

CISE

CENTER FOR INFORMATION & SYSTEMS ENGINEERING



TRANSFORMING TOMORROW THROUGH PIONEERING RESEARCH AND BUILDING ALLIANCES
Center for Information & Systems Engineering

Annual Impact Report



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The Center for Information & Systems Engineering (CISE) operates as an independent center of research for Boston University College of Engineering (ENG) supporting faculty affiliates from BU College of Engineering (ENG), College of Arts and Sciences (CAS), and Questrom School of Management (Questrom), and additionally became part of the Hariri Institute federation of centers and initiatives in July of 2022.

CISE's **MISSION** is to deepen and broaden interdisciplinary research in the study and design of intelligent systems with broad societal applications. In today's increasingly data-driven, networked world, we have an unprecedented opportunity to monitor, control, and improve our well-being and surroundings. By engineering hardware and software systems to acquire, analyze, and act upon information from a range of networked sources, we can advance human intelligence to solve critical problems in fields such as health care, communications, energy, and national security, among others.

In line with its mission, CISE spearheads several activities to project ENG, CAS, Questrom, and Hariri's strength in information and systems engineering and data science, both internally within BU and externally. CISE activities are designed to catalyze and support cross-disciplinary faculty research collaborations, advance scientific understanding and discovery, facilitate engagement with industry, and support a diverse community of faculty and students.

In FY24, Director Ayşe K. Coşkun initiated a new annual workshop series to ignite new research in emerging areas related to intelligent systems. This workshop series aims to make strides on problems with global societal impacts by bringing together interdisciplinary participants and speakers from universities, government, and industry. The first of this series was themed on AI for Understanding Earthquakes and included an innovative AI challenge.

“CISE is essentially a catalyst, bringing together people with different expertise and supporting them to build bigger and more impactful projects. We continue this center's strong tradition of collaborative research around the topic of intelligent systems, foster growth from concepts and algorithms to implementation in software systems and hardware, and provide a portfolio of programs to enable our researchers to interact and collaborate.”



This report provides an overview of CISE activities and notable initiatives during the past fiscal year (2023-2024).

CISE AT-A-GLANCE



53 Faculty Members

35% increase in faculty over the past decade

12 Academic Units

10
Renowned
Faculty Awards



MacArthur
Foundation



41

Grants Managed

\$18,694,389

Annual Research Expenditures

35 Annual Events



23

Student Attributed
Faculty & Student
Spotlight Articles



1,640

Social Media followers across
platforms (Instagram, Youtube,
X, LinkedIn)



NOTABLE EVENTS

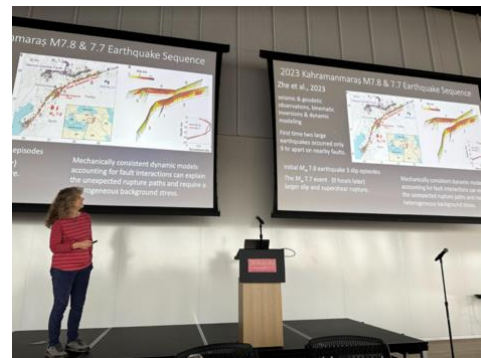
Throughout the year, CISE hosted seminars, workshops, and conferences that have brought together experts from academia, industry, and government to discuss the latest trends and challenges in systems engineering and computer science. The Center actively engages in initiating and supporting a variety of conferences, events, and symposia that are a culmination of the core values and objectives that drive CISE’s mission forward. These events put larger and more ambitious future endeavors into motion, propelling affiliates toward future accomplishments and breakthroughs.

AI for Understanding Earthquakes Workshop

CISE kicked off a new series of innovative workshops spanning uncharted topics to catalyze new collaborations and innovative research. This AI for Understanding Earthquakes workshop explored challenges and open problems at the intersection of AI and earthquake sciences and simultaneously offered students a hands-on AI challenge. Both national and international experts were invited to provide insight and discuss potential collaborations.



Earthquakes cause infrastructural and environmental damage and loss of life, affecting millions of people globally. AI has the potential to change the way we analyze and forecast earthquakes. The workshop highlighted research surrounding this AI capability and featured a plenary talk from Chris Johnson titled “Probing Seismogenic Faults with Machine Learning”.



Other Speakers: Chris Marone (La Sapienza Università di Roma), Rachel Abercrombie (Boston University), Mostafa Mousavi (Google/Stanford University), Peter Gerstoft (University of California, San Diego), Ben Holtzman (Massachusetts Institute of Technology), Daniel O’Malley (Los Alamos National Laboratory), Srisharan Shreedharan (Utah State University), and Laura Laurenti (La Sapienza Università di Roma)

This event not only advanced our understanding of earthquake dynamics but also highlighted the power of collaboration in addressing complex scientific challenges. Brian Kulis (ECE, CS, SE), Janusz Konrad (ECE), and Prakash Ishwar (ECE, SE, CS) secured funding through the Hariri Institute Focused Research Program (FRP) for FY2025 aiming to deepen insights into earthquake dynamics to create a tangible impact (more information on page 14). Kulis has worked significantly in AI for audio, while Konrad and Ishwar have pursued previous projects on earthquakes. This team represents a major opportunity to combine expertise areas to drive new technical advances and create a real and tangible impact.

“The workshop was a huge success. Personally, it put me in touch with researchers in the earthquake field, and ultimately led to us starting multiple collaborations.” In addition to the FRP project, he is working with Harvard University researchers on a National Science Foundation proposal.

~Brian Kulis



The workshop featured an [AI Challenge](#) component that added an interactive and practical dimension to the discussions. Participants of this challenge competed in predicting earthquake timing and surface displacement, based on the laboratory data from **Penn State University (PSU)** and **Los Alamos National Laboratory (LANL)** supported by the Office of Science Basic Energy Sciences program. Winning student teams presented their approach at the workshop.

The AI Challenge was a dynamic convergence of expertise and innovation, exploring the intersection of artificial intelligence and earthquake sciences.



AI Challenge Winners

1st Place Team Talk:

“Not Our Fault” from Stanford University- Ian McBrearty, Artemii Novoselov, Xing Tan, and Yifan Yu

2nd Place Team Video Presentation:

“Pepsi_Sessions” from Georgia Tech & University of Arizona- Seyifunmi Adeboboye and Joses Omojola

3rd Place Team Talk:

Boston University- Efe Sencan

The workshop is a demonstration of CISE’s continued vision in catalyzing new collaborations, and already resulted in further grant applications at the intersection of AI and earthquake sciences.

Co-Organizers: Ayşe K. Coşkun (BU), Christopher W Johnson (LANL), Paul Johnson (LANL), and Eren Kurshan (Princeton) || **Discussion Facilitators:** Yannis Paschalidis, Brian Kulis, and Prakash Ishwar

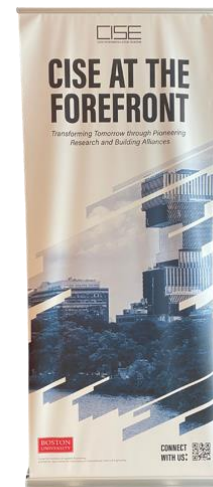
Challenge Organizers: Christopher W Johnson (LANL), Ayşe K. Coşkun (BU), Fatih Acun (BU PhD Candidate), and Sadie Allen (BU PhD Candidate)

AI Expo for National Competitiveness

This first annual [AI Expo](#) for National Competitiveness, May 7-8, 2024, was an opportunity for CISE and Hariri Institute to create visibility by hosting a booth at the event to network with other potential university, industry, and government AI collaborators. The AI Expo was established to serve as the primary place to convene and build relationships around AI, technology, and



US and allied competitiveness. It serves as a forum for academic entities, industry, and government to exhibit some of the latest technological breakthroughs and discuss their implications.



Industry Partnerships



RASTIC Grand Opening and Ribbon Cutting

Boston University celebrated a significant milestone on March 4, 2024, in an event organized by CISE, as [an autonomous robot took center stage](#) to inaugurate the Robotics and Autonomous Systems Teaching and Innovation Center (RASTIC). The grand opening of RASTIC marks a significant step towards cultivating a robust ecosystem for robotics and autonomous systems at Boston University and establishing BU as a leading research institution in the field.

The 2,000-square-foot RASTIC facility features areas dedicated to AI and soft robotics development, device construction, an arena for robot testing, and a miniature city to further autonomous vehicle research.

[The center](#) is currently open for masters-level robotics programs, to complete undergraduate capstone courses, and research-oriented labs focusing on AI integration and new material applications in robotics to enable the intersection between academia, industry, and government. At RASTIC, students will learn by doing, partnering with companies to provide real-world robotics solutions. RASTIC will also serve as a summit space for lectures on robotics by innovators and thought leaders.



The center's development was made possible through the Commonwealth's Collaborative Research and Development Matching Grant program, administered by the [Innovation Institute at the Massachusetts Technology Collaborative](#) (MassTech).



“RASTIC’s design is informed by our deep partnership with industry,” said Boston University Provost ad interim and former College of Engineering Dean Kenneth R. Lutchen. “We have heard from industry that Massachusetts needs a workforce trained in the latest developments in robotics – including the integration of AI and machine learning - to keep it at the leading edge of this rapidly advancing field. This center is designed to do that.”

The award has enabled the development of innovations with private sector partners in Massachusetts and increased student research opportunities in the robotics space. RASTIC emphasizes real-world prototyping projects to integrate new materials, functionality, and artificial intelligence into robotic devices, delivering tools that will allow students to design and launch their own R&D projects.



The [event](#) hosted notable speakers and public figures from **Boston University**: Kenneth Lutchen (Boston University Provost Ad Interim), Elise Morgan (Boston University College of Engineering Dean Ad Interim), Ioannis Paschalidis (Director of The Hariri Institute, Distinguished Professor), Kenneth Sebesta (Director, RASTIC); and from



government: Yvonne Hao (Secretary of Economic Development for the Commonwealth of Massachusetts), Carolyn Kirk (Executive Director, MassTech Collaborative), Tye Brady (Chief Technologist, Amazon Robotics), and Spencer Farland (Senior Director of US Development & Engineering, ASML). Additionally, the event featured facility tours and 16 student demonstrations.



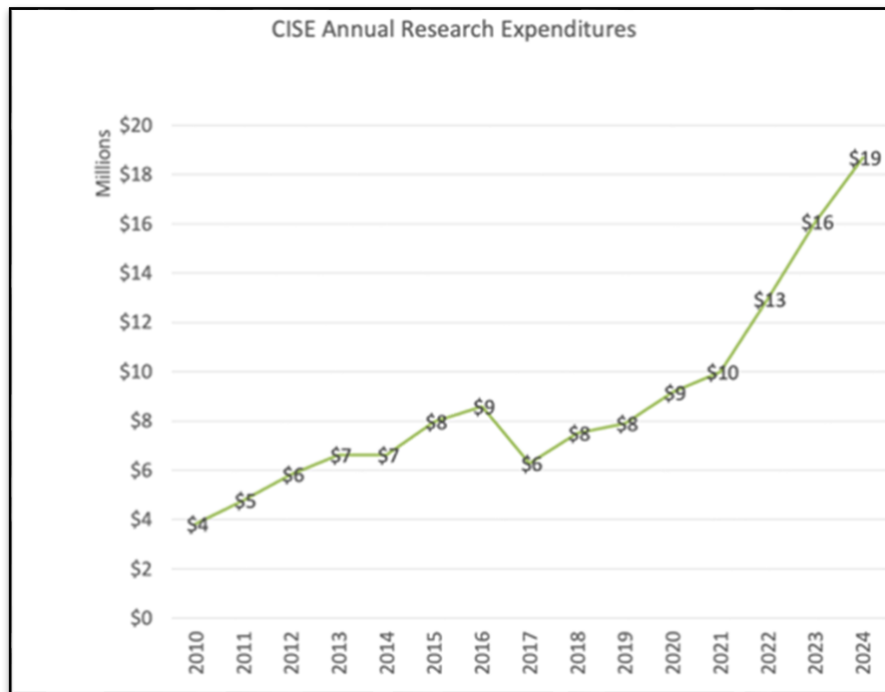
Students were pivotal to the event, Megha Venkatesam (M. S. in ME) designed the RASTIC logo while others supported the creation of promotional materials and a video of the grand opening. This state-of-the-art facility, developed over the past year, represents a collaborative effort between academia, industry, and government aimed at shaping the future workforce in competitive robotics and autonomous systems.





GRANTS & FUNDING MANAGEMENT

CISE assists faculty from the College of Engineering (ECE, ME, BME, SE), the College of Arts and Sciences, and Questrom School of Management in their awards management, including preparing and submitting grant proposals, budget preparation, and post-grant management and projections with monthly PI reports. The CISE administrative staff works with the Office of Research and Office of Special Programs through pre-and-post-award processes. CISE also alleviates administrative post-award duties from faculty such as student hiring, equipment and supply ordering, and event coordination, which helps faculty focus on their research and make significant progress toward success.

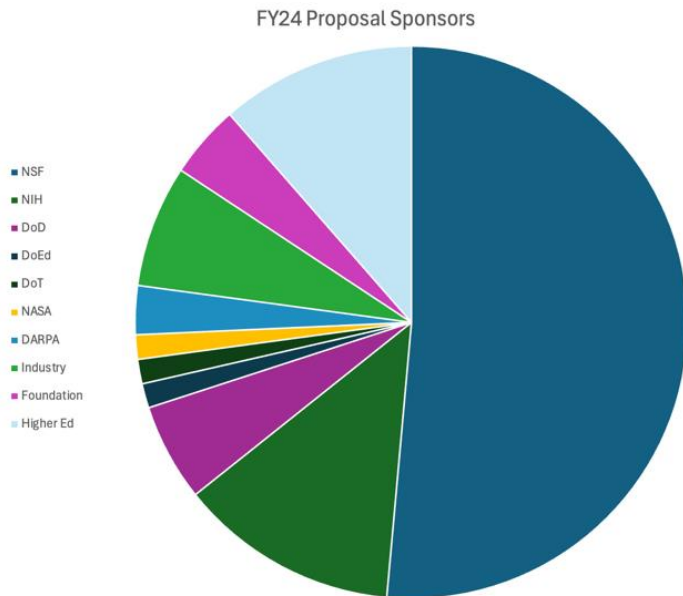


In **FY2023-2024**, CISE’s grant portfolio (administered or in conjunction) resulted in **\$18,694,389** in research expenditures. CISE practices robust financial management, emphasizing transparency, accountability, and efficiency in budget allocation, expenditure tracking, and financial reporting for grant-funded activities. Currently, CISE has active proposals or grants across the federal government and industry. In addition, CISE maintains working research relationships with various national and international entities.

Faculty research areas include Automation and Control, Computational Biology & Medicine, Computational Imaging, Computer Architecture, Cyber-Physical Systems, Data Science, AI &

Machine Learning, High Performance Computing, Information Sciences, Networks, Robotics & Multi-Agent Systems, Security, and Theory & Algorithms.

FY24 Proposals (76 total)

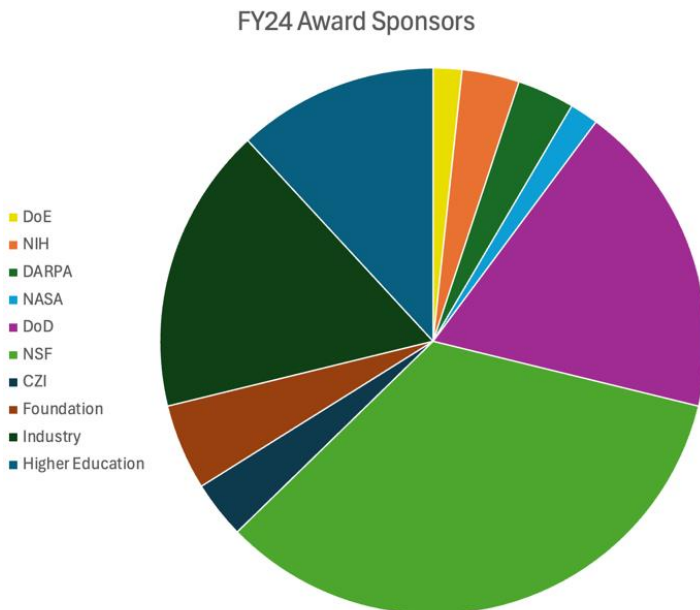


CISE Affiliated Submissions- 52 proposals
CISE Submissions- 24 proposals

FY24 Proposal Information:

- **New-** 65 submissions, 1 re-submission
- **Renewals-** 4 submissions
- **Continuation-** 1 submission
- **Supplement-** 3 submissions
- **REU-** 2 submissions
- **9 CISE Collaborations** between 2+ CISE affiliated faculty
- **28 different faculty** applied for funding
- **Proposals by Department**
 - BIO/ECE 1, BME 1, CAS 2, CDS 3, CEID 1, CISE 1, ECE 51, and ME 16

FY24 Awards (59 total)



CISE Affiliated Awards- 46 awards
CISE Awards- 13 awards

FY24 Award Information:

- **New-** 24 awards
- **Increments-** 17 awards
- **Continuations-** 9 awards
- **Supplements-** 2 awards
- **REU-** 2 awards
- **Renewals-** 1 award
- **9 awards with CISE collaborations** between 2+ CISE affiliated faculty members
- **25 CISE affiliated faculty members** received funding
- **Awards by Department** CAS 5, CDS 2, CISE 2, ECE 34, Math/Stats 1, ME 14, and SPH 1

Grant Highlights

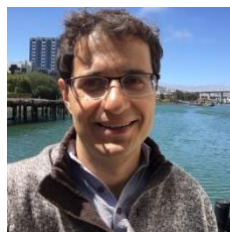
Neuro-Autonomy: Neuroscience-Inspired Perception, Navigation, and Spatial Awareness for Autonomous Robots, a [\\$7,579,804 award](#), just received an increment of \$405,171.87 from the Department of Defense and Office of Naval Research to develop a novel category of neuro-inspired autonomous robots for land, sea, and air that the investigators have termed “neuro-autonomous”.

PI: Yannis Paschalidis, Co-PIs: John Baillieul, Margrit Betke, Michael Hasselmo, Chantal Stern, and Roberto Tron



EMERGE: ExaEpi for Elucidating Multiscale Ecosystem Complex for Robust Generalized Epidemiology, a \$449,943 award, received an increment of \$149,994 for [Lawrence Berkeley National Laboratory, sponsored by the Department of Energy](#), to expand the capabilities of the exascale-ready ABM code ExaEpi by leveraging the adaptive mesh refinement framework, AMReX, to simultaneously model both discrete agents and continuous fields, with the goal of simultaneously models multiple types of agents and multiple fields at different spatial resolutions PI: Yannis Paschalidis

Computational Mesoscope for Ultrafast Multiscale 3D Imaging a \$1,310,540 award was restructured with an additional subaward to UCSD from the [Chan Zuckerberg Initiative Donor Advised Fund](#) through Silicon Valley Community Foundation. This project aims to develop a novel computational mesoscope to enable ultrafast, large field-of-view (FOV), high-resolution, 3D imaging, providing an unprecedented space-time-bandwidth product, on a miniaturized platform. PI: Lei Tian



CPS: Medium: Federated Learning for Predicting Electricity Consumption with Mixed Global/Local was awarded \$1,200,000 from the [National Science Foundation](#) to take advantage of data sources to develop machine learning methods that predict electricity consumption at the day-ahead scale from the data. PI: Alexander Olshevsky; Co-PIs: Yannis Paschalidis, Micheal Caramanis, Venkatesh Saligrama



Sample Efficient Learning for Deployment Time was awarded an increment of \$13,314.42 for a total of \$309,712 from the Department of Defense and Office of Naval Research to develop methods that minimize or even eliminate the need for annotated training data at deployment time.

PI: Venkatesh Saligrama



CNS: Core: Small: Building Resilience into Blockchains, a \$299,997 award, received a [supplemental amount](#) of \$16,000 for participant funding from the National Science Foundation to empower broader participation of users, including those with limited computation, storage, or network connectivity to support the decentralization and trust elements that are key to the continued success of the blockchain technology. PI: David Starobinski, Co-PI: Ari Trachtenberg

AI-powered Performance Analytics for Heterogeneous HPC Systems, a \$985,330 award, received funds in 2021-2024 for \$490,000 and for the period of 2024-2027 received \$495,330 for designing computer systems that reduce energy consumption and thermal problems at chip-level and at system/datacenter level, while maintaining resilience, and security. This project involves two awards from Sandia National Laboratories PI: Ayşe K. Coşkun, Co-PIs: Manuel Egele and Brian Kulis.



Other Grant Funding

2024 Red Hat Collaboratory Research Incubation Award Recipients

The Red Hat Collaboratory, a partnership between Boston University and Red Hat since 2017, brings together academic researchers and the open-source community to advance systems research and education on cloud computing, machine learning and automation, and operating systems at BU.



Small Project category

- **Manuel Egele** (\$175,000)
 - HySe- Hypervisor Security through Component-Wise Fuzzing
- **Ajay Joshi** (\$174,539)
 - CofHE: Computer for Fully Homomorphic Encryption
- **Eshed Ohn-Bar** (\$136,193)
 - Co-Ops: Collaborative Open Source and Privacy-Preserving Training for Edge & Automotive AI
- **David Starobinski** (\$174,999)
 - Improving Cyber Security Operations using Knowledge Graphs

Speculative Project category

- **Manuel Egele** (\$100,000)
 - Lock 'n Load: Deadlock Detection in Binary-only Kernel Modules
- **Eshed Ohn-Bar** (\$92,534)
 - Minimal Mobile Systems via Cloud-based Adaptive Task Processing



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

Focused Research Programs

Focused Research Programs (FRPs) support intensive, faculty-driven efforts in large, multi-disciplinary teams. Hariri Institute FRPs are designed to facilitate research convergence by providing ‘scaffolding’ for groups to coalesce in sustainable ways, to accelerate research for future funding and broader impact.

FY 2023

“Health Equity in the Wake of Continued Climate Change: Leveraging Big Data to Inform Action” - Lucy Hutyra (CAS)

The goal of this FRP is to provide the BU climate and health research community access to shared resources to accelerate research, innovation, and translation in this area.

Sponsors: Hariri Institute for Computing and the Institute of Global Sustainability.

“Optimal Bio-Inspired Design of Holistic Rehabilitation Systems” - Eshed Ohn-Bar (ECE) and Alexander Olshevsky (ECE)

Involved Faculty: CISE-affiliates Wenchao Li, Alyssa Pierson, and Andrew Sabelhaus

This FRP focuses on developing theory-informed principles embedded into a lightweight and adaptable system to realize efficient, safe, and intuitive wearable robots for broad mobility assistance across users, tasks, environmental conditions, and disabilities.

Sponsor: Hariri Institute for Computing.

FY 2024

“AI for Understanding Earthquakes”- Brian Kulis (ECE)

Involved Faculty: CISE-affiliates Janusz Konrad and Prakash Ishwar

This FRP aims to apply artificial intelligence (AI) to improve our understanding of earthquakes, including exploring optimal deep learning architectures for seismic data; investigating the use of video-surveillance infrastructure as an alternative to costly Earthquake Early Warning (EEW) systems; and employing machine learning to advance our understanding of earthquakes.

Sponsor: Hariri Institute for Computing.



“Privacy Preserving Energy Analytics for Data Centers”- Ayşe Kivilcim Coşkun (ECE), Ajay Joshi (ECE), and Adam Smith (CAS)

Involved Faculty: CISE-affiliates Michael Caramanis, Alexander Olshevsky, Yannis Paschalidis

This FRP aims to demonstrate, for the first time, that large-scale computer systems will achieve cost reduction and energy efficiency improvements via a novel privacy-preserving, collaborative, and scalable analytics and optimization framework.

Sponsors: Hariri Institute for Computing and the Center for Reliable Information Systems & Cyber Security (RISCS).

“From Self-Driving Labs to Community-Driven Labs”

Involved CISE-Affiliated Faculty: Sean Andersson, Wenchao Li, Eshed Ohn-Bar

Sponsor: Hariri Institute for Computing.

Other Notable Grant Awards

CISE Seed Grant Awards of approximately

\$150,000 enable affiliated CISE faculty to kickstart innovative interdisciplinary research projects, broaden significant research areas, and collect preliminary data to secure extramural support. The program is designed to help faculty further interdisciplinary research goals by funding graduate student researchers. Previous projects were focused on the theme of “Intelligent, Autonomous, and Secure Systems,” which is a strategic core area for CISE and the College of Engineering. This program occurs every other year and the next cycle will occur during FY24-25



Investigators are awarded for projects that:

- (1) have the potential for future external funding
- (2) are contingent on gathering initial results, proof of concept, or significant data collection
- (3) display intention to develop new innovative collaborations and research directions

Hariri Institute CTSI Pilot Grant Awards

The Clinical and Translational Science Institute ([CTSI](#)) [Pilot Grant Program](#) provides funding in conjunction with the Boston Medical Center, to help BU investigators develop and deploy new tools, methods, and processes to explore and solve major challenges in clinical and translational science.



[Project: A Soft Robotic Catheter for Percutaneous Management of Non-compressible Torso Hemorrhage](#)

The researchers will develop a novel device that uses robotic technology to automate hemorrhage control processes. Designed for clinical situations where compression cannot be applied to stop bleeding, the easy-to-use approach is safer than alternative methods and is designed to stabilize a non-compressible torso hemorrhage without completely cutting off blood flow to the lower extremities. Check Professor Ranzani's research website [here](#) for an upcoming paper related to this work. **PI:** Tommaso Ranzani, PhD || **Co-PI:** Jeffrey Siracuse, MD, MBA

[Project: A Soft-foldable Robotic Retractor with Integrated Pressure Sensing to Reduce Tissue Trauma in Neurosurgery and Skull Base Surgery](#)

The researchers will create soft robotic innovations and systems to facilitate non-invasive neurosurgical operations. They will design, develop, and evaluate a soft robotic neurosurgical retractor to create a workspace in the brain. The retractor will use pneumatically-driven, origami-inspired actuators to create the workspace and will monitor robot/tissue interactions. View related work [here](#). **PI:** Sheila Russo, PhD || **CoPIs:** Anand Devaiah, MD and Urvashi Upadhyay, MD



Workshops, Seminars, Lectures, and Events

CISE Workshops, Seminars, Lectures, and Events are an opportunity for academics, students, and professionals from varied disciplines to connect for potential collaborations and develop intellectual networks.

Held weekly, [CISE Seminars](#) draw a strong number of attendees, including BU faculty, students, and locals from industry and Boston-area universities. CISE hosted 12 CISE Seminars in Summer/Fall 2023 and 15 CISE Seminars in Spring/Summer 2024. In addition to speakers discussing some of the Center's core areas of machine learning, decision-making, and control, this year's CISE seminars featured diverse topics including robotics, autonomous systems, and computer systems.

Distinguished & Joint Seminars

Distinguished and Joint Seminars host renowned

speakers that are global research and thought leaders from academia, industry, non-profit organizations, and government. These speakers are conducting ground-breaking, interdisciplinary research in engineering, as well as computing and computational science.

Kavita Ramanan (2/13/2024)

(hosted jointly by CISE & Hariri Institute)

[Asymptotically Exact Characterization of Epidemic Models on Sparse Random Graphs](#)

Professor of Applied Mathematics at Brown University

Jeremias Sulam (4/12/2024)

(hosted jointly by BME, Systems Neuroscience, CISE, & Hariri Institute)

[Imaging, Data, and Learning: Modern challenges in Biomedical Data Science](#)

Assistant Professor of Biomedical Engineering at Johns Hopkins University; NSF CAREER Awardee

Asu Ozdaglar (4/26/2024)

(hosted jointly by CISE & Hariri Institute)

[Independent Learning Dynamics for Stochastic Games: Convergence and Finite-Time Analysis](#)

EECS Department Head; MIT Schwarzman College of Computing Deputy Dean of Academics; MathWorks Professor

Andrew Chien (5/2/2024)

(hosted jointly by CISE & Hariri Institute)

DISTINGUISHED HARIRI/CISE SEMINAR



Asu Ozdaglar

Professor
Massachusetts Institute of Technology

Independent Learning Dynamics for Stochastic Games: Convergence and Finite-Time Analysis

Abstract

Bio

Friday, April 26th
3:00pm-4:00pm
665 Commonwealth
Avenue, CDS 1750
Faculty Host:
Ayçe Cogburn

Student Host:
Andrei Chavez Arriaga

Reinforcement learning (RL) has had tremendous successes in many artificial intelligence applications. Many of the forefront applications of RL involve multiple agents, e.g., playing chess and Go games, autonomous driving, and robotics. Unfortunately, classical RL framework is inappropriate for multi-agent learning as it assumes an agent's environment is stationary and does not take into account the adaptive nature of opponent behavior. In this talk, I focus on stochastic games for multi-agent reinforcement learning in dynamic environments and discuss best-response learning dynamics for stochastic games, each agent to myopic and choose best-response type actions to other agents' strategies independently, meaning without any coordination with her opponents. There has been limited progress on developing convergent best-response type independent learning dynamics for stochastic games. I will present our recently proposed independent learning dynamics that guarantee convergence in zero-sum stochastic games. We then focus on the natural information setting where agents do not observe opponents' actions, but only observe the payoff they receive at each round. We present independent and independent learning dynamics for such settings and provide finite-time guarantees using a novel coupled Lyapunov drift approach. In the end, I will present a new class of Markov games that models local player interactions in multi-agent stochastic games.

Asu Ozdaglar is the MathWorks Professor of Electrical Engineering and Computer Science (EECS) at the Massachusetts Institute of Technology (MIT). She is the department head of EECS and deputy dean of academics of the Schwarzman College of Computing at MIT. Her research expertise includes optimization, machine-learning economics, networks, her recent research focuses on designing incentives and algorithms for data-driven online systems with many diverse human-machine participants. She has investigated issues of data ownership and markets, spread of misinformation on social media, economic and financial contagion, and social learning. Professor Ozdaglar is the recipient of a Microsoft Research, the MIT Graduate Student Council Teaching award, the NSF Career award, the 2020 Donald P. Eckman award of the American Automatic Control Council, the 2014 Spore teaching award, and Kelley Distinguished School of Engineering and Mathematics professorship. She is an IEEE Fellow, IFAC Fellow, and was selected as an invited speaker at the International Congress of Mathematicians. She received her Ph.D. degree in electrical engineering and computer science from MIT in 2005.



[How Can We Decarbonize the Power Grid and Meet AI's Exploding Power Demands?](#)

Professor of Computer Science at UChicago; Director of [CERES- Center for Unstoppable Computing](#)

Faculty Events

Events are organized to further develop the objectives of CISE faculty research and student projects. These events also serve to enhance the visibility of CISE, its faculty, and, correspondingly, the prominence of their home departments: the College of Engineering, the College of Arts and Sciences, the Questrom School of Business, and the Hariri Institute. CISE staff also attend expos and conferences to build the Center's brand, such as Techspo, Boston 2024, Robotics Expo, and AI Expo for National Competitiveness.

CISE/BDC-IMEC (September 20, 2023)- Fifteen faculty members presented their research via Lightning Talks at a workshop organized by Rabia Yazicigil and co-hosted by CISE and BU's [Biological Design Center](#) (BDC) at the Center for Computing and Data Sciences. Experts from IMEC, a world-leading R&D innovation hub in nanoelectronics and digital technologies, attended the event. At the workshop, faculty shared their research in intelligent systems, biological systems, and bioelectronics with their peers and members of IMEC. The [event](#) concluded with further collaboration discussions between BU faculty and IMEC. BU students from Yazicigil's lab will join IMEC as interns in Fall 2024 for 9 months to design and fabricate energy-efficient custom-designed integrated circuits for biomedical applications. Alperen Yasar will be interning with Dr. Nick Van Helleputte's group focused on Circuits & Systems for Health. Dilara Caygara will be interning with Dr. Carolina Lopez's group focused on Circuits for Neural Interfaces.

AI for Understanding Earthquakes Workshop (November 10, 2023)- CISE organized a workshop comprised of expert speakers, an AI challenge component, and a networking session with Los Alamos National Laboratory and Princeton University. This forum's focus was the utilization of AI to study novel approaches to earthquakes. This [in-person workshop](#) inspired CISE affiliates Brian Kulis (ECE, CE, SE), Janusz Konrad (ECE), and Prakash Ishwar (ECE, SE, CS) to pursue future grant funding while combining expertise to create a tangible impact.

Celebrating Women of Research- International Women's Day Panel (5/7/2023)

This virtual panel in honor of International Women's Day highlighted the trailblazing scholarship, strength, and resilience of female faculty members who have



overcome major systemic challenges to make significant contributions to their fields. Speakers included CISE affiliates Ayşe Kivilcim Coşkun and Rabia Yazicigil Kirby. The professors shared their career experiences including programs, mentors, and resources that helped them along the way. *Hosted by BU's Office of Research and the Diversity, Equity, and Inclusion Committee*



BU AI Task Force

The fourteen-member [AI Task Force](#) is co-chaired by Yannis Paschalidis (ECE, BME, SE) and Wesley Wildman (CS) was created in Fall 2023 by the Hariri Institute to assess both the potential and the pitfalls of generative artificial intelligence and define sensible pathways for the use of the transformative technology on campus. CISE faculty affiliate, Mark Crovella (ECE), is one of fourteen members of the Task Force. The Task Force's four main objectives are information gathering, developing specific recommendations, creating a



set of policies to be adopted by BU, and laying the groundwork for a positive, community-wide implementation. A [final report](#) was produced in Fall 2023.

Faculty Outreach and Research Meetings

Faculty are supported by CISE staff who apply their organizational expertise in curating events for unique prospects. These opportunities promote interdisciplinary collaborations and facilitate discussions with faculty across BU and high-level representatives in their respective fields. Some events and conferences that CISE assisted in the organization include:

- [Robotics Retreat](#) (August 11, 2023)- Andrew Sabelhaus (ME, SE)
- [Department of Energy’s Advanced Research Programs Agency \(ARPA-E\) Event](#) (November 14, 2023)- Event with Michael Caramanis (ME, SE)
- [International Multi-Robot Event](#) (December 4-5, 2023)- Event with Alyssa Pierson (ME, SE)
- [CISCO Broad Research Partnership](#)- CISCO and BU have created a mutually beneficial research partnership to collaborate on the creation of a common research portfolio and host ‘research days’. CISE gathered this information to facilitate a larger research alliance.



Research on Tap

This series brought together groups of BU faculty researchers to deliver lightning talks on important topics to engage a broad audience and maximize impact on the audience. These CISE faculty affiliates presented:

[Toward Responsible AI: Privacy, Fairness, and Accountability \(10/25/2023\)](#)



This event featured an exploration between people and institutions thinking about information law and ethics for algorithmically powered systems and how they are coming to understand the risks and benefits of complex and automated digital tools.

Two CISE affiliates were featured as speakers; Yannik Paschalidis spoke in the plenary panel and Mark Crovella

presented “We Need to Audit Algorithms”. *Hosted by BU Office of Research & Rafik B. Hariri Institute for Computing and Computational Science & Engineering*



[Measuring Corporate Impacts on the Environment & Society \(9/13/2023\)](#)



This event explored ‘environmental, social, governance’ (ESG) metrics. CISE affiliate Nalin Kulatilaka hosted the BU faculty and researchers who delivered 4-minute mini-talks, and the event ended with lively discussions among colleagues. *Hosted by BU’s Impact Measurement & Allocation Program (IMAP), a joint program of BU Institute for Global Sustainability & BU Susilo Institute for Ethics in the Global Economy at BU’s Questrom School of Business*

Student Events

At CISE, fostering a tight-knit community is paramount. Throughout FY 2023-2024, diverse events were developed to unite and support PhD students.

Student-focused events promote networking and enhance research collaborations. Some networking events help students who are away from home feel a sense of community and care, making CISE more visible and prominent while ensuring students receive the support they need. Additional institutes and divisions that have co-hosted many of these events are the Hariri Institute, Division of Systems Engineering (SE), and Division of Materials Systems Engineering (MSE). Their sponsorship and teamwork enhance the scale, impact, and interdisciplinary nature of organized events.

Annual CISE Graduate Student Workshop (CGSW 10.0)

The CISE Graduate Student Workshop (CGSW) is an annual forum that provides students across the twelve departments/divisions the opportunity to share their original research and hone their communication skills in an engaging, collaborative environment. This year, 35 abstracts were submitted, and 18 students were selected to present their work.



The evaluation criteria included: significance and impact, novelty, technical merit, writing and presentation, and relevance to CISE. Organized by students, for students, the day-long event encouraged interdisciplinary sharing among affiliated students, faculty, and invited guest speakers across diverse application areas.



Two plenary speakers presented, Stephanie Gil, Assistant Professor of Engineering and Applied Science at Harvard, spoke on “Making Multi-Robot Systems Capable and Secure”; and Eshed Ohn-Bar, Assistant Professor at BU Department of Electrical and Computer Engineering spoke about “Machine Teaching”. The event concluded with an awards reception where students were recognized for best presentations.



Best Presenter Award Winners

1st Place: Arslan Riaz (ECE PhD Candidate, Advisor: Rabia Yazicigil) – *Ultra-Low Energy Universal Soft-Detection Decoding*

2nd Place: Zeynep Ece Kizilates (ECE PhD Candidate, Advisor: Rabia Yazicigil) – *Interleaved Noise Recycling in a Soft-Detection Scenario Using the ORBGRAND Decoder*

3rd Place: Shashwath Bharadwaj (ECE PhD Candidate, Advisor: Vivek Goyal) – *Mitigating Misattributions in Single-Photon Detector Arrays with Row-Column Readouts*

Annual CISE Graduate Student Best Paper Competition

Students, advised by CISE faculty affiliates, enter this competition by submitting accepted publications of their original research where they are listed as the first author. The competition was established to promote student research and recognize the scientific quality of research being conducted by CISE students. CISE faculty affiliates evaluate the papers and determine the awardees.



Hoang Tran, advised by Ashok Cutkosky (ECE) won the Best Paper Award for his submission “Better SGD using Second-order Momentum”.

Jimuyang Zhang, advised by Eshed Ohn-Bar (ECE), runner-up, was recognized for his paper titled “Coaching a Teachable Student”.

Mohammad Hammas Saeed, advised by Gianluca Stringhini (ECE), and **Haoxing Tian**, advised by Yannis Paschalidis (ECE, BME, SE, CDS) and Alex Olshevsky (ECE, SE, CS), were recognized for their achievements as additional finalists.

Industry Roundtables and Lunch & Learn Events

CISE affiliated faculty and staff, bring together alumni working in local industry with graduate students for roundtable discussions and a Q&A session. Speakers have come from Amazon, MIT Lincoln Lab, Philips, and robotics startup Jibo, Inc. The purpose of this forum is to facilitate an intimate sharing of information, insights, and experiences about post-graduation experiences and opportunities in an informal, dynamic atmosphere. Past roundtable speakers can be found [here](#).

PhD Student Scholar Award

This inaugural student scholar award program bestows 3 to 4 incoming PhD students with a one-time endowment on top of their fellowship stipends to be used towards research-related expenses. Students are nominated by CISE affiliated faculty for the award based on their merit, strength, potential to conduct cross-disciplinary research, and likeliness to continue PhD work with a CISE-affiliated prospective faculty advisor.

2024 Awardees

Qian Wu (Advisor Sean Andersson)
Chae Woo Lim (Advisor Sheila Russo)
Umran Yungucu (Advisor Ajay Joshi)
Onur Okuducu (Advisor Yannis Paschalidis)



Convergent PhD Fellowship

This is the fourth year the College of Engineering, with the support of various departments and centers, such as CISE, is offering PhD applicants a prestigious fellowship, the Convergent PhD Fellowship. It is given to outstanding candidates with research interests that align with one of the College of Engineering’s convergent themes. For each theme, the faculty committee selects 2-3 top nominees to potentially be offered the fellowship. This can bring these superb applicants into CISE’s research portfolios, and their affiliated departments can bring in more high-quality applicants as well.

Resident Student Scholar Program

Since 2014, CISE faculty has invited eminent scholars and scientists to share their ideas through the Resident Scholar Program. This year the program facilitated collaboration among international and national universities.



For FY23-24, the [Division of Systems Engineering](#) hosted two Resident Scholars.

- **Jessica Louie**, [visiting researcher](#), worked on the development of feedback controllers on biological networks in the Robotics Lab with CISE Research Professor Calin Belta. Louie has built and led data science and software engineering teams in industry and is currently CTO of Norfolk Plant Sciences & Norfolk Healthy Produce; her areas of interest include synthetic biology, high tech, sustainability, innovation, and strategy.
- **Yike Li**, SE visiting researcher, an Autonomous Systems PhD candidate of Cagliari, Italy worked with Professor Alessandro Giua. She joined CISE faculty affiliate Christos Cassandras' [CODES lab](#), and CISE for six months as a visiting scholar. Her research interests include modeling & control of large-scale systems, especially functions and scenarios for metro/railway; and applying model-based approaches to solve safety-related problems including safety analysis, fault diagnosis, anomaly detection, and attack prevention.

Internships, Employment Opportunities, and Professional Development

CISE faculty, using their professional network, continually provide students with employment prospects by disseminating information about these available opportunities through the CISE student database.

- **Internships and CVs**- the Mass Transportation event, various Robotics events, and more.
- **Presentations**- CISE provides one-on-one and group training for clearly communicating their ideas clearly and succinctly, to graduate students who wish to hone their communication skills, including interviewing, presentation, and resume writing.
- **International Students and Scholars Office (ISSO)**- facilitate international student inquiries in areas including internships and co-ops



Student Conferences and Outreach- CISE Goes the Extra Mile

Grace Hopper Celebration (September 23, 2023) CISE and the Division of Systems Engineering (SE) sponsored five students to represent the College of Engineering at the Grace Hopper Celebration. CISE students had the opportunity to network, increase visibility in their respective disciplines, and engage in discourse with prominent professionals in diverse science, research, and technology disciplines.

Hackathon (October 20, 2023) Students organized this event with mentorship and financial resources from CISE. The scope of the event was to bridge the gap between hardware and software engineering and integrated hardware and software principles.



Robotics Summit Expo (May 1-2, 2024) CISE was the liaison for eleven graduate students to attend the Expo for networking with international speakers on various topics.

Students & Alumni in the News

Sabbir Ahmad and Ehsan Sabouni H.M and their collaborators won the Control Systems Society Technical Committee (CSS TC) on Smart Cities Outstanding Student Paper Prize 2024. The CSS TC, an organization with the IEEE Control Systems Society promotes research, development, and dissemination of knowledge in these specialized areas.

Cansu Demirkiran, a PhD student working with Ajay Joshi, has been selected as one of the 2024 [ML and Systems Rising Stars](#). Cansu's area of research lies in Machine Learning, Photonic Systems, and Computer Architecture. The program received over 140 applicants and only 41 were accepted into the 2024 cohort.

Sadullah Canakci (ECE, PhD'22,) won the [Best Paper Award](#) at Hardware Oriented Security and Trust (HOST) 2023 for his work on [hardware fuzzing](#). He is currently employed as a Silicon Design Engineer with AMD. (Faculty Advisors: Ajay Joshi, Manuel Egele)

Salomón Wollenstein-Betech, a CISE alumni, was interviewed (April 10, 2024) by [Bostonia](#) about traffic. He studied transportation infrastructure and traffic patterns at CISE. He spoke about congestion pricing, commuting, public transportation, and the implementation of future potential traffic control measures in Boston.

Fatih Acun (ECE) was awarded a Hariri Institute 2024 Graduate Student Fellowship, a three-year appointment. [Fatih's research](#) focuses on enhancing energy efficiency and sustainability in data centers by developing innovative methods that utilize complex datasets collected from large-scale computing systems.



Marketing and Development

CISE initiatives are not only instrumental in advancing CISE's faculty research and student projects but play a pivotal role in enhancing the center's visibility. Articles and spotlights further amplify CISE's impact on the academic community and further establish CISE as a recognized and respected entity in its field. These diverse activities not only strengthen CISE's presence but also enrich its research ecosystem, making it a prominent hub for innovative research and academic excellence.

Events organized by CISE serve as platforms for academics, students, and professionals from diverse disciplines to connect and explore potential collaborations, thereby building intellectual networks. By ensuring widespread awareness of CISE's initiatives and goals, more individuals have been inspired to engage with and support our mission, thereby fostering a robust social media presence.

Social Media & Website

- Improves, develops, and updates the website to improve usability, manageability, and highlight important faculty research, awards, and ongoing activities on campus.
- Prepare articles and promotional graphics
- Write faculty and student Spotlights
- Event coverage: articles and social media
- Promote articles via social media

Public Relations & Spotlights

Articles

- Interview CISE faculty and students on current or upcoming research/accolades.
- Spotlights- highlight and raise awareness of scientific research conducted by faculty and students.
- Create media lists, write/publish articles, develop pitches, organize press interviews, and respond to media queries

Strengthen relationships

- BU Resources: work with Departments, Institutes and Centers to create symbiotic work
- BU Experts- update all information regarding faculty affiliates to promote work
- External press contacts for publication- BU PR, Research, and BU daily magazine *Today*, BU science publication *The Brink*, BU alumni magazine *Bostonia*

Co-Hosted Community Events

CISE, Hariri, MSE, & SE

- Welcome Back (9/8/23)
- Holiday Brunch (12/1/23)
- End of Year Celebration, 200+ attendees (4/26/24)
- Fitbit Challenge- Terrier Treks (4/24)

CISE, MSE, SE

- Month of Fall Event (10/31/23)
- Thanksgiving (11/17/23)
- Graduate Student Appreciation Lunch (4/12/24)
- Nowruz (3/22/24)



Faculty, Students, Staff, & Committees

Faculty Promotions

Ayşe K. Coşkun was appointed as the interim Associate Dean for Research and Faculty Development from July 21, 2023- June 30, 2024.

This role supports and develops programs on faculty mentoring and career progression, specifically in the context of the power of collaboration and convergence for expanding research impact. Additionally, Coşkun has held the role of interim Associate Dean for Educational Initiatives which included advancing our capacity to infuse data science throughout the undergraduate curriculum.

Newly Appointed CISE Faculty

Three new faculty joined CISE including Gianluca Stringhini, Associate Professor (ECE) on October 17, 2023; Sabrina Neuman, Assistant Professor (CS) on September 15, 2023; and Tianyu Wang, Assistant Professor (ECE) on March 11, 2024. Three faculty left CISE last year including Francesco Orabona, Assistant Professor and Director of the Optimization and Machine Learning Lab (ECE, SE, CS) left in August 2024; Alan Liu (Assistant Professor (ECE, CS) left in August 2024; and Calin Belta, Director of BU Robotics Lab (ME, ECE, SE) joined the University of Maryland on December 24, 2023, yet remains a research professor and CISE-affiliate at BU.



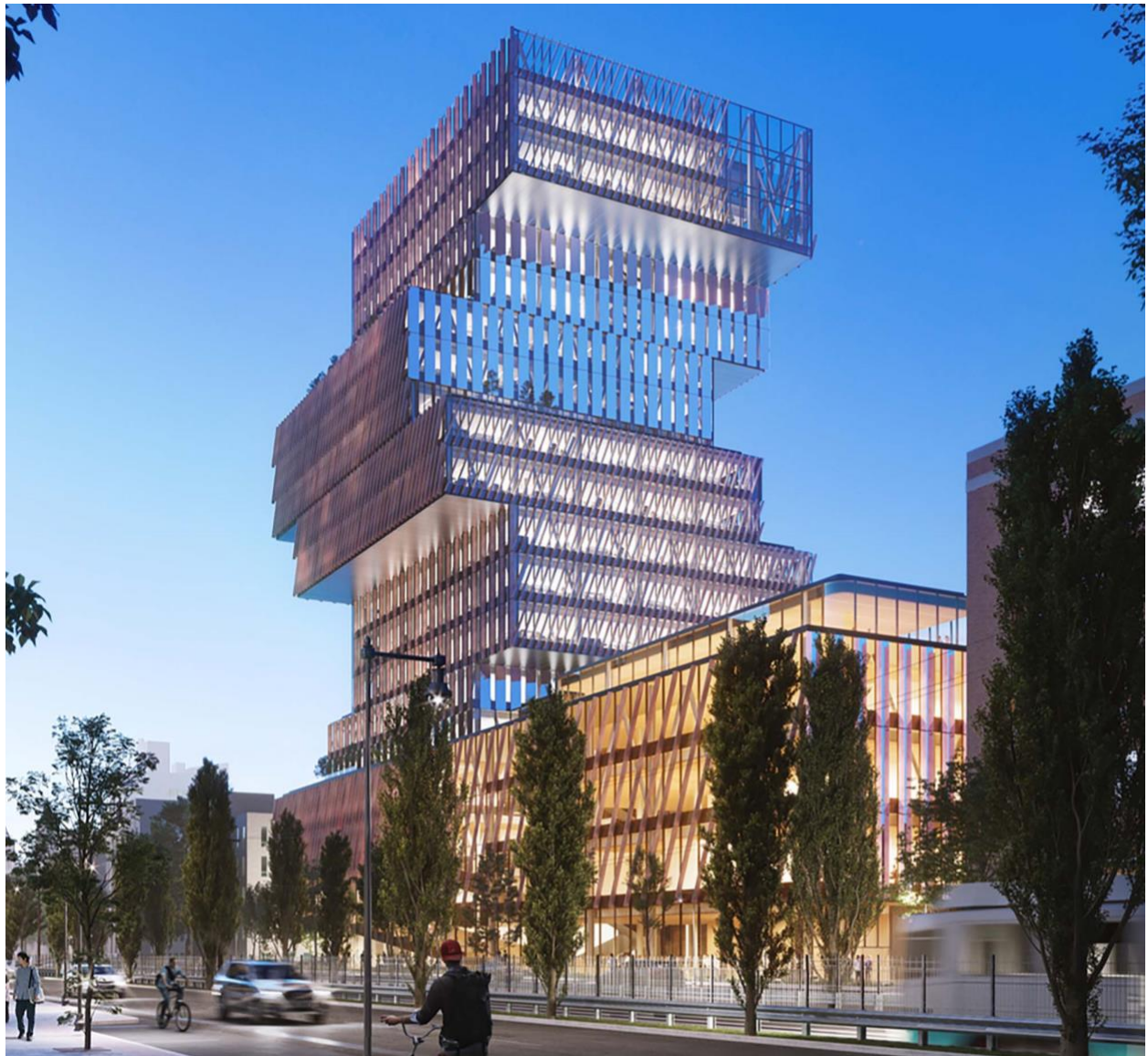
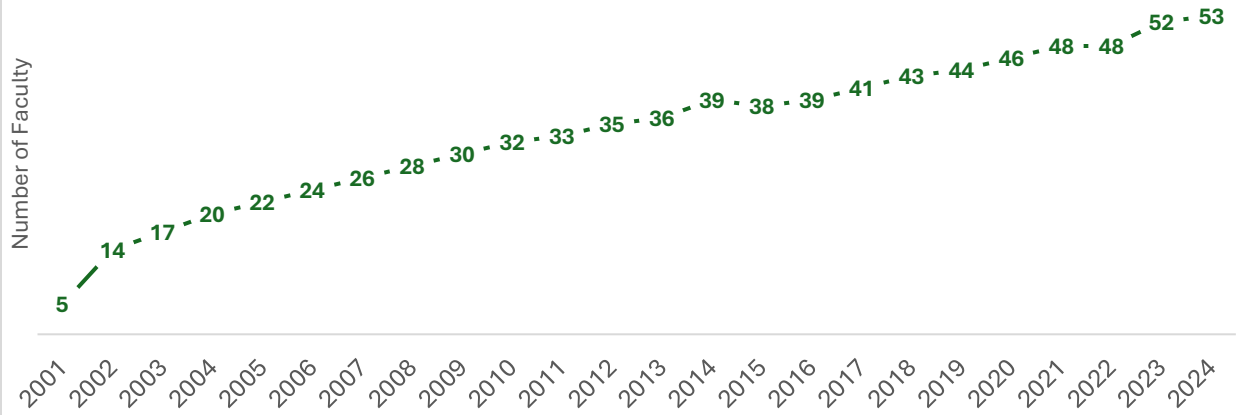
Sabrina M. Neuman is an Assistant Professor of Computer Science at Boston University. Her research interests are in computer architecture design informed by explicit application-level and domain-specific insights. She is particularly focused on robotics applications because of their heavy computational demands and potential to improve the well-being of individuals in society. She holds the 2023-2026 Boston University Innovation Career Development Professorship.

Gianluca Stringhini is an Associate Professor in the Electrical and Computer Engineering Department at Boston University, holding affiliate appointments in the Computer Science Department and in the Faculty of Computing and Data Sciences. He has received multiple prizes including an NSF CAREER Award in 2020, and his research has won multiple Best Paper Awards. Gianluca has published over 100 peer-reviewed papers including several in top computer security conferences like IEEE Security and Privacy, CCS, NDSS, and USENIX Security, as well as top social computing conferences such as ICWSM, CHI, CSCW, and WWW.



Tianyu Wang's research aims to harness the computational power from optical physics to develop more efficient sensors and processors. Traditionally, light primarily serves as a medium for transmitting information in applications such as imaging and telecommunication, yet its potential for information processing has attracted more attention recently.

GROWTH OF CISE FACULTY



Renowned Awards & Accolades

CISE facilitates its role as a leading hub for interdisciplinary research at the intersection of information theory, systems engineering, and related disciplines. Faculty affiliates actively collaborate with colleagues, students, and alumni in a broad range of diverse scholarly activities, as well as with other academic, industry, and government researchers from around the world. As a result, CISE faculty has been honored with various prestigious awards and has published 124 scholarly papers in top-tier journals. Additionally, 14 of these publications were the result of collaboration between CISE affiliates and current or former students, postdoctoral researchers, and/or visiting scholars.

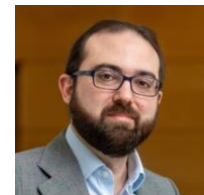
Ayşe K. Coşkun spoke at the Design, Automation and Test in Europe Conference ([DATE24](#)) on March 26, 2024, as the Special Day Lunchtime Keynote speaker. The keynote speech, *Data Center Demand Response for Sustainable Computing: Myth or Opportunity?*, explored opportunities and myths inherent in improving data center sustainability. DATE24 is one of the top Electronic Design Automation (EDA) events in Europe.

Ayşe K. Coşkun is collaborating with the Norwegian University of Science and Technology (NTNU) and the Institute for Global Sustainability (IGS) on a study called “Limits to Digitalization (L2D)” as of July 13, 2023. This government-backed initiative through the Research Council of Norway has invested \$1.1 million to examine the role of digital transformation in Norway’s shift to clean energy, with a focus on its growing data center industry.



Ayşe K. Coşkun and her co-author Sherief Reda won the IEEE TCAD Donald O. Pederson Best Paper Award for their paper titled, "PACT: An Extensible Parallel Thermal Simulator for Emerging Integration and Cooling Technologies.". This recognizes the best paper published in the Transactions on Computer-Aided Design of Integrated Circuits and Systems publication. This award, sponsored by IEEE CEDA, is given annually at the Design Automation Conference (DAC).

Ayşe K. Coşkun, Gianluca Stringhini, and PhD Student Saad Ullah’s research, supported by a gift from OpenAI’s Cybersecurity Grant Program and usage of the [Security Lab Boston University](#) (SeclabU), was published [on the OpenAI blog](#). The research works on improving the ability of LLMs to detect and fix vulnerabilities in code. This research could enable cyber defenders to catch and prevent code exploits before they are used maliciously.



Mark Crovella was featured in BU’s [The Brink!](#), for his work stemming from a first-of-its-kind program sponsored by the National Science Foundation and Department of Energy program. The National Artificial Intelligence Research Resource (NAIRR) Pilot will bring scrutiny to AI’s vast capabilities by providing access to advanced supercomputing resources and data by auditing Large Language Models (LLMs) for socially undesired behavior.



Vivek Goyal was honored in April with a [2024 Guggenheim Fellowship](#) for his proposed research project, *Nanoscale Metrology Through Vector-Valued Secondary Electron Yield Estimation*. The Guggenheim Fellows are selected across 52 disciplines based on prior career achievement and exceptional promise.

Lucy Hutyra was named a [MacArthur Fellow](#), one of the most prestigious awards for scientists, researchers, and professionals in a broad range of fields. Hutyra focuses on understanding the impacts of urbanization on climate and ecosystems, studying how urban environments influence trees and the carbon cycle, and advancing knowledge on how to meet climate action and emission reduction goals.



Brian Kulis was interviewed about the rise of generative AI and the overall impact of Google’s “AI Overview”, artificial intelligence that summarizes search results into short paragraphs, by GBH’s *All Things Considered* host Arun Rath. The article, “Google’s new ‘AI Overview’ feature shows the tech’s weaknesses, BU expert says”, discusses the tremendous progress AI has made in the past few years.



Wenchao Li was awarded (February 21, 2024) the [National Science Foundation Faculty Early Career Development \(CAREER\) Award](#) to further research on [specification-guided imitation learning \(IL\)](#). Through this NSF award, Li will develop a novel framework for the process of IL to be guided by theories and algorithms with formal specifications. His research will explore which types of specifications are appropriate for different scenarios and how to incorporate specifications into data-driven learning processes, such as IL.

Tom Little has rejoined the College’s leadership team as of July 1, 2023, as the Associate Dean for Strategic Initiatives (ADSI), formerly known as the Associate Dean for Education Initiatives (ADEI). Over the past decade Little has successfully facilitated the development of undergraduate concentrations, the broadening of master’s degree options, and implementation of a host of alumni-student interactions.



Ajay Joshi was named interim Associate Dean for Education Initiatives (ADEI). In this position, he has overhauled first-year programming, established robotics as a concentration, and represented a valuable point of contact for all students.

Bobak Nazer was honored with the [2024 Gerald and Deanne Gitner Family Award for Innovation](#) and a \$10,000 stipend in Teaching with Technology for his innovation resulting in positive learning outcomes for undergraduates. For his ‘[Probability, Statistics, and Data Science for Engineers](#)’ course, he recorded and narrated roughly 50 videos to break down complex concepts to create a rich repository of resources for students and colleagues.

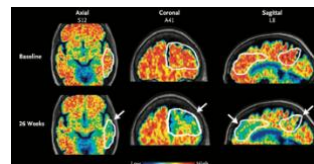




Ioannis Paschalidis was featured in [BU's *The Brink!*](#) for his research concerning hypertension: a new machine learning algorithm leveraging information in electronic health records and showcasing the power of AI in healthcare.



Ioannis Paschalidis and colleague's work describing their new promising AI model which predicts the likelihood of someone developing Alzheimer's Disease early was featured in the [Boston Herald](#) and BU's [The Brink!](#). Their paper was published in [Alzheimer's & Dementia](#), the journal of the Alzheimer's Association, and the [Hariri Institute](#) produced a [video](#) with



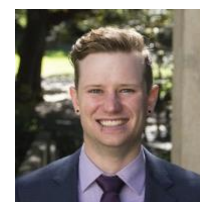
Ioannis describing the work.

Alyssa Pierson was recognized by Mass Robotics for Contributions to Robotics with the [Rising Star Robotics Award](#) "an early-career professional woman making strides in research that will lead to significant impact in the field of robotics".

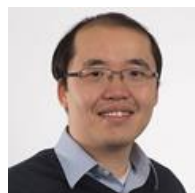


Sheila Russo was awarded a four-year NIH R01 from the National Institute of Biomedical Imaging and Bioengineering (NIBIB) to further develop their surgical soft robots in her Material Robotics Lab at BU. Her [research's implications](#) are potentially significant as the grant will enhance the precision of lung cancer biopsies, targeting specific areas of the lungs more effectively.

Andrew Sabelhaus was [awarded](#) (April 2, 2024) the [National Science Foundation Faculty Early Development \(CAREER\)](#) Award to further his [Soft Robotics Control Lab's](#) mission: to build safety smarts into soft robots for health care applications. He aims to develop autonomous artificial intelligence (AI) systems that bring a soft robot into close contact with humans during verifiably safe motion. Some funding will be used for recruiting under-represented students to build a more diverse robotics workforce.



Lei Tian was awarded (August 17, 2023) the Scialog: Advancing Biomedicine Award from the [Research Corporation for Science Advancement](#), CZI, the Frederick Gardner Cottrell Foundation, and Walder Foundation, an initiative aiming to catalyze advances in imaging technologies.



Lei Tian was invited to serve as a partner in a European Union proposal to support funding a visiting PhD or senior researcher to work in his group for a few months in the future. This project will develop innovative photonic-based technologies for monitoring harsh environments and will facilitate efficient knowledge transfer between institutions.

Lei Tian's "[Wide-Field, High-Resolution Reconstruction in Computational Multi-Aperture Miniscope Using a Fourier Neural Network](#)" paper was published (March 11, 2024) in [Optica](#), the flagship Journal of Optica Publishing Group. This paper navigates challenges related to traditional

fluorescence microscopy which is constrained by inherent trade-offs among resolution, field-of-view, and system complexity.

Hua Wang has been recognized as one of the [Most Influential Asian American Pacific Islanders of 2023](#), honored by Michelle Wu, for his excellent work at BU, philanthropy, social service, and social impact in the greater Boston area.

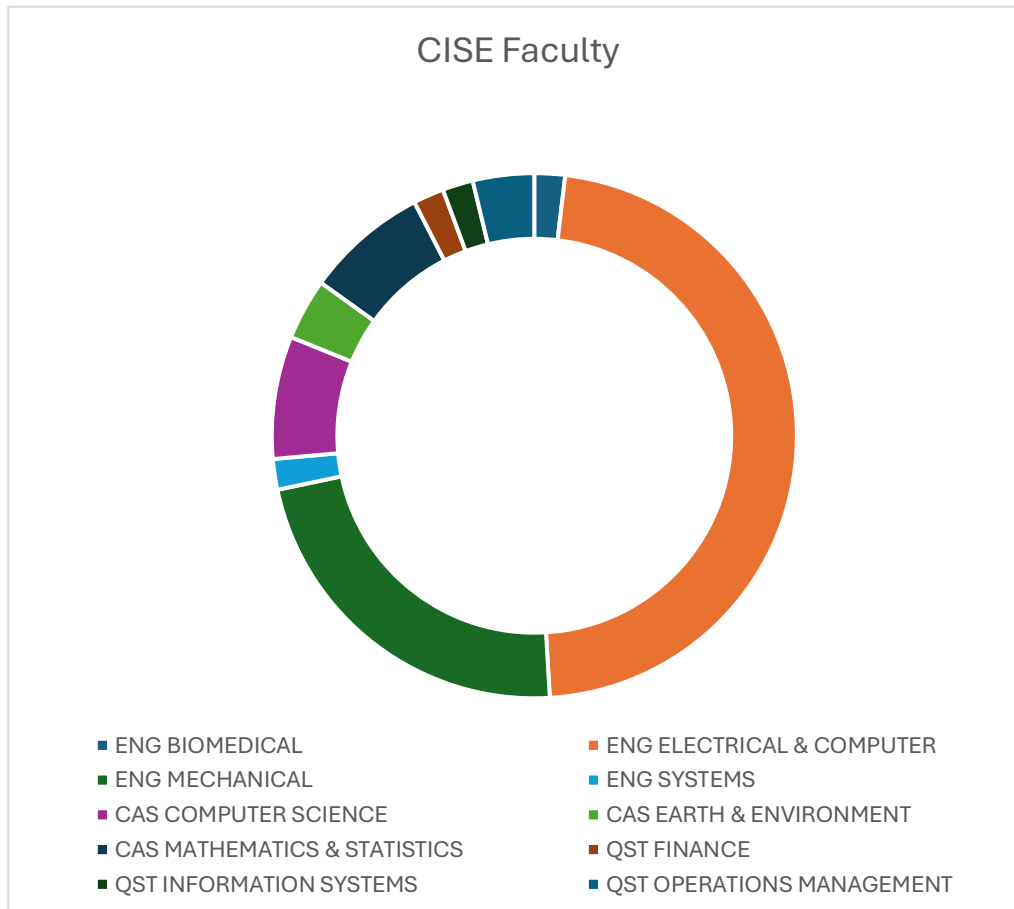


Hua Wang has [collaborated](#) with two Mechanical Engineering alumni on their proposal, “GRASP-Sat, short for Geostationary Orbit Rendezvous and Space Debris Pusher Satellite Swarm”, that earned First Prize at the [SmallSat Alliance 2024 Collegiate Space Competition](#).

Rabia Yazicigil Kirby was awarded the NSF CAREER Award for her project, [Secure Miniaturized Bio-Electronic Sensors for Real-Time In-Body Monitoring](#). This project is building on her ingestible capsule work that was published in *Nature* in August 2023.



Rabia Yazicigil Kirby is (June 15, 2023) part of an interdisciplinary engineering team with Ahmad Khalil (BME) and Douglas Densmore (ECE, BME, MSE) that is collaborating with experts from [Capra Biosciences, Inc.](#), a start-up behind a cutting-edge bioreactor technology.



CISE -Affiliated Faculty List

College of Engineering

BIOMEDICAL ENGINEERING

Sandor Vajda, Professor (BME, SE, CHEM)

ELECTRICAL & COMPUTER ENGINEERING

Christos Cassandras, Distinguished Professor (ECE, SE); Head of the Division of Systems

David Castañón, Professor (ECE, SE)

Ayşe K. Coşkun, Professor (ECE, SE); Head of PEACLab (ECE); CISE Director *as of July 1, 2022*; Interim Associate Dean for Research and Faculty Development *from July 21, 2023- June 30, 2024*

Ashok Cutkosky, Assistant Professor (ECE, SE); Faculty (CDS)

Manuel Egele, Assistant Professor (ECE)

Vivek Goyal, Professor (ECE); Associate Chair of Doctoral Programs (ECE)

Prakash Ishwar, Professor (ECE, CS, SE)

Ajay Joshi, Professor (ECE)

W. Clement Karl, Professor; ECE Chair; Director of Multidimensional Signal Processing Lab (ECE, BME, SE)

Janusz Konrad, Professor (ECE)

Brian Kulis, Associate Professor (ECE, CS, SE); Faculty (CDS)

Lev Levitin, Distinguished Professor of Engineering Science (ECE)

Wenchao Li, Associate Professor (ECE, SE, CS)

Thomas Little, Professor; Associate Dean of Educational Initiatives; Associate Director of the NSF Smart Lighting Engineering Research Center (ECE, SE)

Bobak Nazer, Distinguished Faculty Fellow; Associate Professor (ECE, SE)

Eshed Ohn-Bar, Assistant Professor (ECE)

Alexander Olshevsky, Associate Professor (ECE, SE)

Ioannis (Yannis) Paschalidis, Hariri Institute Director *as of July 1, 2022*; Founding Member and Faculty (CDS); Distinguished Professor (ECE, BME, SE)

Venkatesh Saligrama, Professor (ECE, SE, CS); Founding Member and Faculty (CDS); Data Science Faculty Fellow (CDS)

David Starobinski, Professor (ECE, SE, CS)

Gianluca Stringhini, Associate Professor (ECE)

Lei Tian, Associate Professor (ECE, BME)

Ari Trachtenberg, Professor; Associate Chair of Master Programs (ECE, SE)

Tianyu Wang, Assistant Professor (ECE)

Rabia Yazicigil Kirby, Assistant Professor (ECE)

MECHANICAL ENGINEERING

Sean Andersson, Professor (ME, SE); ME; Chair Director of the Master of Science in Robotics and Autonomous Systems

John Baillieul, Distinguished Professor (ME, ECE, SE)

Calin Belta, Research Professor; Director of BU Robotics Lab (ME, ECE, SE)

Michael Caramanis, Professor (ME, SE)

Michael Gevelber, Associate Professor (ME, MSE, SE)

James Perkins, Associate Professor (ME, SE)

Alyssa Pierson, Assistant Professor (ME, SE)

Tommaso Ranzani, Assistant Professor (ME, MSE, BME)

Sheila Russo, Assistant Professor (ME, MSE)

Andrew Sabelhaus, Assistant Professor (ME, SE)

Roberto Tron, Associate Professor (ME, SE)

Hua Wang, Associate Professor; Associate Head of the Division of Systems Engineering (ME, SE)

SYSTEMS ENGINEERING

Pirooz Vakili, Research Associate Professor (SE)

College of Arts and Sciences

COMPUTER SCIENCE

Azer Bestavros, Professor (CS, ECE, SE); Associate Provost for Computing & Data Sciences (CDS)

Mark Crovella, Professor (CS, ECE, SE); Founding Member and Faculty (CDS); Data Science Faculty Fellow

Abraham (Ibrahim) Matta, Professor; Department Chair of Computer Science (CS, SE)

Sabrina Neuman, Assistant Professor (CS)

EARTH & ENVIRONMENT

Lucy Hutyra, Distinguished Professor (A&S); Professor CAS)

Nathan Phillips, Professor (CAS)

MATHEMATICS & STATISTICS

Luis Carvalho, Associate Professor (MA); Associate Professor of MSSP (M. S. Statistical Practice)

Mark Kon, Professor (MA)

Konstantinos Spiliopoulos, Professor; Director of Statistics (MA)

Daniel Sussman, Assistant Professor (MA)

Questrom School of Business

FINANCE

Nalin Kulatilaka, Professor (FE); Wing Tat Lee Family Professor of Management

INFORMATION SYSTEMS

Benjamin Lubin, Clinical Associate Professor (IS); Faculty Director of MSDT Program

OPERATIONS MANAGEMENT

Erol Peköz, Professor and Department Chair (OM, SE)

Jinglong Zhao, Assistant Professor (OM)

Team CISE



Ayşe K. Coşkun
CISE Director,
as of July 1, 2022,
Professor (ECE,
SE), Head of PEAC
Lab



**Christina
Polyzos**
Associate Director



Lea Sabra
Marketing and
Communications
Specialist
*Fall Hire, as of July
10, 2023*



**Hannah
Dallman**
Grants
Administrator
*Spring Hire, as of
December 19,
2023*

CISE Management Committee

- John Baillieul
- Michael Caramanis
- Christos Cassandras
- David Castañón
- Ayşe K. Coşkun
- Benjamin Lubin
- Ioannis Paschalidis
- Venkatesh Saligrama
- Roberto Tron

CISE Seminar Organizing Committee

- Wenchao Li
- Alexander Olshevsky
- Sheila Russo

CISE plays an integral role in promoting and supporting faculty and their research through a number of initiatives, including marketing, scholarly programs, and community-building. CISE also offers support in career development for graduate students.

CISE develops and supports community building events to strengthen relationships between faculty and students. CISE organizes events and meetings to bolster affiliations.

2024 Hariri Institute Community Recognition Awards

These awards recognize community members who have been integral in helping bring success to their team and our organization.

Excellence in Service Awards

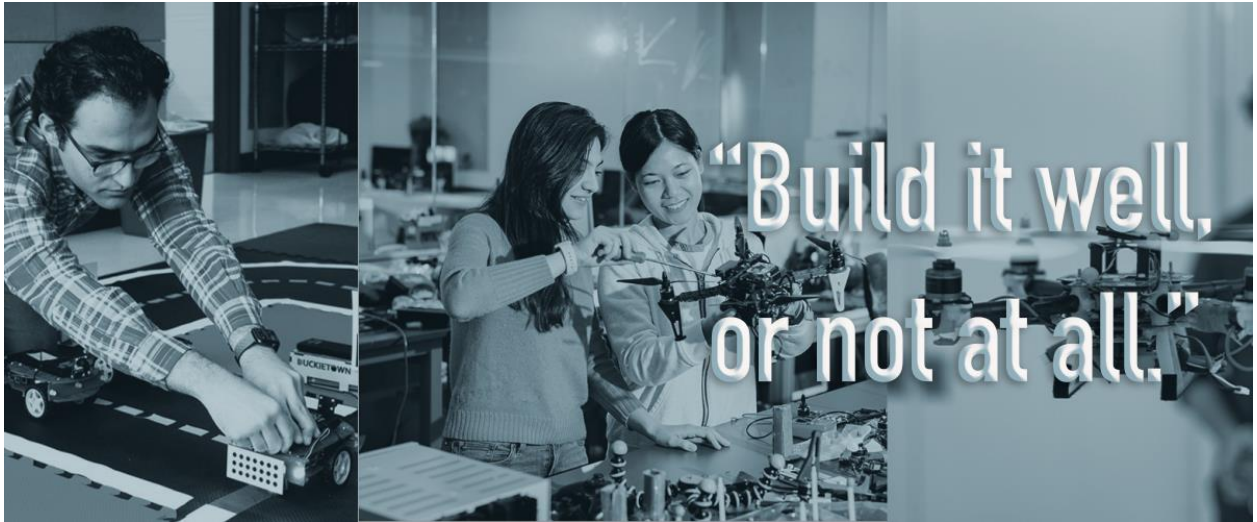
Maureen Stanton, Assistant Director of Marketing & Communications, Hariri Institute

Student Excellence Awards

Margaret Stanton, CISE marketing and communications intern assistant, Hariri Institute

CISE

CENTER FOR INFORMATION & SYSTEMS ENGINEERING



the Staff
at

The Center for Information and Systems Engineering
Ayse Coskun, Christina Polyzos, Hannah Dallman, and Lea Sabra

