE, BME, MSE)	SPIE Biophotonics Technology Innovator Award
• Assistant Professor Michelle Teplensky (BME, MSE)	Beckman Young Investigator Award
• Associate Professor Bobak Nazer (ECE, SE)	Gitner Family Award
• Assistant Professor Sean Lubner (ME, MSE)	Young Investigator Program (YIP) Award
• Professor Emeritus Theodore Moustakas (MSE, ECE)	Nick Holonyak Jr. Award





Vivek Goyal



Joyce Wong



Joerg Werner



Wenchao Li



Sean Lubner



Siddharth Ramachandran



Roberto Paiella



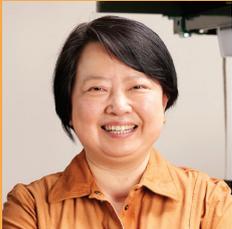
Andrew Sabelhaus



Michelle Teplensky



Theodore Moustakas



Xin Zhang



Darren Roblyer



Michael Albro



Ji-Xin Cheng



Miloš Popović



Hadi Nia



Rabia Yazicigil



Bobak Nazer

20%

Top 20% of engineering schools in US

Source: US News & World Report

# ENG at a Glance

## Academic Summary

Degrees conferred: **349** Bachelor's, **335** Master's, **82** Doctoral

## People Summary

Students: **1,810** Undergraduates, **435** Graduates, **541** Doctoral Students

**127** Faculty Tenure/Tenure Track, **20** Non-Tenure Track, **15** Research

Alumni Network: **22,278** Living alumni

## Academic Degrees

Biomedical Engineering

Computer Engineering

Electrical & Computer Engineering

Electrical Engineering

Materials Science & Engineering

Mechanical Engineering

Product Design & Manufacture

Robotics & Autonomous Systems

Systems Engineering

## Interdisciplinary Centers

Bioengineering Technology & Entrepreneurship Center

Biological Design Center

Biomolecular Engineering Research Center

Center for Computational Science

Center for Information and Systems Engineering

Center for Semiconductor Materials and Devices Modeling

Center for Multiscale and Translational Mechanobiology

Center on Forced Displacement

Institute for Global Sustainability

Institute for Health System Innovation and Policy

Nanotechnology Innovation Center

National Emerging Infectious Diseases Laboratories

Neurophotonics Center

NSF Engineering Research Center in Cellular Metamaterials

Photonics Center

Rafik B. Hariri Institute for Computing and Computational Science & Engineering



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