ECE News

Spring 2022

Department of Electrical and Computer Engineering
Hajim School of Engineering & Applied Sciences
University of Rochester

For more photos: eiohmediaservices.smugmug.com/gallery/n-rNvfjj/

Celebrating the Class of 2022

The Department of Electrical and Computer Engineering celebrated the Class of 2022 in Strong Auditorium on May 14, 2022, followed by a reception on Wilson Quadrangle. The ceremony included remarks, faculty and student awards, and presentation of graduates.

For a full list of graduates:
hajim.rochester.edu/ece/news-events/assets/graduates---may-14,-2022.pdf

Events

View a list of departmental events:
hajim.rochester.edu/ece/news-events/events/index.html

Watch recordings of past ECE events:
hajim.rochester.edu/ece/news-events/events/recorded/index.html

Faculty News

April 2022

Rochester Engineering Society Awards

Congratulations to Professor Mark Bocko, awarded 2021 Engineer of Distinction, and Professor Thomas Howard, a finalist for the 2021 Kate Gleason Young Engineer of the Year by the Rochester Engineering Society.

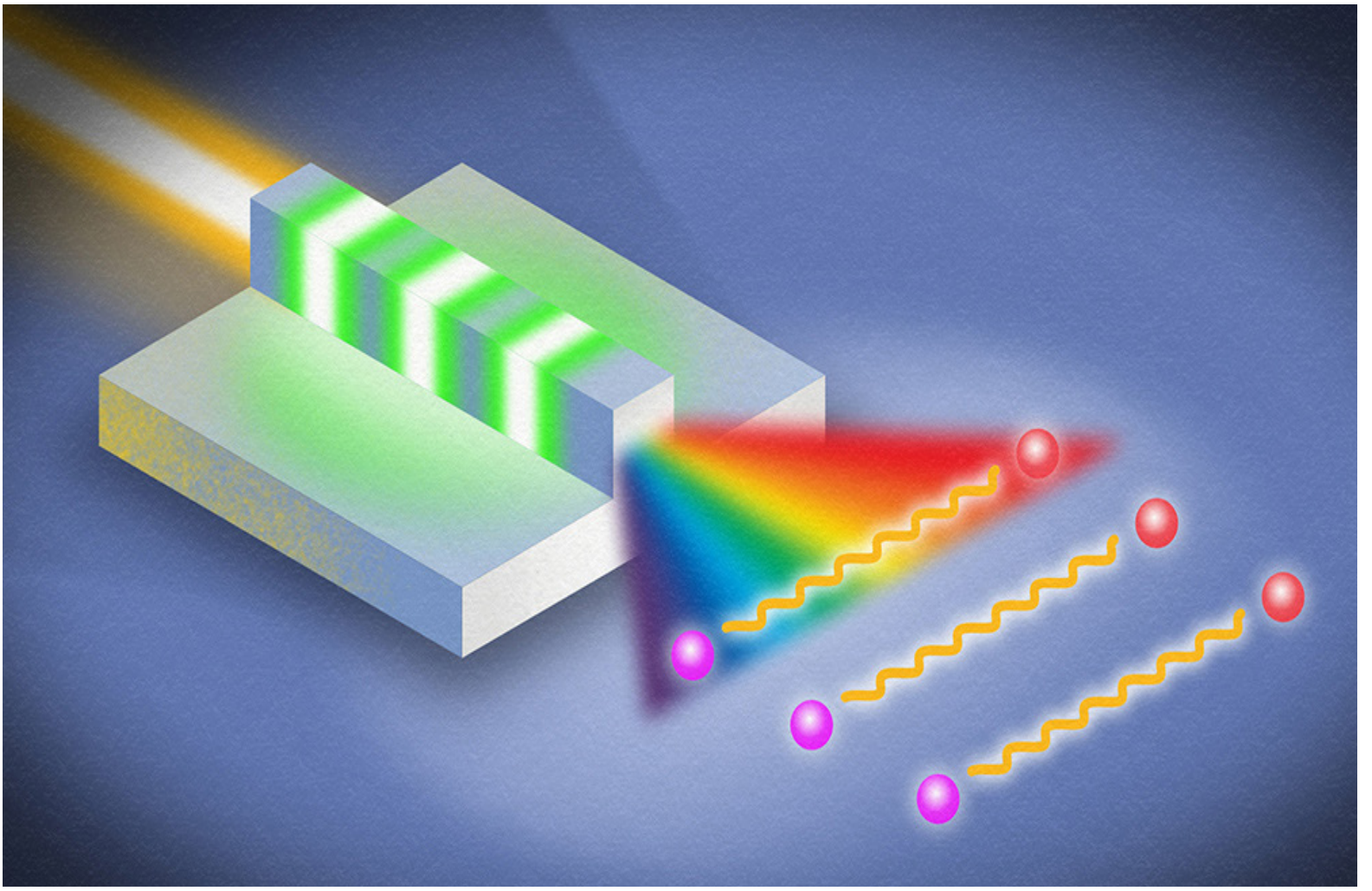
Read more: roceng.org/page-1834451

Mark Bocko

July 26, 2021

Mark Bocko's device undergoes clinical trials as a research tool to detect advance indicators of chronic respiratory disease symptoms

A version of a mobile device first developed by Mark Bocko, Distinguished Professor of Electrical and Computer Engineering, in collaboration with Hyekyun Rhee, professor of nursing, is now undergoing clinical trials as a research tool to detect advance indicators of chronic respiratory disease symptoms. ADAMM-RSM is produced by Health Care Originals Inc., which licensed the ADAMM technology originally developed by Bocko and Rhee as a personal device adolescents could wear to better manage their asthma. The company further refined the technology so that it can be worn as a flexible patch with a rechargeable battery anywhere on the upper torso, front or back. The personal device is not yet on the market, but the company developed ADAMM-RSM to measure more respiratory factors for use as a research tool. Health Care Original's cofounders include Sharon Samjitsingh '13, an alumna of our TEAM master's program.



Researchers in the lab of Qiang Lin have generated record "ultrabroadband" bandwidth of entangled photons using the thin-film nanophotonic device illustrated here. (Illustration by Usman Javid and Michael Osadciw)

October 28, 2021

Rochester researchers set 'ultrabroadband' record with entangled photons

Qiang Lin, professor of electrical and computer engineering, and PhD students in his lab have taken advantage of quantum entanglement to generate an incredibly large bandwidth using a thin-film nanophotonic device they've created. The breakthrough, described in Physical Review Letters, could lead to enhanced sensitivity and resolution for experiments in metrology and sensing, including spectroscopy, nonlinear microscopy, and quantum optical coherence tomography, as well as higher dimensional encoding of information in quantum networks for information processing and communications. Also collaborating on the project were lead author Usman Javid, and coauthors Jingwei Ling, Mingxiao Li, and Yang He of electrical and computer engineering, and Jeremy Staffa of optics.

Read more: rochester.edu/newscenter/rochester-researchers-set-ultrabroadband-record-with-entangled-photons-498662/

Marvin Doyley, right, professor and chair of electrical and computer engineering, and PhD students Irteza (Enan) Kabir, left, and Reem Mislati. (University of Rochester photo / J. Adam Fenster)

November 18, 2021

New imaging technology could buy time for pancreatic cancer patients

University of Rochester engineers, imaging scientists, surgeons, and immunologists are working together on a novel imaging technology to help surgeons make the most of that narrow time frame before pancreatic cancer spreads. Led by Marvin Doyley, professor and chair of electrical and computer engineering at the Hajim School, the collaborators have received a $2.4 million grant from the National Institute of Biomedical Imaging and Bioengineering to look at pancreatic cancer tumors in a different way—measuring not just their size but also their elasticity and ability to be perfused, or permeated, with blood and other fluids.

Read more: rochester.edu/newscenter/new-imaging-technology-could-buy-time-for-pancreatic-cancer-patients-502882/

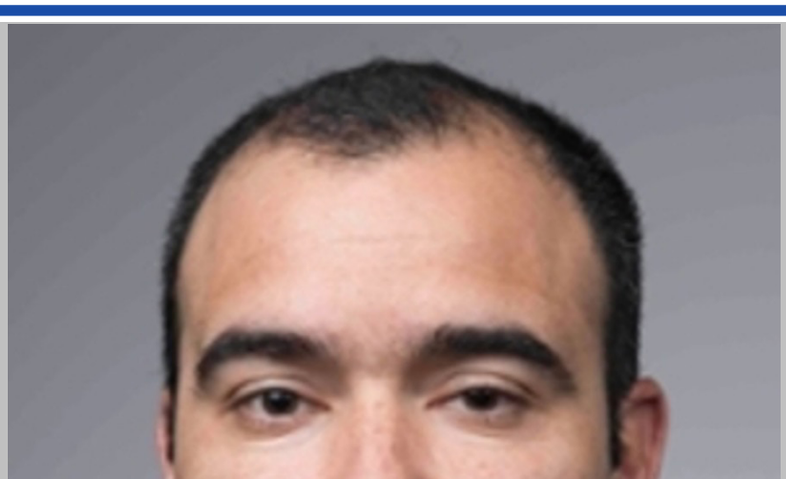
Mujdat Cetin

January 1, 2022

Mujdat Cetin appointed as the new editor-in-chief of the journal *IEEE Transactions on Computational Imaging*

Mujdat Cetin, professor of electrical and computer engineering and the Robin and Tim Wentworth Director of the Goergen Institute for Data Science, has been appointed as the new editor-in-chief of the journal *IEEE Transactions on Computational Imaging*. His three-year term began January 1, 2022. The journal publishes articles where computation plays an integral role in the image formation process.

Read more: signalprocessingsociety.org/publications-resources/ieee-transactions-computational-imaging



Gonzalo Mateos

January 10, 2022

Professor Gonzalo Mateos selected for the 2021 IEEE Signal Processing Society

Gonzalo Mateos, associate professor of electrical and computer engineering and the Asaro Biggar Family Fellow in Data Science, who has been selected for the 2021 IEEE SPS (Signal Processing Society) Pierre-Simon Laplace Early Career Technical Achievement Award “for contributions to distributed, online and robust signal processing over networks.” The award is presented to an individual who, over a period of years in his or her early career, has made significant technical contributions to theory and/or practice in technical areas within the scope of the society.

Read more: signalprocessingsociety.org/sites/default/files/uploads/community_involvement/

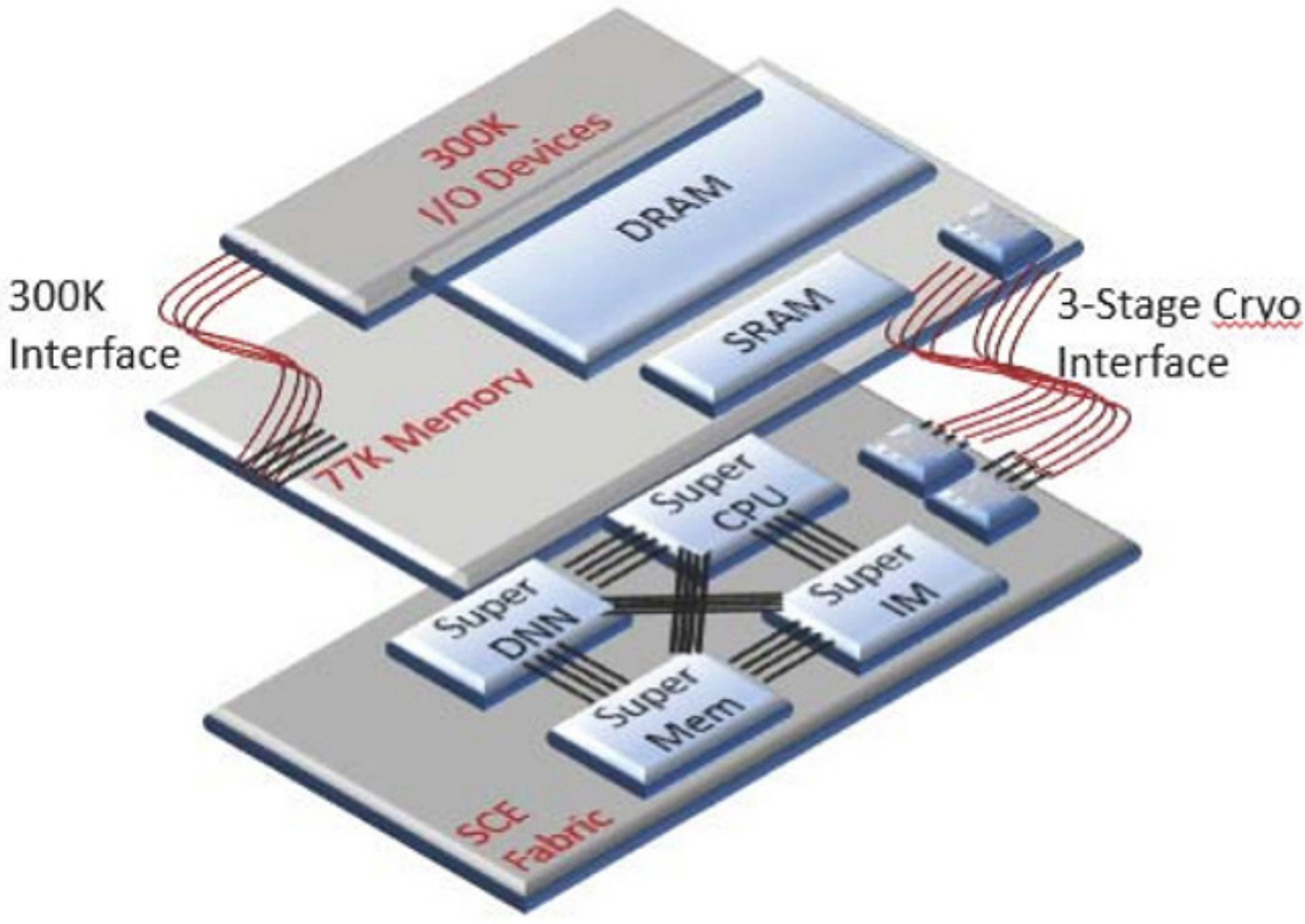
Stephen Wu

May 19, 2022

Stephen Wu receives Curtis Award for Teaching Excellence

“This had to be one of the best COVID-acclimated classes that I have taken in the last two semesters. . . . I have learned so much,” one student said after taking ECE 221: Electronic Devices and Circuits during the fall of 2020 from Stephen Wu, assistant professor of electrical and computer engineering. Wu, a recipient of the University’s 2022 G. Graydon Curtis ’58 and Jan W. Curtis Award for Nontenured Faculty Teaching Excellence mastered the “flipped” teaching model during the pandemic, making short, high-quality recordings that students can view on their own time, and using classroom time to solve questions. He is also an outstanding mentor for undergraduate and graduate students alike in his research lab.

Read more: hajim.rochester.edu/ece/news-events/news/2022-05-19_wu_curtis_award_news.htmlAlumni Newss



June 3, 2022

ECE faculty are key partners in ambitious $15M project to produce superconductive integrated circuits and systems

Cloud computing that supports so much of our digital society—from Facebook to Google to

Amazon—is fast but uses incredible amounts of energy. “Data centers are filled with row after row of multiprocessors, and every chip dissipates hundreds of watts of energy,” says Eby Friedman, Distinguished Professor of Electrical and Computer Engineering at the University of Rochester. “The energy required to support all of the cloud computing in the world is about five percent of the total energy on the planet. It’s shocking.” Friedman and three colleagues at Rochester are key partners in an ambitious $15 million project, led by the University of Southern California, to develop next-generation, superconductive integrated circuits—on chips a third of an inch in size—that would be at least 100 times more energy efficient and operate more than 10 times faster than the CMOS (complementary metal oxide semiconductor) technology currently used.

Read more: hajim.rochester.edu/ece/news-events/news/2022-06-03-superconductive-integrated-circuits-systems.html

June 8, 2022

Play a Bach duet with an AI counterpoint

To play a duet with German composer Johann Sebastian Bach, you don’t have to travel back to the 18th century; thanks to a new program developed by researchers at the University of Rochester, you only need a computer. The web-based program, called BachDuet, was developed by Zhiyao Duan, an associate professor of electrical and computer engineering and of computer science, and members of his lab, including Yongi Zang ’23 and PhD student Christodoulos Benetatos. BachDuet allows a person to improvise duets in the style of Bach with an artificial intelligence (AI) counterpoint in real time. By visiting the BachDuet website, a user can play duets with the AI agent using a computer keyboard, mouse, touchscreen, or MIDI keyboard.

Read more: rochester.edu/newscenter/play-a-bach-using-artificial-intelligence-524452

Alumni News

August 16, 2021

Alumnus John McNeill ’91 (MS) named the Bernard M. Gordon Dean of Engineering at Worcester Polytechnic Institute

Congratulations to electrical engineering alumnus John McNeill ’91 (MS), who has been named the Bernard M. Gordon Dean of Engineering at Worcester Polytechnic Institute (WPI). McNeill, who has been serving as interim dean since 2018, joined the faculty at WPI in 1994 after working in industry. He has received multiple awards for outstanding teaching and is an expert in biomedical sensing, jitter (noise) in integrated oscillators, and digitally assisted calibration of analog-to-digital converters used in low-power sensor systems.

Read more: wpi.edu/news/wpi-names-professor-john-mcneill-bernard-m-gordon-dean-engineering

October 25, 2021

Hajim Distinguished Alumnus Award presented to Robert Ter Tsu Huang ’70 (MS) ’76 (MA)

The Hajim Distinguished Alumnus Award recipient this year is Robert Ter Tsu Huang ’70 (MS) ’76 (MA) of electrical engineering, the founder of SYNNEX Corp. Huang is generously supporting efforts to promote the University of Rochester and connect its alumni, parents, and friends nationwide through the Huang Series in Technology and Innovation program. He distinguished himself as SYNNEX president and co-CEO for nearly 30 years and then worked closely with the company to create a lasting legacy of scholarships for college students.

Read more: synnexcorp.com/scholarship/huang-leadership

January 18, 2022

Kevin Klem ’80 mentors Hajim students through the Meliora Collective

Electrical engineering alumnus Kevin Klem ’80, a participant in the Meliora Collective Mentorship Program, is an example of the wonderful mentors who draw on their own experiences to provide our Hajim students with invaluable career advice. Kem has more than 40 years of industry experience, working for Hughes Aircraft, Raytheon, and, most recently, Ball Aerospace and Technologies. He has worked on a team that engineered sensors and electronics for missiles as well as infrared sensor systems for A-6 fighter planes and on satellite ground station hardware and software for NASA’s Earth Observing System.

Read more: rochester.edu/adv/alumni-news-media/2021/12/03/engineering-insight-for-students-and-recent-graduates-kevin-klem-80/

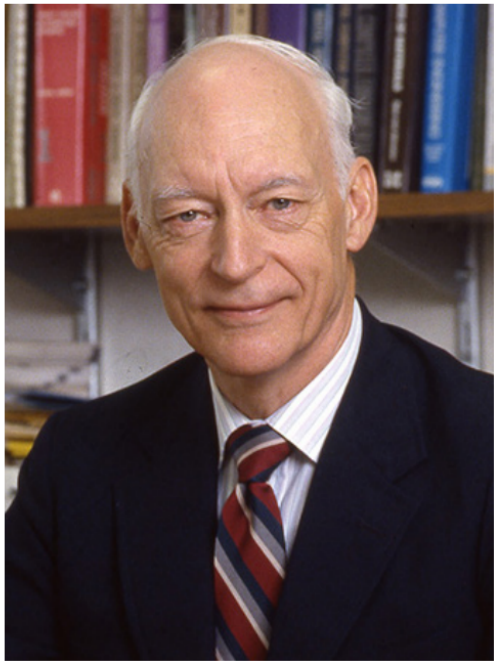
January 31, 2022

Tanzeem Choudhury ’97 named a fellow of ACM

Electrical engineering alumna Tanzeem Choudhury ’97 has been named a fellow of ACM (Association for Computing Machinery), the world’s largest and most prestigious society of computing professionals, for contributions to mobile systems for behavioral sensing and health interventions. Choudhury, who was an exemplary undergraduate here, is now the Roger and Joelle Burnell Professor in Integrated Health and Technology at Cornell Tech and cofounder of HealthRythms Inc. She was named one of 35 top innovators under 35 by MIT’s Technology Review. Choudhury is an outspoken advocate for gender equity.

Read more: www.acm.org/media-center/2022/january/fellows-2021

In Memoriam



January 10, 2022

Bruce Arden, former dean of engineering, passes away at 94

Arden, who served from 1986 to 1994 as the dean of the Hajim School of Engineering & Applied Sciences (then called the College of Engineering and Applied Science), was an early pioneer in the use of computers. Arden, who died last month in Livonia, Michigan, at age 94, also served as the William F. May Professor of Engineering in the Department of Electrical Engineering at Rochester before retiring with emeritus status.

Read more: rochester.edu/newscenter/bruce-arden-former-dean-of-engineering-dies-at-94-507502/

April 22, 2022

ECE department mourns the passing of alumnus Peter Halfdan Helmers

Peter Helmers passed away peacefully at home on April 22, 2022. He was 68 years old and resided in Penfield, New York.

Read more: obits.masslive.com/us/obituaries/name/peter-helmers-obituary?id=34722714

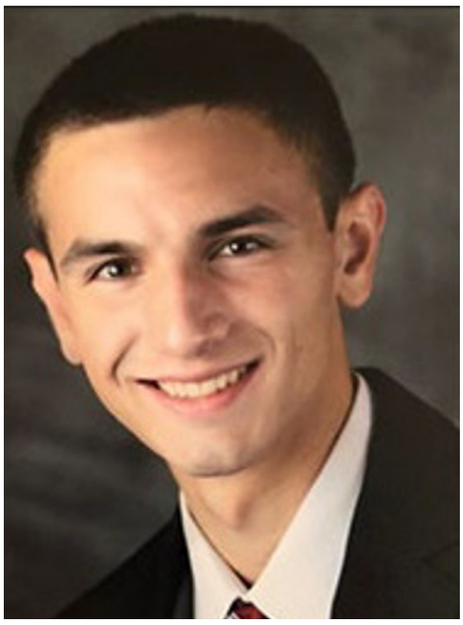
Graduate Student News

December 13, 2021

ECE PhD student Shadi Sartipi received the IEEE Brain Best Paper Award

Shadi Sartipi is a PhD student in the research group of Mujdat Cetin, professor of electrical and computer engineering and the Robin and Tim Wentworth Director of the Goergen Institute for Data Science. Sartipi received the IEEE Brain Best Paper Award for her paper "EEG Emotion Recognition via Graph-based Spatio-Temporal Attention Neural Networks." The IEEE Brain Initiative was formed in 2015 to create a technical community to facilitate crossdisciplinary collaboration and coordination to improve our understanding of the brain and how to treat diseases and improve the human condition.

Read more: sites.google.com/eng.ucsd.edu/bmb2021/awards



April 19, 2022

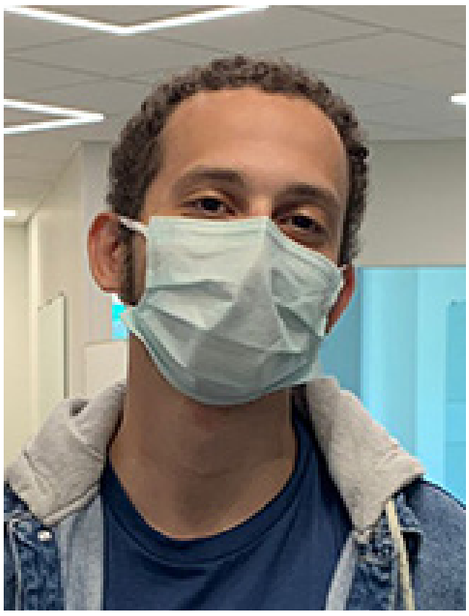
ECE PhD student Andrew Hahn one of 11 graduate students honored with Edward Peck Curtis Award

Eleven University students have been selected as recipients of the Edward Peck Curtis Award for Excellence in Teaching by a Graduate Student. This award was established by the late life trustee Edward Peck Curtis in 1984 and recognizes graduate students who excel in advancing the teaching mission of the University by providing highly skilled and innovative instruction to Rochester's undergraduates. This year's recipients are Shoeib Ahmed Chowdhury (mechanical engineering), Zach Barber (philosophy), Michael Chavrimootoo (computer science), Dillion Dzikowicz (nursing), Andrew Hahn (electrical engineering), Marianne Kupin-Lisbin (history), Ying Lin (brain and cognitive sciences), Kevin Ling (biomedical engineering), Derek Myler (music theory), Lynn Sidor (biology), and Neal Shah (neuroscience).

Read more: hajim.rochester.edu/news/2022/2022-04-25-curtis-awards.html

Undergraduate Student News

Studio X, a new space in the Carlson Science and Engineering Library that will foster exploration, cross-disciplinary collaboration, and peer-to-peer tutoring in the latest extended reality (XR) technologies, including virtual, augmented, and mixed realities. (University of Rochester photo / J. Adam Fenster)



October 8, 2021

Muhammed El-Sayed ’22 finds ‘fantastic experience’ at Studio X

Studio X, a newly opened space in the Carlson Science and Engineering Library, will be a great place for our students and faculty to explore, collaborate, and engage in peer-to-peer tutoring in the latest extended reality (XR) technologies. This month’s outstanding student, Muhammed El-Sayed ’22 of electrical and computer engineering, will play an important role in making that happen. He is one of three 2021 student Karp Library Fellows who will help River Campus Libraries develop programs and outreach for Studio X.

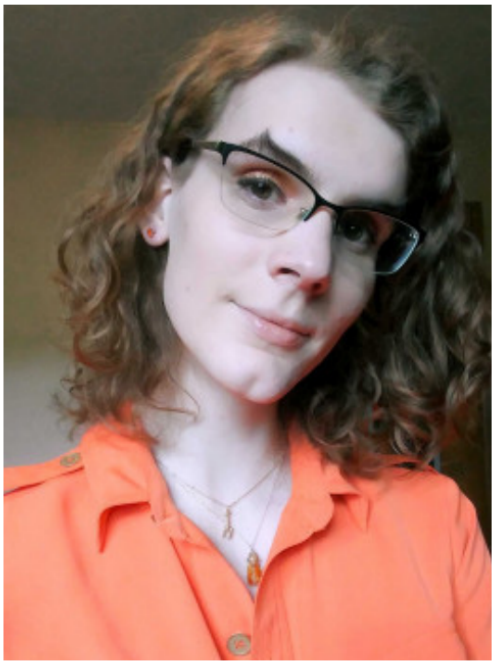
Read more: hajim.rochester.edu/news/2021/2021-10-08-el-sayed.html

November 15, 2021

Ruihan Xu receives the 2021 Suzanne J. O'Brien Book Award

Ruihan Xu, an ECE sophomore, is a recipient of the 2021 Suzanne J. O'Brien Book Award. The award is cosponsored by the Iota Chapter of Phi Beta Kappa and the College at the University of Rochester. It was first conceived and presented in 2003 as a way of recognizing excellence at the very beginning of a student's college experience. Awardees are selected for their scholarly achievement, humanistic values, cocurricular activity, and leadership potential.

Read more: rochester.edu/college/pbk/book.html

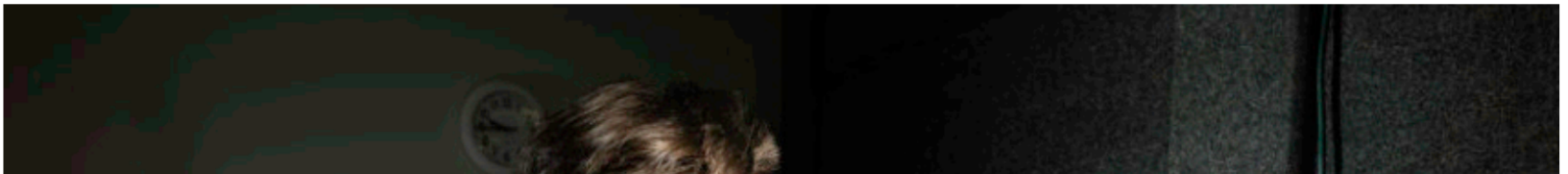


February 21, 2022

Evelyn Ferwalt '23 recognized with the Research Initiative Award

Evelyn Ferwalt '23 of electrical and computer engineering received the runner-up prize in this year's Research Initiative Awards. These awards, created by the Friends of University of Rochester Libraries, are given to students working on capstone or independent research projects or senior theses. The awards recognize excellence in the early phases of research, which includes working with faculty and librarians. Ferwalt's runner-up prize of $500 recognizes her work with Jaime Cardenas, assistant professor of optics, on a project that aims to fuse a photonic integrated chip and an optical fiber, or otherwise demonstrate fiber-to-chip coupling, using only electric-arc methods.

Read more: library.rochester.edu/about/news/research-rochester-way



Ben Kevelson

March 28, 2022

Ben Kevelson ’22 uses flat panel technology to build a more cost-effective device that can also function as a touch interface

Audio and music engineering major Ben Kevelson ’22 is part of a University of Rochester team working to design flat surfaces that can function as acoustic and tactile interfaces—no external microphones or speakers needed. The project involves developing alternative technologies for recording and reproducing spatial audio through bending vibrations on flat surfaces ranging from smartphones to video walls. These vibrations allow the smart acoustic surface to serve as a touch interface. The advantage is that the surface is already part of the device, allowing the device to maintain its durability and aesthetics while incorporating these new features.

Read more: rochester.edu/newscenter/flat-panel-technology-touch-interface-smart-acoustic-devices-516792/

Tianwei Jiang and Zilin Zeng

April 25, 2022

Tianwei Jiang ’22 and Zilin Zeng ’22 of audio and music engineering receive the Professors’ Choice Award at the Undergraduate Research Exposition

Thirteen research projects involving Hajim students were presented at the Speakers Symposium and poster session at this year’s Undergraduate Research Exposition. In addition, eight of our Grand Challenges Scholars showed their posters. The following Hajim students received Deans’ Awards:

- Helena Schreder ’22 of mechanical engineering for her Speakers Symposium presentation “Hydraulic Resistance Model for Interstitial Fluid Flow in the Brain”
- Justin Sennyondo ’22, Omar Hamad ’22, Humfrey Kimanya ’23, and Dung Nguyen ’22 of mechanical engineering for their Speakers Symposium presentation “Structural Assessment of Concrete Vaulted Maya Temples of Bonampak, Chiapas, Mexico”
- Tianwei Jiang ’22 and Zilin Zeng ’22 of audio and music engineering received a Professors’ Choice Award for their poster describing “Singing Glasses–Digital Adaptation of the Glass Instrument.”

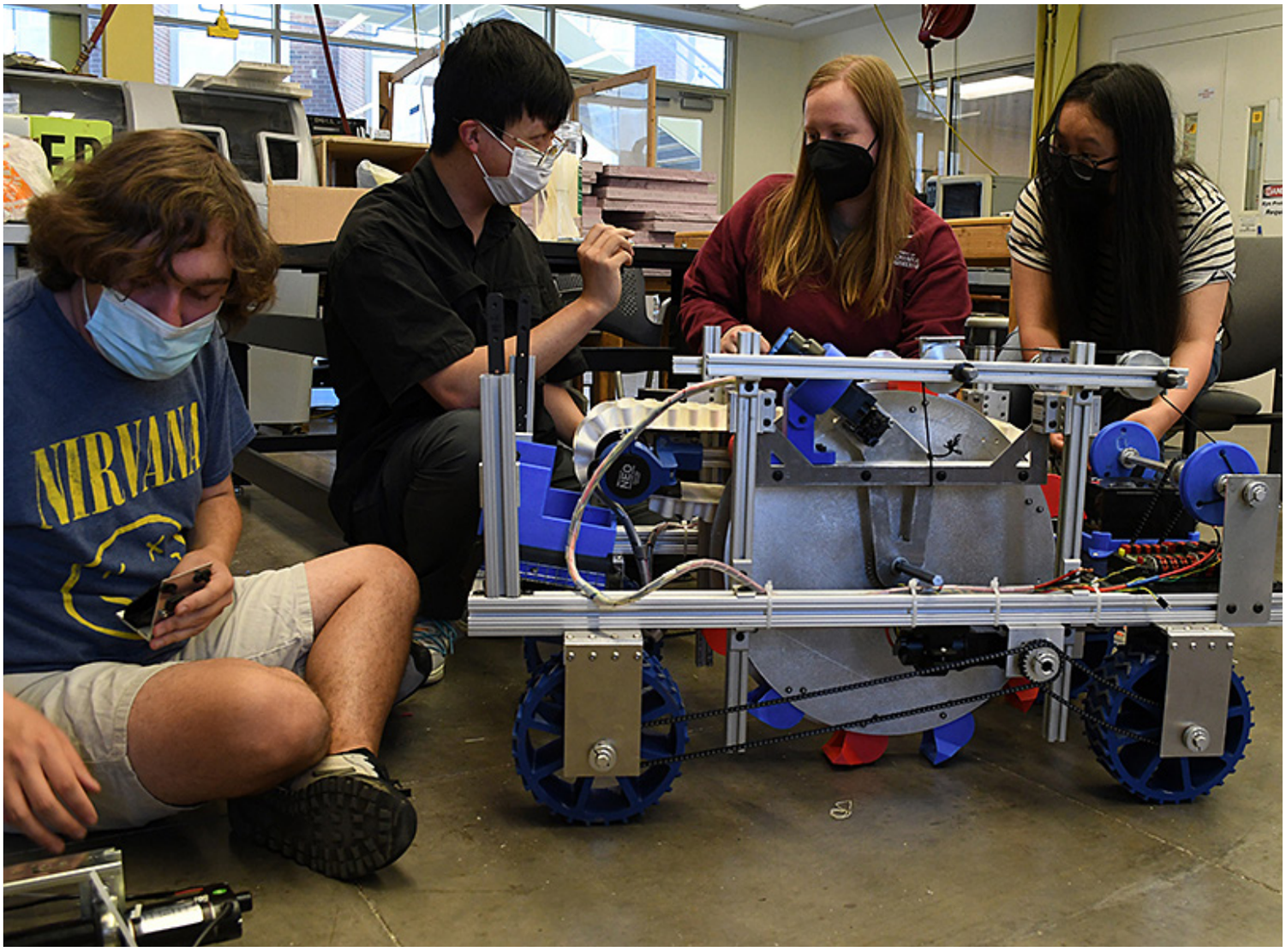
Read more: researchexpo2022.virtualpostersession.org

May 2022

Students inducted into Phi Beta Kappa

Congratulations to three ECE students who were recently inducted into Phi Beta Kappa, the nation’s oldest academic honor society. Inductees are chosen based on exceptional academic performance and a letter of recommendation from a faculty or staff member.

- Joseph Bumpus ’23 (audio and music engineering)
- Lydia King ’23 (electrical and computer engineering)
- Tabib Wasit Rahman ’23 (electrical and computer engineering)



Left to right, Christopher Piatek, Lianming Hu, Francesca Daszak, and Rachael He of the Lunabotics team work on their automated mining robot in the Fabrication Studio at Rettner Hall.

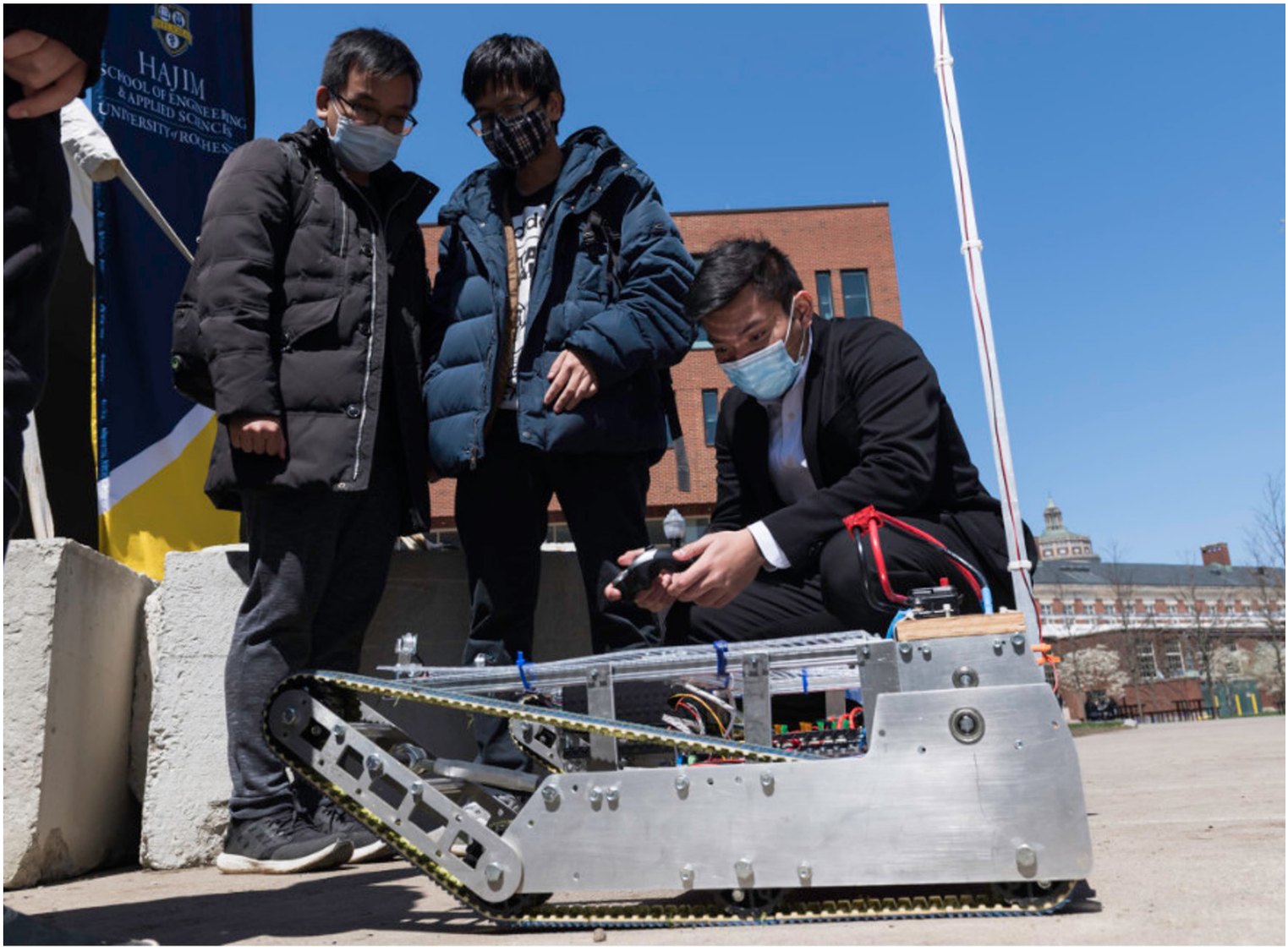
May 17, 2022

Students aim high at NASA robotics competition

The Rochester team tested an automated mining robot against 47 other teams at Kennedy Space Center.

A robotics team from the University of Rochester will put months of work and several all-nighters on the line at Kennedy Space Center May 23–27. The students will send their automated mining robot into a replica lunar landscape, testing it against 47 university teams from across the country during the annual NASA (National Aeronautics and Space Administration) Lunabotics competition. This year’s competition simulates the space agency’s upcoming Artemis mission to the moon.

Read more: hajim.rochester.edu/news/2022-05-17-lunabotics.html



Thang C. Le (right) demonstrates his team's autonomously controlled robot, which combines several sensors and modules to safely navigate buildings on campus as it delivers packages. (University of Rochester photo/ J. Adam Fenster)

May 30, 2022

Senior Design Day 2022

Thang C. Le (right) demonstrates his team's autonomously controlled robot, which combines several sensors and modules to safely navigate buildings on campus as it delivers packages. More than 90 projects were on display at this year's Senior Design Day hosted by the Hajim School for teams of graduating students in engineering, computer science, and data science—as well as in the medical device design master's program.

Read more: rochester.edu/newscenter/design-day-senior-engineering-students-show-their-work-521372

Community

January 15, 2022

ECE DEI Outreach Initiative

In partnership with the Pre-College Programs at the David T. Kearns Center, ECE participated in the "Say It with Music" Recording and Music Video STEM Camp on January 15, 2022. During the one-day camp, high school students created, wrote, recorded, and produced their very own song and filmed a music video. Students were exposed to many careers, including music, audio engineering, music technology, video editing, recording, and sound design, that intersect with STEM.

Read more: sayitwith-music.com/about

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