BUFFALO Engineer

2023

NASA'S JAMES WEBB TELESCOPE

INSIDE THIS ISSUE:

DISCOVERING LIFE AFTER THE BIG BANG

Aerospace alum John Durning ends NASA career 'looking back in time'

University at Buffalo
School of Engineering and Applied Sciences

MESSAGE FROM THE DEAN

Kemper Lewis, PhD, MBA
Dean, School of Engineering and Applied Sciences

Photo: Onion Studio, Inc.

Dear Friends of the School of Engineering and Applied Sciences,

There's never been a more exciting time to be a part of the School of Engineering and Applied Sciences. The school is growing rapidly, with **25 new faculty hires** this year and more than 40 being recruited over the next two years, a record research portfolio of more than **$90 million in expenditures,** and an unprecedented enrollment topping 7,700 students. We are also advancing toward the later stages of designing a **new $102 million building** that will bring together people from across the world to learn, collaborate, and innovate.

This growth is the tangible result of the impact our alumni, faculty, staff, and students are having in their spheres of influence. Throughout these pages, we showcase a few of the ways that our scholarly community is conducting groundbreaking research, commercializing new technologies, delivering transformative education, and shaping solutions to global challenges.

From playing an instrumental role in the development of NASA's James Webb Space Telescope and using computer chess engines to improve emergency room care to demonstrating how to balance a Hall of Fame basketball career with coursework and improving public awareness of deepfakes, our alumni, faculty and students are committed to excellence and solving complex issues with creative solutions.

Looking back at the past year, I am amazed by all the positive impacts our community has made—and inspired by all that is still to come. Together, we can leverage our strengths to solve society's most pressing problems and create meaningful change in the world.

Together, we are SEAS. Together, we are UB.

Kemper Lewis, PhD, MBA
Dean, School of Engineering and Applied Sciences

BUFFALO Engineer 2023

Buffalo Engineer is published by the UB School of Engineering and Applied Sciences to showcase the excellence of our faculty, staff, alumni and students.

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UB Alumni can update their address through UB Connect: **ub-connect.com**.

All others can email **seascomm@buffalo.edu** or clip the address label and return it with the correct address to: Buffalo Engineer, School of Engineering and Applied Sciences, University at Buffalo, 438 Bell Hall, Buffalo, NY 14260.

SEAS AT A GLANCE

RESEARCH EXPENDITURES:
$90+ MILLION

270+
FACULTY
AND GROWING

2022-2023 DEGREES AWARDED:

1,014	1,480	99
UNDERGRADUATE	MASTER'S	PhD

#29
for Best Online Master's in Engineering Programs, *U.S. News and World Report*, 2023

#21
No. 21 for Best Online Master's in Engineering Programs for Veterans, *U.S. News and World Report*, 2023

#53
No. 53 for Best Engineering Schools, *U.S. News and World Report*, 2023

41,000+
ALUMNI IN

50 STATES **70** COUNTRIES

CONTENTS

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'SANDWICH' OF GRAPHENE AND BORON NITRIDE CAN IMPROVE SEMICONDUCTORS

A moiré pattern is created by layering two similar but not identical geometric designs, like viewing a chain-link fence through a second chain-link fence.

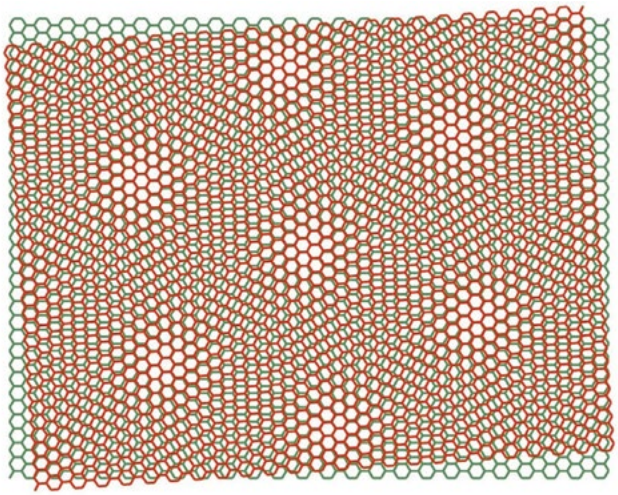
The moiré pattern that results from placing a sheet of graphene between two sheets of boron nitride could vastly improve the semiconductor chips used to power everything from computers to cars, according to a study led by **Jonathan Bird,** professor and chair of the Department of Electrical Engineering.

"Our work demonstrated the viability of this approach, showing that the graphene-boron nitride sandwich that we are studying does indeed have the favorable properties needed for microelectronics," Bird says.

Graphene's carbon atoms are linked in a hexagonal or honeycomb pattern. Graphene conducts electricity too well to be useful in microelectronic technology, but by sandwiching graphene between two layers of boron nitride, which also has a hexagonal pattern, the resulting moiré pattern gives graphene semiconductor-like properties that are more amenable to use in advanced microelectronics.

The moiré pattern in graphene can be adapted to use in technological applications, such as new types of communication devices, lasers and light-emitting diodes.

The research, published in Nature Communications, was funded in part by the U.S. Department of Energy and a MURI grant from the Air Force Office of Scientific Research.



The moiré pattern created by layering graphene with boron nitride.

BOOSTING STEM STARTUPS WITH I-CORPS HUB

UB is a partner on a new $15 million Innovation Corps Hub program to support science and technology entrepreneurship.

Funded by the National Science Foundation, the Interior Northeast I-Corps Hub (IN I-Corps) aims to expand the nation's geography of innovation by developing a regional I-Corps innovation network that can become a repeatable, inclusive model of education and workforce training designed for and by innovators based in rural regions and small cities.

UB has served as an I-Corps Site since 2017, helping over 100 startups improve their business ideas and connect with potential customers. The newly funded program will provide additional resources and greater opportunities for the UB community.

Blaine Pfeifer, professor in the Department of Chemical and Biological Engineering who participated in I-Corps with his company Abcombi Biosciences, will serve as a faculty lead in the Hub program.

UB HOLDS WORKSHOP ON HYDROGEN-BASED CLEAN ENERGY

Over 100 industry leaders, researchers, educators and representatives of funding agencies came to UB in December for a daylong workshop on hydrogen-related clean energy technologies.

Andrew Whittaker, SUNY Distinguished Professor in the Department of Civil, Structural and Environmental Engineering; **Mark Swihart,** SUNY Distinguished Professor and chair of the Department of Chemical and Biological Engineering; and **Krishna Rajan,** SUNY Distinguished Professor and Erich Bloch Chair of the Department of Materials Design and Innovation, participated in the discussions, which explored creating a local ecosystem to accelerate the transition to a hydrogen economy in an inclusive and equitable manner.

"If you have opportunities where we can help, we are ready to partner," **Kemper Lewis,** dean of the School of Engineering and Applied Sciences, told industry representatives.

IMPROVING THE RESILIENCE OF BRICK BUILDINGS

Unreinforced masonry (URM) buildings are everywhere. They commonly house residences, stores, restaurants, schools, fire departments and other critical infrastructure, but are also well known for their seismic vulnerability.

A new project in the Structural Engineering and Earthquake Simulation Laboratory (SEESL) led by **Andreas Stavridis** could make these critical structures more earthquake-resistant while also creating educational opportunities for students.

"We want to improve the performance of existing URM buildings during extreme loading events, like earthquakes," says Stavridis, associate professor in the Department of Civil, Structural and Environmental Engineering and deputy director of SEESL. "We also want to improve their resilience; that is, ensure they are able to recover and function after such events in a reasonable amount of time with minimal interventions and costs."

Co-principal investigators from the department are **Michel Bruneau,** SUNY Distinguished Professor, and **Kallol Sett,** associate professor.

Funded by the National Institute of Standards and Technology, the project has included testing a URM structure on SEESL's shake table. Researchers believe it is the largest brick-and-mortar structure of its kind ever tested on a shake table in the U.S.

It was constructed with the help of students and instructors from the Iroquois Job Corps Center in Medina and apprentices in the bricklayers local 3 union in Buffalo. Job Corps is a free U.S. Department of Labor residential education and job training program for young adults ages 16 to 24.

The partnership between SEESL and Job Corps allows lab structures to be built faster and students to learn the skills necessary for success in the construction industry.

The testing will help develop a framework for the design of reliable and cost-effective retrofit methodologies suitable for URM structures. Researchers anticipate their findings will directly influence the American Society of Civil Engineers standard 41, which uses different performance-based methodologies to evaluate and improve, or retrofit, the performance of existing buildings during earthquakes.

"Researchers tend to focus on improving new construction guidelines and we tend to neglect existing buildings," Stavridis says. "Old buildings are more challenging."

Photo: Douglas Levere

Ready to shake. Front row, from left: Andreas Stavridis (faculty member), Greg Congdon (PhD student) and Michel Bruneau (faculty member). Back row, from left: Rahul Raman (PhD student), Kamutala Vamshi Krishna (undergraduate student) and Rohit Singh (PhD student).

UB MAKES MAJOR SHOWING AT TRB MEETING

Faculty and students presented research ranging from examining drivers' brain activity to using virtual reality to make roads safer for cyclists at the 2023 Transportation Research Board (TRB) meeting in Washington, D.C., the largest transportation conference in the world.

As one of TRB's bronze patrons, UB hosted a two-hour reception to showcase the capabilities of its Stephen Still Institute for Sustainable Transportation and Logistics (ISTL) and Institute of Bridge Engineering (IBE).

"The reception exceeded all our expectations," says **Stephen Still,** ISTL benefactor and researcher who is also a professor of practice in the Department of Civil, Structural and Environmental Engineering. "We had hundreds of attendees from leading universities, government agencies and the private sector."

CSEE Assistant Professor Irina Benedyk (center) with students at TRB.

Students in grades K-8 from Westminster Community Charter School in Buffalo visited Davis Hall in January during the annual STEM Exploration Week, as part of a partnership between the school, SEAS, National Grid and Buffalo Promise Neighborhood. Activities included structure building Olympics, creating binary-coded jewelry and solar-powered lanterns, and dancing with Yubie, a robot dog.

MAKING HYDROGEN FUEL CELLS MORE AFFORDABLE

Research led by **Gang Wu** suggests that scientists are moving closer to finding a catalyst that dramatically reduces the cost of fabricating hydrogen fuel cells, leading the way to a green power revolution.

In a study published in Nature Energy, Wu's team describes how they combined iron with nitrogen and carbon to produce a fuel cell catalyst that is efficient, durable and inexpensive.

"This has been years in the making," says Wu, professor in the Department of Chemical and Biological Engineering. "We believe this is a significant breakthrough that will eventually help unleash the tremendous potential of hydrogen fuel cells."

The study was supported by the U.S. Department of Energy and the National Science Foundation. Wu's team bonded four nitrogen atoms to iron and then embedded the material in a few layers of graphene. The resulting structure is a vastly improved catalyst that achieved a durability rating approaching platinum group catalysts and is believed to be the most efficient iron-based catalyst produced to date.

DETECTING COVID-19 IN WASTEWATER

The availability of home tests and the end of many testing requirements have made tracking COVID-19 infection rates all the more challenging for public health officials.

So the best information may come from wastewater.

Ian Bradley and **Yinyin Ye,** assistant professors in the Department of Civil, Structural and Environmental Engineering, have been leading UB's efforts to test wastewater for SARS-CoV-2, the virus that causes COVID.

Their lab monitors samples from treatment plants in five Western New York counties. After conducting surveillance in Erie County since 2020, their testing expanded to Allegany, Cattaraugus, Chautauqua and Niagara Counties this past year.

"Wastewater collects viral signals that are shed from each infected individual," Ye says. "This will provide us an unbiased approach to understand what is happening in the community. If the clinical results are delayed, wastewater can be used as an early warning system."

Bradley and Ye also found that spikes in acetaminophen—an active ingredient in over-the-counter cold medicines—preceded spikes in the virus. The study, published in Environmental Science & Technology Letter, was led by Diana Aga, Henry M. Woodburn Professor of Chemistry in the UB College of Arts and Sciences.

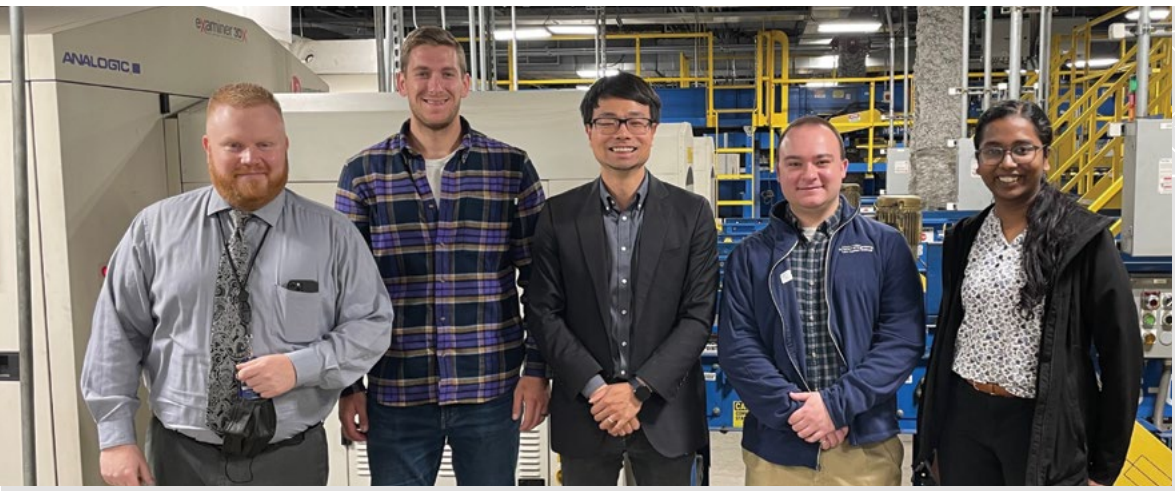
They hope that similar science could be used in the future to track the spread of other diseases or even the abuse of opioids.

Photo: Douglas Levere

The project has also been a learning experience for both graduate and undergraduate students, who have gotten firsthand experience in wastewater processing and virus-detection methods.

"I hope the lab has allowed students to see the very clear impact that environmental engineering can have on public health in addition to the environment," Bradley says.

Partners include the New York State Department of Health, the Erie County Department of Health, Syracuse University and Ceres Nanosciences.



The UB team visited the TSA/bag security screening area at the Buffalo-Niagara airport. From left are: a TSA agent, Kyle Hunt, Jun Zhuang, Ian Unson and Esther Jose.

PROTECTING PUBLIC SPACES

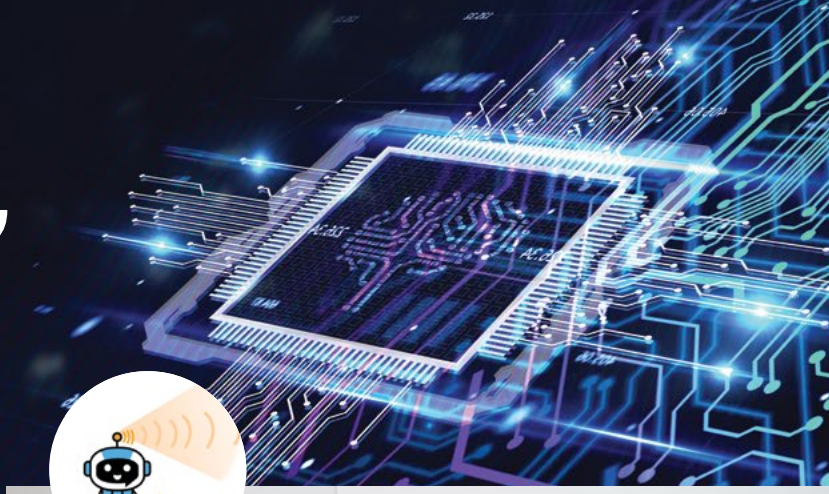
IMPROVED SAFETY THROUGH BETTER THREAT ASSESSMENT AND RISK MITIGATION

Jun Zhuang, Morton C. Frank Professor in the Department of Industrial and Systems Engineering, is one of the founding investigators of a new $36 million, 10-year Department of Homeland Security Centers of Excellence, "Soft-Target Engineering to Neutralize the Threat Reality (SENTRY)."

Led by Northeastern University, the new Center of Excellence is focused on developing a system—or Virtual Sentry—that will provide just-in-time information to key decision makers at soft targets, such as stadiums, schools and places of worship, so that they can neutralize a threat before any harm is done.

Zhuang and his team are addressing strategic allocation of resources to protect soft targets from adaptive adversaries. They are working with local stakeholders, including school districts and places of worship, to develop case studies.

HARNESSING AI TO HELP KIDS SPEAK



Venu Govindaraju is leading a five-year, $20 million project to address the nationwide shortage of speech-language pathologists and provide services to children ages 3 to 10 who are at increased risk of falling behind in their academic and socio-emotional development—issues exacerbated by the COVID-19 pandemic.

The highly competitive National Science Foundation grant was awarded to the UB team earlier this year to establish a national institute that develops artificial intelligence systems that identify and assist young children with speech and/or language processing challenges.

The award, which will be used to create the National AI Institute for Exceptional Education at UB, also will advance foundational AI technologies, human-centered AI design, and learning science that improve educational outcomes for young children. It is one of the largest federal research grants received by UB.

"There simply aren't enough speech-language pathologists in the United States and, as a result, children are not receiving life-changing interventions soon enough," said Govindaraju. "Our multidisciplinary team will create advanced AI systems that address this critical problem, allowing for earlier diagnoses and tailored interventions that close educational gaps and create more inclusive learning environments where children thrive both academically and socially."

Govindaraju, SUNY Distinguished Professor in the Department of Computer Science and Engineering (CSE) and UB's vice president for research and economic development, is the principal investigator. **Jinjun Xiong,** CSE Empire Innovation Professor, is a co-principal investigator and will serve as scientific director; and **Srirangaraj Setlur,** principal research scientist in CSE, will serve as the managing director. **Letitia Thomas,** assistant dean for diversity in the School of Engineering and Applied Sciences, will lead the broadening participation, and diversity, equity and inclusion sections of the grant.

The institute also includes over 30 researchers from nine universities including UB; the University of Illinois Urbana-Champaign; Stanford University; the University of Washington; Cornell University; University of Nevada, Reno; University of Texas at El Paso; Penn State University; and University of Oregon. They specialize in AI, natural language processing, social robotics, communicative disorders, diversity and inclusivity, learning science, communication and other fields.

INSTITUTE WILL HELP UNDERSERVED STUDENTS

The National AI Institute for Exceptional Education will focus on serving the millions of children nationwide who, under the Individuals with Disabilities Education Act, are legally entitled to speech and language services.

Specifically, it will develop two advanced AI solutions: the AI Screener for early identification of potential speech and/or language impairments and disorders; and the AI Orchestrator, which will act as a virtual teaching assistant by providing students with ability-based interventions.

The AI Screener will listen to and observe children in the classroom, collecting samples of children's speech, facial expressions, gestures and other data. It will create weekly summaries of these interactions that catalogue each child's vocabulary, pronunciation, video snippets and more. These summaries will help teachers monitor their students' speech and language processing abilities and, if needed, suggest a formal evaluation with a speech-language pathologist.

The AI Orchestrator is an app that will help speech-language pathologists, most of whom have caseloads so large that they are forced to provide group-based interventions instead of individualized care for children. The app addresses this by recommending personalized content tailored to students' needs. It continues to monitor their progress and adjusts lesson plans to ensure that the interventions are working.

Initially, the team intends to deploy prototypes of each system to roughly 80 classrooms, reaching 480 kindergartners.

FIVE RECEIVE PRESTIGIOUS EARLY CAREER AWARDS FROM THE NATIONAL SCIENCE FOUNDATION





Top row: Gao, Sariyuce, Zhao
Bottom row: Nalam, Shin

Five faculty members have earned National Science Foundation CAREER Awards for research that could protect data in household appliances, catch cryptocurrency money launderers, extend the life of cars and engines, improve artificial intelligence-assisted health care and advance our understanding of life itself.

Assistant Professor **Mingchen Gao, A. Erdem Sariyuce** and **Ziming Zhao,** Department of Computer Science and Engineering; **Prathima Nalam,** Department of Materials Design and Innovation; and **Sangwoo Shin,** Department of Mechanical and Aerospace Engineering, are recipients of one of the most prestigious honors for early-career scientists and engineers.

Collectively, they will receive nearly $2.9 million in funding for their respective projects, which include both research on pressing societal problems and outreach to diverse communities.

LUBRICANT FOR A LONGER-LASTING CAR

Prathima Nalam will use her $667,000 grant to develop efficient, low-pollutant lubricants that will combat the wear caused by friction in machines, leading to longer lifecycles, decreased waste and a reduced environmental burden.

ADVANCING AI-POWERED MEDICAL DIAGNOSING

Mingchen Gao will use her $578,519 award to advance AI-powered medical imaging diagnosis. Specifically, she will create algorithms that help machine learning models analyze medical images, leading to improved clinical decisions and more confidence in AI-assisted health care.

PROTECTING SMART APPLIANCES FROM HACKERS

Ziming Zhao will use his $564,748 award to study a core component of IoT devices' security, trusted execution environments. These are protected modes on the main processor that execute sensitive code and store sensitive data like credit card and medical information in isolation, so an attacker can't access a device's data even if they gain access to the main operating system.

CATCHING CYBERCRIMINALS AND MONEY LAUNDERERS

With a grant award of $555,821, A. Erdem Sariyuce aims to create a novel approach to network analysis that could better detect cyberattacks and even connect the dots between money launderers.

DECODING LIFE THROUGH CELL MOVEMENT

Sangwoo Shin's award of $500,000 will allow him to explore one important aspect of cells that affect their movement: lipid bilayers. These thin membranes that encapsulate cells are extremely flexible, electrically charged, and semipermeable, meaning they can only allow water to pass through while blocking ions.

LOOKING AHEAD:

10 NEW PROMISING PROJECTS

1

SPOTTING ONLINE SCAMS

Siwei Lyu, Department of Computer Science and Engineering, is the principal investigator on a $5 million project from the National Science Foundation to reduce online fraud targeting older adults. The multidisciplinary team will develop digital tools that help older adults better recognize online scams and protect themselves from disinformation.

2

TRAINING FUTURE CYBERSECURITY EXPERTS

Shambhu Upadhyaya, Department of Computer Science and Engineering, received $3.4 million from the National Science Foundation to continue CyberCorps: Scholarship for Service, a nationwide program aimed at training the next generation of cybersecurity experts. The program will be operated in collaboration with the UB School of Management.

3

FASTER SCREENING FOR LUNG CANCER

Yun Wu, Department of Biomedical Engineering, is the principal investigator on two National Institutes of Health grants totaling more than $3.5 million that will support the development of a new, low-cost blood test for lung cancer that would make screening more widely available to millions of people.

4

HYDROGEN FUEL FOR BIG TRUCKS

Gang Wu, Department of Chemical and Biological Engineering, received $3 million to develop a catalyst for a hydrogen fuel cell that would supply efficient, cheap and durable energy for heavy-duty trucks. The global project is part of Hydrogen Shot, a U.S. Department of Energy initiative to advance clean energy.

5

TEACHING ENGINEERING DESIGN WITH AI

Corey Schimpf, Department of Engineering Education, received $3 million from the National Science Foundation to create a collaborative web-platform that utilizes an AI design mentor to help students in grades 7-10 explore integrated engineering design and earth science challenges. Project collaborators include the University of Michigan and the Concord Consortium.

6

DIVERSIFYING THE STEM WORKFORCE

UB and other SUNY institutions received a $2.5 million grant from the National Science Foundation to continue the Louis Stokes Alliance for Minority Participation (LSAMP) program, which aims to diversify the STEM workforce by supporting underrepresented students. UB's LSAMP program is directed by Letitia Thomas, assistant dean for diversity.

7

IMPROVED VACCINES AND CANCER DRUGS

Blaine Pfeifer, Department of Chemical and Biological Engineering, is a principal investigator on two National Institutes of Health grants totaling $4.4 million: one to develop a drug that trains the immune system to better target cancer cells, and the other to design a more effective pneumonia vaccine for older adults.

8

LONGER-LASTING CONCRETE

Pinar Okumus, Department of Civil, Structural and Environmental Engineering, is associate director of the Transportation Infrastructure Precast Innovation Center, a Tier 1 University Transportation Center funded by the U.S. Department of Transportation. Led by Okumus, UB received $1.6 million of the $10 million award to incorporate new technologies into precast concrete.

9

NEXT GENERATION POWER GRIDS

Uttam Singisetti, Department of Electrical Engineering, is the principal investigator on a $1.5 million grant from the National Science Foundation to develop new devices for ultra-high voltage power grids—which help integrate renewable energy sources, reduce transmission losses and provide climate resiliency—using the compound gallium oxide as an ultrawide-bandgap semiconductor.

10

BOOSTING STEM STUDENT OUTCOMES

UB received a $1.5 million National Science Foundation grant to improve retention and graduation rates among high-achieving, low-income STEM students through the Engineering Design and Innovation Scholars Program, which provides students with scholarships, support and an inclusive learning community. Rajan Batta, Department of Industrial and Systems Engineering, is the principal investigator.

FACULTY EXPERTS IN THE MEDIA

HOW TO CATCH A CHESS CHEATER

When the chess world suspects someone of having cheated in a tournament, **Kenneth Regan** is the expert who gets the call. A professor of computer science and engineering, Regan was interviewed by media outlets around the world—including **The New York Times, Time Magazine** and **NPR**—about the latest scandal to rock the global chess community: grandmaster Hans Niemann's admission to cheating in online matches, but not during in-person games. Software developed by Regan to detect cheating in chess is utilized by the International Chess Federation, the world's governing body of chess competition.

REAL DANGERS OF DEEPFAKES

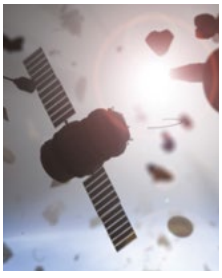
Detecting deepfakes is getting is harder without the help of emerging technologies, such as tools developed by SUNY Empire Innovation Professor **Siwei Lyu** that can spot a spoofed image or video by analyzing light reflections in the subject's eyes or irregular blinking. **National Geographic, The Atlantic, USA Today** and **Newsweek** have all turned to Lyu to uncover fraudulent films, as well as to discuss the dangers of deepfake technology to society, particularly in politics, news and cybercrime.

STRENGTHENING STRUCTURES FROM DISASTER

In the wake of the devastating earthquakes that impacted Turkey and Syria—as well as the minor tremor that shook Western New York—**Michel Bruneau** spoke to **Al Jazeera** and other media outlets, including **Fox News, The Associated Press** and **Politifact,** on engineering structures to withstand the damage caused by natural disasters. Bruneau, a SUNY Distinguished Professor, also discussed the aftermath of a train derailment in East Palestine, Ohio; the effects of Hurricane Ian on infrastructure; and his recent book, "The Blessings of Disaster," which demonstrates how catastrophes create opportunities for society to become more resilient.

NAVIGATING THE TWITTER TURMOIL

The tumultuous rollout of Twitter's—now renamed X—new blue checkmark verification led to a flurry of imposter accounts, some of which mimicked government agency accounts responsible for sharing public safety information during emergencies. Disasters provide the perfect storm for false information to spread online, says Morton C. Frank Professor **Jun Zhuang,** adding that government accounts have also played a crucial role in stamping out rumors. He shared his insight with **The Associated Press** and the story was republished by more than 400 news outlets, including **The Washington Post, ABC News, CBS News** and **U.S. News & World Report.**



MOUNTING PILE OF SPACE JUNK

Space is becoming a mess due to the abundance of debris orbiting the planet, and it could soon create major problems for satellites and space travel, says SUNY Distinguished Professor **John Crassidis.** Space junk falling to the Earth is happening more frequently, Crassidis told **Newsweek;** in an interview with **NBC's TODAY Show,** he discussed how a rogue rocket crashed into the moon, leaving an unexpected double crater. The good news: NASA aims to use high-powered lasers and special robots to clean up space pollution, an approach that Crassidis told **Salon** that he agrees with.

FACULTY HONORS AND AWARDS


Lovell


Andreadis


Lin


Yu


Aref


Rabideau


Dantu


Kennedy


Lyu


Rudra


Yuan


Moore


Batta


Casucci


Cavuoto

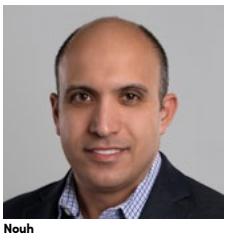

Zhuang


Snell


Battaglia


Chen


Crassidis


Nouh

Biomedical Engineering: **Jonathan Lovell** was inducted into the American Institute for Medical and Biological Engineering College of Fellows.

Chemical and Biological Engineering: **Stelios Andreadis** was elected a Fellow of both the American Association for the Advancement of Science and the American Institute of Chemical Engineers; **Haiqing Lin** received a SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities; **Sriram Neelamegham** was named a UB Distinguished Professor; **Ashlee Ford Versypt** was selected for the David Himmelblau Award for Innovations in Computer-Based Chemical Engineering Education by the American Institute of Chemical Engineers; **Miao Yu** received the Neil Yeoman Innovation Award from the American Institute of Chemical Engineers.

Civil, Structural and Environmental Engineering: **Amjad Aref** was elected a Fellow of both the American Society of Civil Engineers and the Structural Engineering Institute; **Alan Rabideau** was named a Fellow of the American Society of Civil Engineers.

Computer Science and Engineering: **Karthik Dantu** and **Oliver Kennedy** received the Institute of Electronics and Electrical Engineering Region 1 Technological Innovation Award; **Kennedy** also received the Faculty-Staff Distinction in Academic Integrity Award from the UB Office of Academic Integrity; **Siwei Lyu** was elected a Fellow of the International Association for Pattern Recognition; **Chunming Qiao** received the Excellence in Graduate Student Mentoring Award from the UB Graduate School; **Bina Ramamurthy** earned the Institute of Electronics and Electrical Engineering Region 1 Outstanding Teaching Award; **Atri Rudra** was named the inaugural Katherine Johnson Chair in Artificial Intelligence and received the SUNY Chancellor's Award for Excellence in Teaching; **Junsong Yuan** received the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities.

Engineering Education: **Kristen Moore** received the SUNY Chancellor's Award for Excellence in Faculty Service.

Industrial and Systems Engineering: **Rajan Batta** was named a Fellow of INFORMS and received the Institute for Industrial and Systems Engineering's Frank and Lillian Gilbreth Industrial Engineering Award; **Sabrina Casucci** received a SUNY Chancellor's Award for Excellence in Teaching; **Lora Cavuoto** received the William E. Tarrants Outstanding Safety Educator award from the American Society of Safety Professionals; **Diana Ramirez-Rios** was elected regional vice president of the Americas of the Production and Operations Management Society; **Chi Zhou** received a UB


Neelamegham


Ford Versypt


Qiao


Ramamurthy


Ramirez-Rios


Zhou


Ringuette

Exceptional Scholars: Sustained Achievement Award; **Jun Zhuang** was named a Fellow of the Society for Risk Analysis.

Materials, Design and Innovation: **Edward Snell** was elected a Fellow of the American Crystallographic Association.

Mechanical and Aerospace Engineering: **Francine Battaglia** was elected president of the American Society of Thermal and Fluid Engineers; **James Chen** was named a Fellow of the American Society of Mechanical Engineers; **John Crassidis** was named Moog Professor of Innovation and was inducted into the Niagara Frontier Aviation and Space Hall of Fame; **Mostafa Nouh** received UB's President Emeritus and Mrs. Meyerson Award for Distinguished Undergraduate Teaching and Mentoring; **Matthew Ringuette** was named an Associate Fellow of the American Institute of Aeronautics and Astronautics.

MOORE, JENSEN, RABIDEAU AND WU JOIN LEADERSHIP TEAM

The School of Engineering and Applied Sciences has named its first Associate Dean of Equity and Inclusion, and three departments in the school have new leadership.

As the first Associate Dean for Equity and Inclusion, **Kristen Moore** will oversee and expand the growth of the school's diversity initiatives. Her commitment to justice, equity, diversity and inclusion (JEDI) is best exemplified in her work as chair of the SEAS JEDI Committee, where she led the development of faculty, student, and staff training; collected data regarding JEDI initiatives; developed mentoring programs; and developed policy and practice around equity and inclusion. She joined UB in 2018 as a founding faculty member of the Department of Engineering Education and served as its first director of graduate studies.

She follows the leadership of SUNY Distinguished Professor Rajan Batta, who has overseen the growth of the school's diversity initiatives since 2016. Batta will continue to serve as the Associate Dean for Faculty Affairs and Recognition.

Award-winning educator and environmental engineer **James Jensen** has been appointed chair of the Department of Engineering Education. He succeeds Carl Lund, who served as chair since the department was formed in 2018. Jensen has made significant contributions to teaching and learning, and environmental engineering. He has mentored over 200 student and has been recognized with many awards, including a SUNY Chancellor's Award for Excellence in Teaching.

Sustainability and education advocate **Alan Rabideau** has been named chair of the Department of Civil, Structural and Environmental Engineering. His appointment as chair follows the six-year tenure of Joseph Atkinson. A UB professor since 1993, Rabideau has provided critical leadership for the department's Environmental and Water Resources Engineering programs and has fostered relationships with many organizations in Western New York and beyond.

Yun Wu, who has made significant contributions to the development of innovative nanotherapeutics and in vitro diagnostic assays for cancer treatment and diagnosis, has been named chair of the Department of Biomedical Engineering. She follows the outstanding leadership of Professor Albert Titus, who has been the chair of BME since its inception in 2012.

BRUNEAU AND LYU NAMED DISTINGUISHED SOCIETY MEMBERS

The nation's oldest engineering society and the world's largest computing society have recognized two UB faculty as distinguished members.

Michel Bruneau, SUNY Distinguished Professor in the Department of Civil, Structural and Environmental Engineering, was honored as a distinguished member of the American Society of Civil Engineers (ASCE). **Siwei Lyu,** SUNY Empire Innovation Professor in the Department of Computer Science and Engineering, was named a distinguished member of the Association for Computing Machinery (ACM).

An internationally known leader in civil engineering, Bruneau's innovative research focuses on enhancing the resilience of structures against extreme events and has helped shape numerous design codes and standards.

Lyu, a renowned investigator of digital media forensics and deepfakes, was honored for his outstanding scientific contributions to computing. His research has led to the development of technologies for spotting manipulated images through audio, visual and other forensics, as well as improvements in how computers recognize, detect and track objects, and understand human activity.

CHUNG NAMED FELLOW OF AMERICAN ACADEMY OF ARTS AND SCIENCES

Deborah Chung has been named a Fellow of the American Academy of Arts and Sciences, one of the oldest scholarly societies in the United States. She was one of 11 people elected under the academy's Engineering and Technology Section.

Ranked among the top materials science researchers in the world by a Stanford University citation-based study, Chung is the founder of the Composite Materials Research Laboratory at UB and previously served as the Niagara Mohawk Power Corp. Endowed Chair Professor.

A prolific scholar with over 600 peer-reviewed journal publications, she has received numerous honors throughout her career. She is also a dedicated teacher in the Department of Mechanical and Aerospace Engineering, where she has mentored 37 PhD graduates.

Her talents extend beyond science. For example, she holds the Licentiate of the Royal Schools of Music (LRSM) diploma in piano performance from the Royal Schools of Music and she placed second at the Hong Kong Music Festival in the piano solo competition. She has been asked many times to speak on the intersection of science and music.

Chung was the California Institute of Technology's first female engineering graduate, and earned a PhD degree in Materials Science from the Massachusetts Institute of Technology under the tutelage of the late Professor Millie Dresselhaus.

Fellows were inducted on Sept. 29-30 in Cambridge, Massachusetts.

WHITTAKER JOINS ELITE GROUP OF NATHAN M. NEWMARK MEDALISTS AT UB

Fifth UB structural engineer to receive ASCE's prestigious award

Andrew Whittaker, SUNY Distinguished Professor in the Department of Civil, Structural and Environmental Engineering, won the prestigious Nathan M. Newmark Medal from the American Society of Civil Engineers (ASCE).

Whittaker was honored for his "fundamental contributions to earthquake, blast, impact and performance-based engineering for buildings and mission-critical infrastructure, including advanced nuclear reactors." He joins Michael Constantinou (2015), Andrei M. Reinhorn (2011), Tsu Teh Soong (2002) and George C. Lee (2000) as a recipient of the Newmark Medal. All are internationally recognized for their contributions to structural and earthquake engineering.

An internationally renowned scholar and engineer, Whittaker has helped develop national engineering standards, including ASCE 4, ASCE 7, ASCE 43, ASCE 59 and ACI 349. He chairs the ASCE Nuclear Standards Committee, and his work has led to significant advancements in seismic isolation of nuclear reactors, power plants and facilities.

Whittaker will accept the award next March during ASCE's Structures Congress in San Antonio, Texas.

Mark Karwan poses with his family at the celebration of his career at UB.

CELEBRATING THE CAREER OF MARK KARWAN

FORMER DEAN AND ISE PROFESSOR RETIRES FOLLOWING A 46-YEAR CAREER AT UB

The Industrial and Systems Engineering community came together with family and friends to celebrate the professional accomplishments of Mark Karwan, SUNY Distinguished Professor of Teaching, Praxair Professor in Operations Research, and former dean of the School of Engineering and Applied Sciences. He retired this year after a distinguished 46-year career at the University at Buffalo.

Karwan began his career at UB in 1976, after receiving his PhD from the Georgia Institute of Technology. During his time at UB, he advised or co-advised 41 PhD students, as well as mentored many undergraduate and graduate students. His research on mathematical programming, including modeling and algorithmic development, has been applied in diverse areas such as sports scheduling, hazardous waste routing and military path planning. He is also regarded as an innovative and thoughtful leader, who served as chair of ISE from 1987-1992, and dean of SEAS from 1994-2006.

"Mark Karwan is the epitome of engineering at UB," said A. Scott Weber, provost and executive vice president for academic affairs, University at Buffalo. "A distinguished faculty member, former chair and dean, and a mentor to many, including me, he has served with distinction. His collegiality, infectious humor and positive attitude was and will continue to be an asset to our university."

ISE department chair and professor Victor Paquet organized the event, which concluded the department's year-long celebration of its 75th anniversary. It featured an hour-long seminar in which Karwan reflected on his career as a professor, researcher and leader; lunch and a reception; and testimonials and stories from in-person and virtual attendees.

Colleagues and friends who could not travel to Buffalo shared their best wishes via Zoom.

Mark Karwan talks with former PhD students (from left) Matt Henchey, Frank Mufalli and Lei Sun.

Mark Karwan talks with current ISE faculty members Johnson Fadeyi and Sayanti Mukherjee.

DISCOVERING LIFE AFTER THE BIG BANG

Aerospace alum ends NASA career 'looking back in time'

By Peter Murphy

Durning stands in front of one of the James Webb Telescope's 18 mirrors while engineers and technicians examine some of its parts.

NASA's James Webb Telescope is delivering the clearest images of what the universe looked like billions of years ago. These images have captivated the public, and—perhaps more important—have impacted theories on the Big Bang and our universe more broadly.

University at Buffalo aerospace engineering alumnus John Durning (BS'85), who began his career at NASA over 30 years ago, has played a key role in what could be some of the most significant and unexpected findings related to space in decades.

"Scientifically, the James Webb Telescope's mission is to understand how the universe came to be, and to validate or invalidate our model for understanding our place in the universe," says Durning. "I think it will give us a better perspective on things happening here on earth and could help us work together."

Durning spent 16 years on the James Webb Telescope project, most recently as its deputy project manager, before retiring in July of 2022.

"The telescope tells us what the universe looked like when the first galaxies formed after the Big Bang. It is colloquially called 'looking back in time.' What does that mean? We don't travel back in time," Durning says. "Since the Big Bang, everything has been moving away from everything else as the universe expands. Some of the light emitted soon after the Big Bang is just catching up to us now. As it arrives at the telescope, it reflects the information from when it was emitted all those years ago.

"For example, it takes three seconds for moonlight to reach our eyes so we are seeing what the moon looked like three seconds ago. The light from the closest star, Alpha Centauri, takes four years to get to us so when you look at it you see what it looked like four years ago. The James Webb Space Telescope can see what the universe looked like at the beginning because of its sensitivity."

The Webb Telescope has several instruments on board that do different things with the light it captures. Imagers produce the iconic pictures, while spectrographs determine the chemical composition of the incoming light. Using the combination of images and an understanding of the chemicals and other elements surrounding the exoplanets (any planet beyond our solar system) and galaxies the telescope discovers, engineers and scientists at NASA can infer the dynamics and history of those distance objects, albeit millions or billions of years ago.

"For example, the presence of methane in an exoplanet's atmosphere usually indicates a biological process, and could mean life was present back in the day. What kind of life we cannot say, but life nonetheless," says Durning.

Photo: Bill Ingalls/NASA

Engineers celebrate at the Space Telescope Science Institute in Baltimore after the James Webb Space Telescope's mirrors finished unfolding.

UB AND ITS LASTING IMPACT

Durning grew up in Long Island, New York, an area with a rich history of aviation milestones, including the birthplace of NASA's first lunar modules. As a high school student, he excelled in math and physics, and went on to earn an associate degree in engineering from nearby Nassau Community College. After working for a year with a civil engineering company, he enrolled at UB.

"I received a great education at UB and established some great connections. I learned how to approach complex problems, which is a skill that has been invaluable to me in the workplace."

As a student at UB, Durning took advantage of the collaborative environment among students and faculty members. He credits the university with preparing him for a career with NASA.

"I picked UB because of resources. It was what I could afford, and the education was excellent—on par with any other institution. I had coworkers at NASA who were from Stanford and MIT. UB was more than capable of producing engineers," Durning says.

Durning's experience at UB proved to be lasting. He met his wife Patricia, an occupational therapy major, while the two were students.

Durning (left) and other members of the JWT team in front of the telescope's tennis court-sized sunshield. The sunshield gives the telescope a Sun Protection Factor (SPF) of 1 million.

STARGAZING

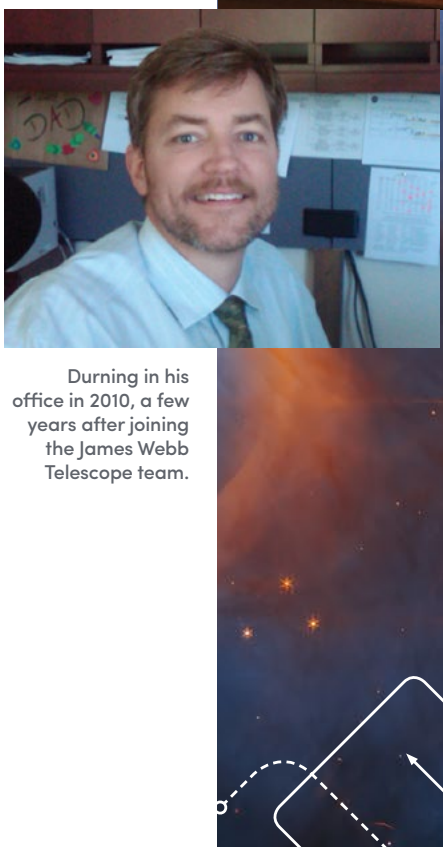
After graduation, Durning worked for the U.S. Navy as an engineer in Maryland. He enrolled at George Washington University and learned of an opportunity to follow a life-long passion.

"I had always been interested in NASA," Durning says. "Growing up on the island, you'd look up into the sky at night, but you couldn't see many stars because of the city. I was always interested in adventure, exploring and seeing the bigger picture."

Durning applied for a job with NASA at the Goddard Space Flight Center and worked as the instrument manager for the gamma ray spectrometer on the Mars Observer Mission up until its launch in 1992. In this role, Durning managed the instrument that took gamma ray measurements from Mars to understand the planet's surface. Durning then joined the earth sciences team and served as deputy observatory manager for the EOS Aqua project. After his time with the observatory, Durning served as the mission manager on the Zephyr Wind Lidar mission, and in leadership roles on several different missions. At each step of his career, Durning's role became more managerial, and while each position brought its own set of challenges, there were some similarities.

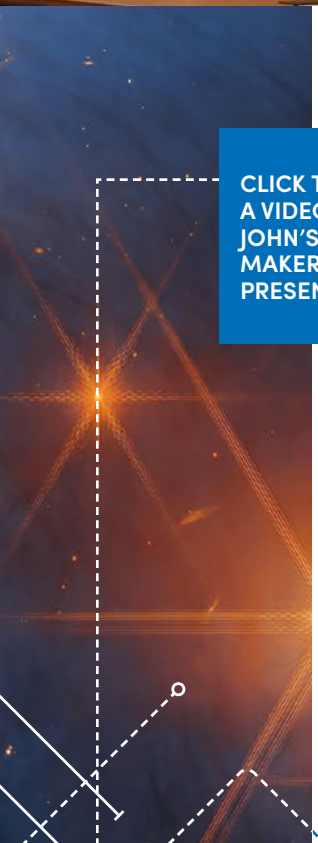
"No two days were the same and there were lots of new challenges. As an instrument manager, I would work with the people who were actually turning the wrench," Durning says. "When a problem came up, we would meet with the team directly and develop a solution. As deputy project manager with the James Webb Telescope, if a challenge arose, we would approach the problems the same way, only this time, the team was much larger. We had thousands of engineers, scientists, and technicians from all over the country and Canada and Europe working on Webb. The work was incredibly rewarding."

Durning joined the James Webb Telescope mission in 2006, after work had been underway for about five years, but the next 16 years would prove pivotal for the project's potential discoveries.



Durning in his office in 2010, a few years after joining the James Webb Telescope team.

During in one of NASA's Mission Control Center conference rooms.



CLICK TO WATCH A VIDEO OF JOHN'S CHANGE MAKER EVENT PRESENTATION

HOW THE JAMES WEBB TELESCOPE ANSWERS FUNDAMENTAL QUESTIONS

"The Hubble Telescope provided fundamental discoveries in 1992, but even then, scientists knew that we couldn't look back into the cosmos with visible frequency—we needed to work with infrared frequency," Durning says.

NASA began generating what the Webb project would look like in the 1990s, and the organization was focused on using infrared frequency. According to Durning, this presented several challenges, but two were paramount: the telescope needed to be as cold as possible and as big as possible. Whatever device was going to be looking back into space needed to be as close to absolute zero as possible, and it needed to stay cool despite its movement throughout space. The telescope needed to be deployed some place where it would be thermally stable.

Scientists identified L2, the second Lagrangian point, as an ideal location to deploy the James Webb Telescope. Lagrange points are positions in space where the gravitational pull of various orbiting masses (the sun, Jupiter, moon, etc.) cancel out and an object can maintain an orbit there. This second Lagrangian point would provide the telescope with a thermal environment stable enough to use infrared frequency through its near infrared cameras. The telescope's instruments, including the spectrographs and near infrared cameras, analyze chemical compounds. These devices help the telescope answer the questions: Are we alone and how did we come to be?

"We can see how the universe evolved and the conditions that made that possible," Durning says. "We can look at other places in the universe and see if this same evolution is happening."

According to Durning, discoveries form the Webb Telescope project are already impacting our understanding of space, and that impact could be exponential.

"Ninety percent of the universe is unseeable, but it's based on the 10% of the universe that we can see. The older galaxies we see now seem more complex. It could rewrite our current understanding and models," Durning says. "We had 18 segments of the telescope looking in one direction. We pointed everything at a star and needed to allow 10 minutes for alignment. We did this with two bright stars, and behind each of them, we saw hundreds of galaxies," Durning says. "We were surprised. How many possible other Earths and planets are there? We didn't expect to see these galaxies while aligning the telescope since we were only looking at the stars for a relatively brief time and the stars were not located in a particularly scientifically significant location in the sky. There is so much more out there."

CAREER HONORS AND RECOGNITIONS

Durning has received a number of awards during his career with NASA. He received the Special Act or Service Awards for outstanding leadership in 1992, 1995, 1996 and 2010. He also received Performance Awards in 1991, 1993, 1994, 1995, 1997, and in the years from 2001 to 2009.

More recently, he was honored by UB's School of Engineering and Applied Sciences with its Engineer of the Year Award, which is given each year to recognize a school alumnus or closely affiliated person with distinguishing activities in alumni, community, business and/or professional affairs.

These days, Durning and his wife Patricia are renovating a 100-year-old house just outside of Binghamton, New York. In his retirement, Durning looks forward to traveling and spending time with his family.

REMEMBERING HARI SRIHARI

SCHOLARSHIP FUND, CONFERENCE ROOM HONOR THE WORK OF UB'S LEGENDARY COMPUTER SCIENTIST

By Tom Dinki

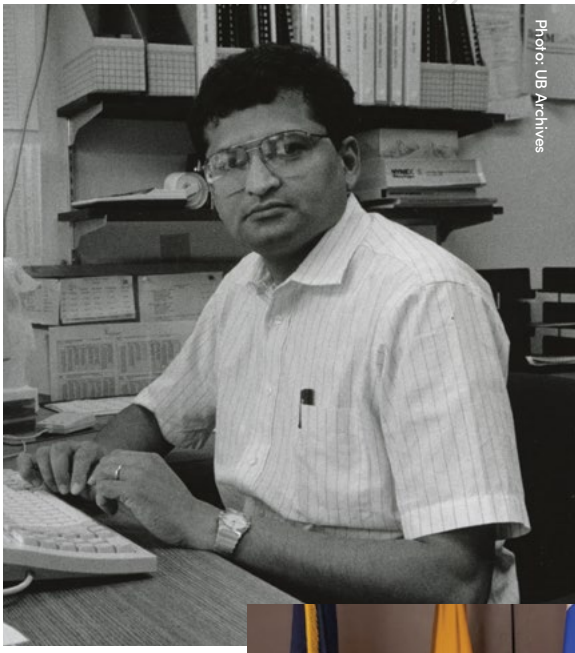


Photo: UB Archives

Sargur "Hari" Srihari was, in many ways, a visionary.

A pioneer in pattern recognition, he taught machines to read handwriting. The impact of his work is felt everywhere, from technology that understands the scribbled addresses on our mail to machines that can determine if a criminal forged a signature.

"Dr. Srihari was, quite simply, a towering figure in computer science," said University at Buffalo President Satish K. Tripathi. "Always at the cutting edge of innovation, he transformed pattern recognition, machine learning and computational forensics with findings that brought global renown to UB and had a profound impact on society."

A SUNY Distinguished Professor of Computer Science and Engineering, Srihari founded the Center of Excellence for Document Analysis and Recognition (CEDAR) in the early 1990s. The center did groundbreaking research for the United States Postal Service and received funding of more than $60 million over 25 years. The work led to handwritten digit recognition being recognized as the "fruit fly" of artificial intelligence and machine learning.

In 2002, he conducted the first computationally based research to establish the individuality of handwriting, with important implications for the criminal justice system.

This work led to the first automated system, known as CEDAR-FOX, for determining whether two handwritten samples came from the same or different writers. The system was eventually extended to compare fingerprints and footprints.

Srihari was invited to serve as the only computer scientist on a National Academy of Sciences' committee that produced an influential 2009 report on strengthening forensic sciences in the U.S., which has had a major impact in courts worldwide.

His research advances, which have received seven U.S. patents, also paved the way for the handwriting-recognition technology that is used in modern systems ranging from tablets to scanners. His early research work on 3D imaging remains influential in fields such as 3D printing.

"His work was used everywhere," said Kemper Lewis, dean of the School of Engineering and Applied Sciences. "People leveraged it to solve even more complex problems."

HIS SECOND PASSION: TEACHING

Beyond his extensive research over 45 years at UB, Srihari remained dedicated to teaching, recalls his wife, Rohini Srihari, professor and associate chair of the Department of Computer Science and Engineering.

"I watched him spend hours working on new lecture slides," Rohini Srihari says. "He loved creating these and it was sometimes difficult to get him away from his desk."

She recalled that he had several opportunities to go elsewhere over the years but enjoyed his work and the company of his colleagues too much to leave.

"He often commented that his professional success may not have been achievable had he been distracted by career moves and chasing new personal opportunities," Rohini Srihari said.

To further honor his dedication to students, the Sargur N. Srihari Graduate Fellowship in Computer Science and Engineering was created to support a student pursuing a doctorate in machine learning in the Department of Computer Science and Engineering.

"We would like to thank all the people who have donated to the endowment fund, including many of Hari's former students and friends," Rohini Srihari says. "We hope that students who receive this fellowship demonstrate Hari's thirst for advancing science."

Photo: Madison Dailey

PRESERVING HARI'S LASTING LEGACY

To honor his vision and dedication, UB posthumously awarded Srihari the President's Medal at the School of Engineering and Applies Sciences' 2022 graduate commencement ceremony in May.

That same month, the university held a symposium on campus in his honor. The symposium focused on Hari's professional accomplishments and included a series of talks and a panel discussion from faculty colleagues, current and former students, and distinguished guests.

Earlier this year, 113Y Davis Hall was renamed the Sargur Srihari Conference Room. The space, which is shared by CEDAR and the Center for Unified Biometrics and Sensors (CUBS), will feature a plaque and other items that commemorate Srihari's legacy.

"Think about what happens in conference rooms," Lewis says. "These are where big problems are tackled and transformational solutions are envisioned."

Rohini Srihari said she hopes "the real legacy of the room will be that students and faculty will be meeting there long into the future to discuss cutting-edge technologies, building on the work that he accomplished."

PROFESSIONAL ACCOLADES AND CAREER

Born in Bangalore, India, Srihari earned an undergraduate degree in electrical and communication engineering from the Indian Institute of Science in Bangalore in 1970. Immigrating to the U.S. later that year, he obtained a master's degree (1972) and PhD (1976), both in computer and information science, from The Ohio State University. After receiving his PhD, Srihari joined the faculty at Wayne State University. He came to UB in 1978.

During his career, Srihari authored more than 350 research papers with 20,000 citations (h-index=64); edited five books; and served as principal adviser to 40 doctoral students.

He was the recipient of numerous honors, among them the International Association for Pattern Recognition (IAPR)/International Conference on Document Analysis and Recognition Outstanding Achievements Award in 2011 for his outstanding and continued contributions to research and education in handwriting recognition and document analysis, and services to the community; the Distinguished Alumnus of The Ohio State University College of Engineering in 1999; and the UB Excellence in Graduate Mentoring Award in 2018.

He held fellowships in the IAPR and the Institute of Electronics and Telecommunications Engineers, and was a life fellow of the Institute of Electrical and Electronics Engineers (IEEE).

In his later years, Srihari remained an active faculty member, continuing to teach and supervise graduate students. He also developed an extensive set of lecture slides for machine learning, which are widely used in courses around the world.

His final teaching efforts were focused on integrating the wealth of research being produced in deep learning from various books, papers and blogs. He served as a visiting professor and scientist at his alma mater, the Indian Institute of Science, during spring 2020, and later established a scholarship there. "His wisdom and kindness are dearly missed," says Jinhui Xu, professor and chair of the Department of Computer Science and Engineering.

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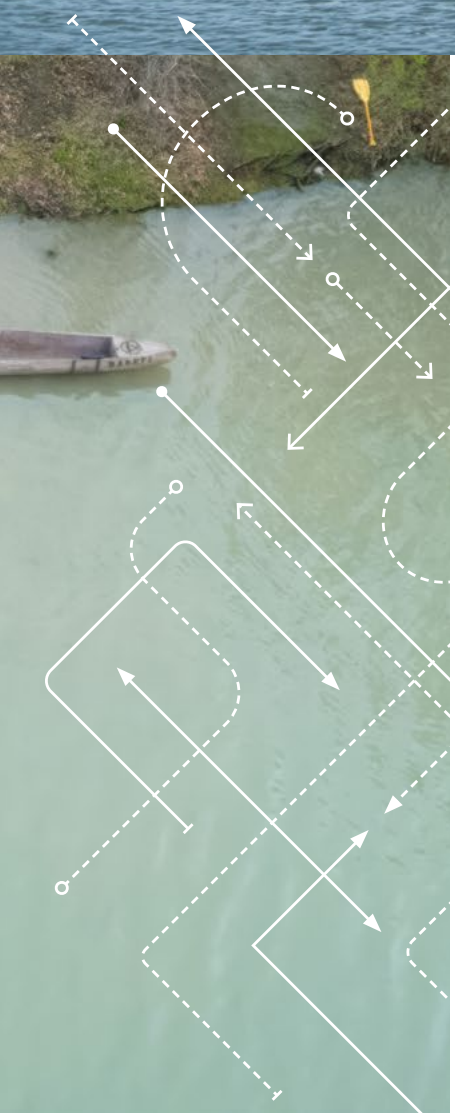


Photos: Douglas Levere

HISTORIC YEAR FOR UB ASCE TEAMS

TEAMS HAVE BEST FINISH EVER AT NATIONAL COMPETITIONS

By Peter Murphy

The UB American Society of Civil Engineers (ASCE) steel bridge and concrete canoe teams earned first place in each of their regional competitions for the first time in club history. Their momentum continued later this summer when they both finished inside of the top 10 at their national competitions.

The steel bridge team finished third in the American Institute of Steel Construction's national Student Steel Bridge Competition at the University of California, San Diego. This is the best finish in history for the UB ASCE steel bridge team.

"Finishing third in the nation means a lot to me and it shows that hard work does pay off," says Dylan Leddy, a recent graduate who is enrolled in the civil engineering master's program for fall 2023 and one of the team's project managers. "We drove the bridge across the country to the competition in San Diego. This hardworking team deserves its spot in the top after putting in thousands of person hours on these projects."

UB ASCE's concrete canoe team finished ninth in the national Concrete Canoe Competition at the University of Wisconsin-Platteville. According to Meghan Pauley, concrete canoe project team manager and recent civil engineering graduate, the team made steady improvements.

"Our goal for the entire year was to make it to the national competition and place within the top 10, which we were able to accomplish," says Pauley. "We focused on improving our paddling skills to keep us nationally competitive, so we would go out onto Lake LaSalle a few days every week to get down our sprint and slalom times."

Their hard work paid off. The team finished fifth in both the coed sprint and men's slalom races.

HOSTING A REGIONAL COMPETITION

The UB ASCE club hosted this year's Upstate New York-Canada ASCE Student Symposium on UB's campus from April 20–22. Nine teams from eight states and Canadian provinces came to UB to compete in a variety of events. In addition to inviting mentors, conducting professional workshops, and managing other responsibilities, the club had to plan the symposium while competing in the seismic design, concrete canoe and steel bridge competitions.

Sean Crowell, senior civil engineering student, and Josh Cardamone, junior civil engineering student, served as the conference chairs. They began planning the symposium last spring.

"At the end of August, we began having regular meetings with our student planning committee every two weeks to review what had been accomplished and what new tasks needed to be completed," Cardamone says.

"Our biggest takeaway was seeing all the work that goes into hosting something on this scale," Crowell says. "There were so many little things that needed to be considered throughout this entire process that we never would have considered.

CAN CHESS ENGINES MAKE BETTER EMERGENCY ROOM DECISIONS?

PHD STUDENT DEVELOPING GAME-PLAYING AI FOCUSED ON ER EFFICIENCY

By Tom Dinki

Adam DeHollander has been a tournament chess player since middle school and is a former volunteer chess coach.

Computer chess engines surpassed the world's best human players in the 1990s. They can calculate millions of moves per second, allowing them to quickly make the best decision on the board. So why couldn't they be used to make decisions in an emergency room?

Adam DeHollander, a PhD student in the Department of Industrial and Systems Engineering, is developing a game-playing artificial intelligence focused on assigning nurses and prioritizing patients instead of sacrificing pawns and capturing queens.

"I wondered if we could reprogram the algorithms that play chess to instead analyze the emergency department," DeHollander says. "Turns out you can basically convert the emergency department into a game and then use the algorithms to solve the game."

DeHollander was recently selected for the National Science Foundation's Graduate Research Fellowship Program as a result of the project, which is his doctoral dissertation. The five-year fellowship provides three years of financial support, including an annual stipend of $37,000.

He also received the 2022 Chessable Research Award from chess education platform Chessable.

"Adam has an impressive knowledge of advanced chess gaming software that makes the original IBM Deep Blue look like a toy," says Mark Karwan, SUNY Distinguished Teaching Professor Emeritus and DeHollander's adviser.

DeHollander, a tournament chess player since middle school, got the idea after visiting an emergency room in his native Michigan two summers ago. Over 90% of emergency departments in the U.S. regularly experience crowded conditions, which can lead to adverse health outcomes and increased mortality rates.

DeHollander created a chess engine simulation where pieces on the board represent nurses and X-rays, while moves on the board represent allocating those resources.

His chess engine rates moves on a scale of one to zero. One means no patients waiting, while zero means an infinite number of patients waiting for an infinite amount of time. Most moves are rated somewhere in between.

The game is played between a decision-making human player trying to maximize their score and a virtual "random player" making random moves.

"The chess engine can look at each decision and figure out what the score would be if you made that decision," DeHollander says.

DeHollander envisions a doctor or nurse playing as the decision-making player in order to test out strategies and possibly even making decisions in real time based on the computer's advice.

DeHollander coded his simulation from scratch using the high-level programming language C++ and is now developing the computer's artificial intelligence in UB's Center for Computational Research.

Health care is DeHollander's passion. Asthma medication weakened DeHollander's immune system to the point where he missed many days of middle school, while frequent doctor's appointments for migraines forced him to take online classes in high school.

The fact his health care research involves chess is a bonus.

"It's great to be able to use a hobby to actually make a difference in the world," he says.

BOT WARS: THE ARMS RACE, SEAS-STYLE

By Charles Anzalone

The rules of Bot Wars can be summed up in two words: just fight.

A UB tradition, Bot Wars is the marquee event of Engineers Week, a series of student-run engineering and science-themed competitions in February. Student engineering clubs compete in a range of ever-popular activities, ranging from the Egg Drop and Drone Racing to the Derby Race and Giant Jenga.

"It's so much fun," says Auburn Schwartzmeyer, a junior majoring in mechanical engineering and president of the UB Society of Automotive Engineers (SAE) student chapter.

"You have all your friends there. From the beginning of the week, we have these little events we run, and games, and we all get to play them and compete, and you earn these points," she says. "The Bot Wars is the big cherry on top. It's the finale you worked so hard for."

An arena is set up in the lobby of the Student Union, and teams contend in two challenges – the Bot Wars Maze, in which robots must navigate a maze as quickly as possible, and the Bot Wars, where bots clash, bash and saw until there is one robot standing.

There are, of course, a few guidelines to keep the competition fair and the participants and audience safe. Spikes, nails and blades are all fair game. Explosives, flamethrowers, radio jammers and high-voltage devices are all banned weapons.

This year, SAE's bot SLAYYYER took home the crown, destroying the competition. SAE also placed first overall in Engineers Week, earning the most points throughout the events. But in addition to bragging rights, the students forged lifelong bonds while hanging out and tinkering with their bot in the Jarvis Hall workspace. They have also picked up valuable skills for future careers.

Students in the Society of Automotive Engineers club work on their bot in the lab.

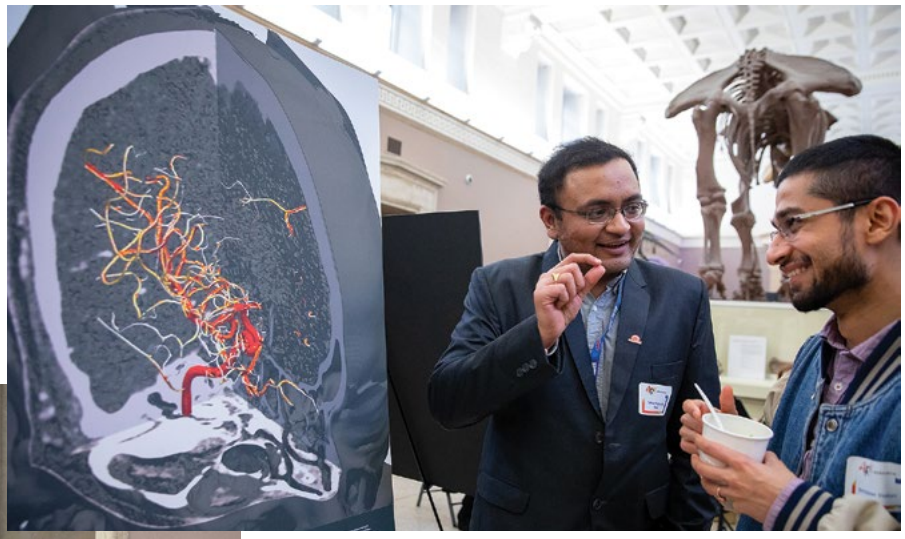
"SAE is a great place to learn skills not taught in the classroom. There have been times that I learned something in SAE and then walked into lecture, and have already known the material from SAE," says Riley Pauldine, a club member and mechanical engineering student.

He continued, "No one plans for these moments to be memorable, but with everyone in SAE always looking to enjoy their time at school more, if the right people are at SAE at the right time, stories are bound to be written."

STUDENT HIGHLIGHTS

Joel Muhigirwa, an electrical engineering student and past president of the National Society of Black Engineers, shakes hands with Vice President Kamala Harris during her visit to UB.

Two PhD students received awards from the Department of Energy to pursue their research at national laboratories. Nicholas Cucciniello (top), Department of Materials Design and Innovation, is developing brain-like computers that run on less energy at Los Alamos National Laboratory. Lili Rassouli (bottom), Department of Chemical and Biological Engineering, will study ways to convert solar energy into other clean fuels at the Pacific Northwest National Laboratory.



Photos: Meredith Forrest Kulwicki

Aditya Chivate, an industrial engineering PhD student, won the Judge's Choice for Most Compelling Microscopic Image award in UB's Art of Research competition. The 3D-printed millibot can navigate through small spaces, including within the human body. Neurosurgery postdocs Tatsat Rajendra Patel, Sricharan Veeturi and Munjal Shah (not pictured), who received mechanical engineering PhDs, won the Judge's Choice for Best 3D Rendering. Their work combines AI and image processing to give doctors a 3D visualization of brain vessels.

Photo: Mason Gaugler

Students in the fully online Master of Engineering Management program gathered for a pre-commencement celebration in Davis Hall this past May. The event was the first opportunity for the classmates and faculty members—who had been working remotely for the past year and a half—to meet in person.

Sydney Swedick, a biomedical engineering student, received the prestigious Barry Goldwater Scholarship. She plans to pursue a PhD in neuroscience, where she is interested in conducting research on peripheral nerve injuries and spinal cord injuries using tissue engineering and regenerative medicine.

The UB INFORMS student chapter board members, (from left) Courtney Burris, Kaylie Butt, and John Becker, accept the Summa Cum Laude award from Laura Albert, President-elect of INFORMS, at the annual conference. This is the third year in a row that UB's chapter has received the award, the highest honor a student chapter can receive from INFORMS.

For the second year in a row, Jesse Callanan (right) received the Best Paper Award in Mechanics and Materials Systems from ASME's Smart Materials, Adaptive Structures and Intelligent Systems division. Callanan graduated earlier this year with a PhD in aerospace engineering and is now a postdoc at Los Alamos National Laboratory. The award recognized his work on a new class of electromechanically coupled metamaterial. His advisor was Mostafa Nouh (left).

Photo: Paul Hokanson

Electrical engineering student Jonathan Surdej recently won his sixth consecutive Mid-American Conference (MAC) title in shot put at the Outdoor Track and Field Championships in May.

A LEGACY OF GIVING

JACK DAVIS, ALUMNUS, BENEFACTOR AND FRIEND: MARCH 1, 1933 – JAN. 23, 2023

By Peter Murphy

A 1955 graduate of the University at Buffalo's School of Engineering and Applied Sciences, John R. "Jack" Davis believed deeply in the transformative power of an education.

After graduating from the University at Buffalo with a degree in industrial engineering, Davis served in the Marine Corps Reserves and the Coast Guard. He worked for General Motors Corp.'s Tonawanda foundry and Carborundum Co. before founding I Squared R Element Co., which makes silicon carbide and disilicide heating elements and hot surface igniters used in high-temperature electric furnaces and appliances.

The company, one of the region's most prominent and successful manufacturing businesses, is the only U.S. manufacturer of these products.

Davis revered the value of engineering education and wanted the school and UB to be an epicenter for engineering research and teaching, leading the way in developing a highly skilled workforce for Western New York and the world.

"Do it right, and do it right now," was Jack's business motto, but it was also a mindset he brought to his philanthropy to his alma mater. The largest individual donor to the School of Engineering and Applied Sciences, Jack's philanthropy has been instrumental in providing scholarships to over 200 students in Western New York to study engineering at UB. He and his beloved wife, Barbara, also provided the $5 million cornerstone gift that enabled the construction of one of the University's signature spaces, Barbara and Jack Davis Hall, in 2012.

"I hear students talking all the time about how much they love being in this building," said Kemper Lewis, dean of the School of Engineering and Applied Sciences. "His vision and his commitment have helped elevate us to the No. 2 public engineering school in the Northeast. An achievement like that doesn't happen without the support and devotion of someone like Jack Davis."

During his lifetime, and now through his estate, Jack Davis has helped to ensure that students dreaming of becoming engineers will find a home at UB. Through his careful planning and generosity, future profits of I Squared R Element will support a scholarship fund for Western New York students pursuing an engineering education.

"When I was awarded this scholarship, I started crying," said Alex Yuen, aerospace engineering student and scholarship recipient. "UB has become my favorite college campus to be on. I especially love Davis Hall, as it makes me feel smarter in a way. This scholarship is life-changing to me, and I am extremely grateful to have been awarded."

Davis died Jan. 23, 2023 after a long illness. He was 89. In addition to his wife Barbara, he is survived by four sons, Jack, Bob, Al and Ace; two daughters, Jill Josephs and Star Davis; a brother, Don; a sister, Peggy Jacobs; 16 grandchildren and 22 great-grandchildren.

Jack and Barbara Davis cut the ribbon on the opening day of Barbara and Jack Davis Hall. Photo: Douglas Levere

JESSICA ALLEN

FIRST WOMAN CERTIFIED IN COLD STOWAGE FOR REAL-TIME OPERATIONS

A few years after graduating with a bachelor's degree in mechanical engineering from UB, Jessica Allen secured a position as a project engineer on the NASA Cold Stowage team, helping to provide temperature-controlled environments for the International Space Station (ISS) program. Now, she is on her way to making history as the first woman to be certified in Cold Stowage for Real-Time Operations. We interviewed Allen, who graduated in 2011, about her role and experience working with NASA, and her advice for women pursuing a career in engineering.

You currently work for NASA. Can you tell us more about your role?

I work on the Cold Stowage team. Our team transports temperature-controlled science experiments to the ISS via SpaceX and Northrup-Grumman launches. We handle temperatures ranging from 37 degrees Celsius (98 degrees Fahrenheit) down to minus 95 degrees Celsius (minus 139 degrees Fahrenheit)!

Once the science is unloaded from the capsule, the astronauts will perform the experiments. They then store it in special fridges, freezers or incubators designed for cold stowage. After that, a SpaceX capsule will bring the science back down to Earth, where our team will work with the science teams to distribute it. We also get to load our hardware into the capsules for launch. It's neat to be so close to and see inside something that will go to space in a few hours.

You're on your way to making history as the first woman to be certified in Cold Stowage for Real-Time Operations. What has that experience been like for you?

It's been very exciting and a little intimidating at the same time! I've been on the team for several years now and have always had interactions with the Real-Time Operations team and its processes. This has helped greatly with jumping into the deep end of training. I know the operations team well, so this makes the training process much more comfortable.

As people can imagine, NASA uses several computer programs and monitoring sequences. Learning all the ways we monitor hardware on the ground and what's active on the ISS has been a new process for me. I've also learned how to remote into our units to do commanding to change temperatures.

Another new thing is talking on voice loops. This is a system we use to talk to various flight support positions at NASA on the ground, as well as communicate in real time with the astronauts on the ISS. If you can picture how everyone was talking with headsets in the mission control room in the movie "Apollo 13," it's not that far off from that.

Overall, the training experience has been enlightening. To get fully certified for Real-Time Operations, an engineer needs to sit for many simulations. This involves being on the voice loops, having our hardware displays up and handling multiple problems along the way for several hours. Everyone that is talking that day on those loops is also training, and there are actually many women who are involved. It's great to see that we have a big presence, and more women are training to be at the forefront of NASA.

What advice do you have for women who are interested in or are currently pursuing a career in engineering?

I think things we don't know about can be overwhelming. Prior to coming to NASA, I had never worked in the field of space or aeronautics. It can be intimidating doing something new. Plus, we always want to do things the best we can on our first try and that can be hard, especially when it comes to starting a new field in engineering.

I think the key is to take small steps and break things down easier. Then, it doesn't seem like that big dream or task is too far out of reach. Also, I recommend getting involved in other non-academic or engineering events. Volunteering is a great way to expand your horizons while doing something fun. I've volunteered for things ranging from an animal shelter to the Houston Super Bowl.

By Grace Gerass

HOW KOURTNEY BROWN BALANCED A HALL OF FAME ATHLETICS CAREER WITH COMPUTER ENGINEERING

By Tom Dinki

When deciding on colleges, Kourtney Brown wanted a competitive Division I basketball program, as well as a respected engineering program that could prepare her for a career after basketball.

She found both with the University at Buffalo.

"I think UB was the perfect balance," she says.

And Brown pulled off quite the balancing act during her time on campus. She became the women's basketball team's all-time leader in points, rebounds and blocks, while earning a dual degree in computer science and engineering and electrical engineering from the School of Engineering and Applied Sciences. She was inducted into the Dr. and Mrs. Edmond J. Gicewicz Family UB Athletics Hall of Fame last year and is now a senior process integration engineer for Samsung in Austin, Texas.

"Being a student-athlete made me a better engineer, and vice versa," Brown says. "An engineer's job is to come up with unique ways to solve a problem. It's the same thing in basketball—only the problem is how to score on, or defend against, the person in front of you."

Brown would take apart computers in her Ohio childhood home while setting records for the Solon High School girls' basketball team. She was recruited by several universities, but ultimately chose UB for its strong engineering program.

Just 16% of Division I student-athletes earned a degree in STEM during the 2019-20 academic year, according to the NCAA.

And so freshman year had its challenges. She led the Bulls in blocked shots, but juggled a hectic schedule of games, practices and workouts with lectures, labs and homework.

"And then luckily—or maybe not luckily—I was injured my sophomore year," Brown says.

Sitting out as a medical redshirt gave her time to focus on academics and build study habits that would make her a successful student once she got back on the court.

She then won Mid-American Conference Defensive Player of the Year and MAC Player of the Year during her junior and senior seasons, respectively, while also being named to the Academic All-MAC Team, given to student-athletes with at least a 3.20 grade-point average.

Brown credits time management. Her days were filled with early morning strength and conditioning workouts, engineering classes and labs during the day, followed by a three-hour practice, and study hall at night.

She also credits SEAS faculty.

"They really took a lot of time to help me—even outside of class and their office hours—to make sure I stayed on top of everything," she says.

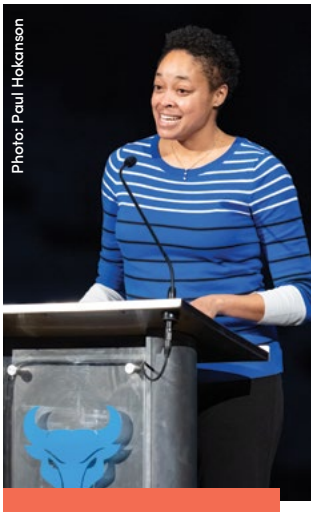
After graduating in 2011, Brown played overseas before returning to UB as an assistant coach. She then earned her master's degree in electrical and electronic engineering at Louisiana Tech University.

Brown joined Samsung in 2017. There she specializes in computer chip design and verification.

"I think the most rewarding part of my job is working on things that are in our phones and cars and getting to say, 'Hey, I made that chip, and I made it work well,'" she says.

Kourtney Brown in the Bell Hall electrical engineering lab during her senior year at UB.

Kourtney Brown goes up for a basket during a game against Ohio University at Alumni Arena in 2011.

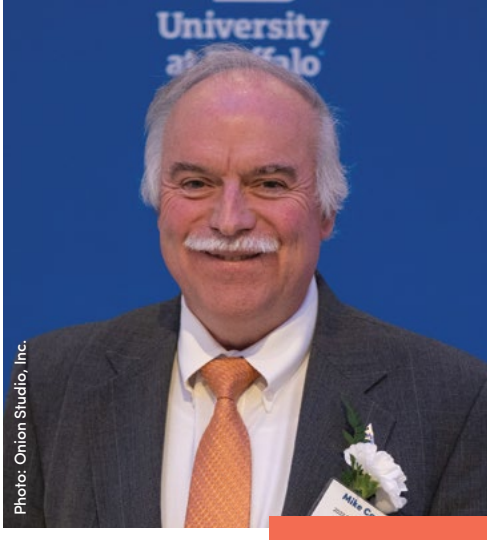


Kourtney Brown, a former women's basketball player who graduated with degrees in computer science and engineering and electrical engineering, delivers her UB Athletics Hall of Fame speech in 2022.

CADIGAN NAMED '22 ENGINEER OF THE YEAR

"THERE'S NEVER BEEN A BETTER TIME TO BE AN ENGINEER THAN RIGHT NOW"

By Tom Dinki



Michael J. Cadigan's message to School of Engineering and Applied Sciences students was simple: There's never been a better time to be an engineer than right now.

The 1979 University at Buffalo graduate and GlobalFoundries executive pointed to the high demand, competitive salaries and, most important, opportunity to impact the world in ways that no other profession can.

"You will be able to put your fingerprints on what you've done to influence society and people's personal lives, like automation, safety and security," Cadigan said at SEAS' 2023 Pledge to Professional ceremony. "There's no better time to do what you're doing."

The UB Engineering and Applied Sciences Alumni Association named Cadigan its 2022 Engineer of the Year, which goes to a school alum or closely affiliated person with distinguishing activities in alumni, community, business and professional affairs. Due to COVID-related delays, Cadigan was honored at February's ceremony along with 2021 winner Dexter Johnson and 2023 winner John F. Durning.

"Michael's resume is impressive, groundbreaking and long. Suffice to say that Michael has distinguished himself through his career and in the field of engineering," said Jordan Walbesser, the association's immediate past president and computer engineering alum. "Not only has he distinguished himself professionally, Michael also gives back to the university."

After graduating from UB with a bachelor's degree in mechanical engineering, Cadigan went on to have an extensive career at IBM. There he held a variety of leadership positions related to product management, manufacturing and supply chain operations.

Cadigan was general manager of the IBM Microelectronics Division when it was acquired by GlobalFoundries, a multinational semiconductor manufacturing company, in 2015. As GlobalFoundries' chief quality officer and senior vice president of aerospace, defense and critical infrastructure, Cadigan is responsible for assuring quality management systems and leading business strategy and development in serving the aerospace and defense segments.

Given current world events and the influence of technology in aerospace and defense, assuring the supply of secure semiconductors is critical.

"You and I know you cannot pick up anything today to communicate, find your directions, or have your washing machine tell you when your wash is done, without a chip in it," Cadigan told students.

Cadigan shows his pride through his continued association with SEAS. He has been a member of the school's Dean's Advisory Council since 1999 and currently services as its chair. His son David earned an electrical engineering degree from UB in 2008 before going on to a master's degree at Columbia University and his own career at IBM.

The family's name is now attached to a conference room in Davis Hall.

"Be proud when you're wearing blue," Cadigan told students. "And, most importantly, know what you can do to impact people's lives because it's all in your capability when you walk out of here."

Cadigan holds his 2022 Engineer of the Year plaque with UBEAA Immediate Past President Jordan Walbesser (left) and Dean Kemper Lewis (right).

ROCK MECHANICS EXPERT PYRAK-NOLTE WINS DEAN'S AWARD FOR ACHIEVEMENT

By Tom Dinki

Laura Pyrak-Nolte has always been passionate about rocks.

She studies how rocks behave beneath the Earth's surface in order to provide insight into natural gas production, fresh water availability and nuclear waste disposal.

But as a child collecting rocks, she wasn't concerned about how they behave or impact the energy economy. She simply found them pretty.

"Sometimes we don't recognize our passions, or think that passions must be deep," Pyrak-Nolte said in a video message played at one of the school's two graduate commencement ceremonies.

Pyrak-Nolte, Distinguished Professor of Physics and Astronomy at Purdue University, received this year's Dean's Award for Achievement from the School of Engineering and Applied Sciences.

The award is the highest honor presented by the school and is awarded annually to someone who has made a substantial contribution to the practice of engineering or applied sciences or has had an exceptional professional career. Recipients are invited to be honored speakers at commencement.

Pyrak-Nolte, who graduated from UB in 1981 with a bachelor's degree in engineering science, looks to understand the evolution of fractures, how seismic waves interact with them and how their geometry impacts the flow of fluids. She also uses 3D printing to create synthetic rock samples and has shown that studying their fractures can help predict the behavior of rocks in the real world.

She is the vice president of North America for the International Society for Rock Mechanics and Rock Engineering and a member of both the National Academy of Engineering and the American Academy of Arts and Sciences.

But in her message to graduates, Pyrak-Nolte said her career has had ups and downs.

She struggled to find a job after receiving her PhD from the University of California, Berkeley. Following a short-term appointment as a visiting assistant professor at Purdue, where her husband, David Nolte, also taught, she took an assistant professor position 100 miles away at the University of Notre Dame in 1992.

It would take five years for her to get hired back at Purdue as an associate professor and once again be closer to her husband, who is now Purdue's Edward M. Purcell Distinguished Professor of Physics and Astronomy.

"Was this a smooth path? Of course not. Every journey has its ups and downs," Pyrak-Nolte said. "It is like hiking mountain trails: You know you have to keep climbing and maybe you can see that the top of the mountain is close, but for some reason the path goes down or plateaus. But if you keep hiking, if you persevere, eventually you reach the top.

"Some people may tell you that at this point you should envision where you want to be and just go for it," she added. "But I am telling you to not worry if you don't know where you want to be."

CLASS NOTES

1960s

David Hagelberger (BS 1969, electrical) was appointed to the board of trustees of Genesee Community College through June 30, 2025. He worked for Sierra Research Corp. as a design engineer and in various leadership positions for 44 years before retiring in 2012.

1990s

Matthew Tryniski (BS 1998, electrical) has been appointed senior vice president of defense systems and solutions for SRC, Inc. He previously served as assistant vice president of multi-domain electronic warfare and has been with the company for nearly 40 years.

Tara Wasik (BS 1999, mechanical) was appointed plant director at General Motors in Tonawanda. She has worked at GM for 24 years and was previously the assistant plant manager.

2000s

Jeffrey Mahon (BS 2002, electrical) has been promoted to senior electronic warfare systems engineer at SRC, Inc. In his new role, he will lead the development of innovative products focused on improving electronic warfare analyst workflow by using signal processing automation, machine learning, and digital engineering.

Hongyi Wu (PhD 2002, computer science and engineering; MS 2000, electrical) was named department head of Electrical and Computer Engineering at the University of Arizona.

Jason Havens (BS 2005, civil) was included in Buffalo Business First's list of 40 Under 40. He is a project manager at Clark Patterson Lee and owner of Rusty Nickel Brewing.

Divyesh Shah (MS 2007, computer science and engineering) joined Meesho as vice president, engineering, where he will lead the supply, monetization and fulfillment and experience engineering teams. He previously worked at Google as director of engineering and Uber as senior manager in the U.S.

PULITZER PRIZE-WINNING ALUM YAM RECEIVES NORTON MEDAL

By Tom Dinki

Marcus Yam has captured close-up photography of wildfires, mudslides, a terrorist attack, and an Iraqi bomb defuser while doing his job.

But the three-time-Pulitzer-Prize-winning photographer credits his experience at the School of Engineering and Applied Sciences with helping him on a 2021 assignment in Afghanistan.

A foreign correspondent for the Los Angeles Times, Yam was tasked with confirming that a United States drone strike intended for members of the Islamic State Khorasan terrorist group had inadvertently killed 10 civilians, including seven children.

Unable to get confirmation from witnesses, he decided to climb to the top of a nearby building for a better vantage point of the scene. He spotted the point of impact and then used a shovel to dig into the area. He recovered several metal components, which the L.A. Times was able to confirm were part of a U.S. Hellfire missile.

The U.S. Department of Defense would later call the strike a tragic mistake.

"In that moment I realized that that engineering brain was always working," Yam told graduates at the school's recent undergraduate commencement ceremony. "I'm glad that I've always had that background."

Yam received the Chancellor Charles P. Norton Medal, UB's highest honor, as part of the university's 2023 commencement season. The medal is presented annually in public recognition of a person who has, in Norton's words, "performed some great thing which is identified with Buffalo ... a great civic or political act, a great book, a great work of art, a great scientific achievement or any other thing which, in itself, is truly great and ennobling, and which dignifies the performer and Buffalo in the eyes of the world."

Yam came to UB from his home in Kuala Lumpur, Malaysia, and graduated in 2006 with a bachelor's degree in aerospace engineering. Although he aspired to become a NASA astronaut, he discovered his passion for photography during a stint at UB's student newspaper, The Spectrum, and an internship with The Buffalo News.

In 2015, as a photojournalist for the Seattle Times, he shared the Pulitzer Prize for breaking news reporting of the deadly landslide in Oso, Washington. In 2016, he was part of the L.A. Times' Pulitzer-winning news team that covered the San Bernardino, California terrorist attack. Yam's photography of the U.S. withdrawal from Afghanistan won the Pulitzer for breaking news photography in 2022.

In his remarks to graduates, Yam said a major part of his job is to navigate the unknown. He praised the class of 2023's resilience in getting through the COVID-19 pandemic and remote learning.

"You've got this. You all have got this," he said. "I wish you the very best as you all navigate the unknown after graduation."

2010s

Copprium, a company founded by **Brian Bischoff** (BS 2015, industrial), is working in tandem with UB to help create conductive copper ink.

Panagiotis Mistriotis (PhD 2016, chemical) received a Career Development Award from the American Heart Association to study vascular cell behavior inside pathophysiologically-relevant confined microenvironments. He is an assistant professor of chemical engineering at Auburn University.

2020s

Michael Murphy (MS 2020, BS 2018, civil) joined the transportation team at Clark Patterson Lee as a junior civil engineer His responsibilities include researching, evaluating and executing appropriate engineering techniques and code provisions; conducting site and construction inspections; and identifying infrastructure improvement opportunities for the firm's clients.

Lillian Baker (BS 2022, environmental) joined D&B Engineers and Architects as an Engineer I in the Water Supply Division at the firm's Woodbury, New York headquarters.

Amanda Cicio (BS 2022, civil) joined D&B Engineers and Architects as an Engineer I in the Civil Group at the firm's Woodbury, New York headquarters.

Keep in touch and network with fellow alumni from our school by joining our LinkedIn page linkedin.com/school/ub-seas.

Visit UB Connect (ub-connect.com) to submit your class note, update your profile, find your friends, and learn about your benefits as a UB alumni.

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DEAN'S ADVISORY COUNCIL MEMBERS

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[1] Outgoing member

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To become an engineering and applied sciences partner, contact **Christine Human** at **chuman@buffalo.edu**.

BOLD MEANS **NO LIMITS.**

"My favorite place is the Structural Engineering and Earthquake Simulation Laboratory," says doctoral student Homero Carrión Cabrera, MS '19. "It is a place that makes me feel limitless, because almost all kinds of structures can be tested there. Hopefully, my studies will result in countries all around the world, particularly poor countries, being more resilient to earthquakes."

At UB, we've proven we can do anything when we come together. Our students have boundless ambition. Our faculty have unstoppable drive. And we're fueling the future with discovery and innovation. The *Boldly Buffalo* campaign is on course to raise $1 billion. **buffalo.edu/campaign**

BOLDLY BUFFALO
THE CAMPAIGN FOR UB

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School of Engineering and Applied Sciences

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Photo: Douglas Levere

UB ASCE STUDENT CHAPTER HOSTS REGIONAL COMPETITION AT UB

The Steel Bridge Competition was held in UB's Alumni Arena. Read more about the event on page 20.