BUFFALO

Engineer

2022

A WIN-WIN SITUATION

Partnership offers real-world opportunities to students and brings talent to ACV

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,

It's an exciting time here at the University at Buffalo. We have long known that our school is among the best public institutions in the country, and we were very pleased when New York State Gov. Kathy Hochul designated the University at Buffalo as a **flagship university** of SUNY during her State of the State address earlier this year.

We were also thrilled with the news that Gov. Hochul approved **$102 million for a new building** for the School of Engineering and Applied Sciences. This funding is an acknowledgment that our faculty, students, and accomplishments have continued to grow—and so must our physical space.

This new building will be an opportunity to serve and bring together people from across our nine diverse departments, featuring innovative spaces for student experiences, industry collaborations, and innovative research. While many of the details are still to be determined, we do know that this space will serve as **a true home for all students interested in engineering and computer science.** We also know that our alumni and industry partners will be invaluable in guiding and supporting this endeavor, ensuring that our graduates continue to meet the needs of the workforce.

Throughout these pages, we showcase just a few of the ways that our faculty, staff, students and alumni are contributing to the world around us. Whether it be by partnering with industry, conducting groundbreaking research, being recognized with prestigious grants and awards, commercializing new technologies, delivering transformative education, or shaping solutions to national and global challenges, we are unified by our perseverance and creativity.

We are also connected by our **commitment to collaboration,** which is not just a strength but a necessity in these challenging times. Looking back at the past year, I am awed by all the positive impacts our community has made—and inspired by all that is still to come.

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

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

BUFFALO Engineer 2022

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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Support Our School

Your philanthropic support helps to fund a variety of student programs. Please use visit **buffalo.edu/campaign/seas** to make your contribution. Your participation at any level is appreciated.

Address Changes

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.

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A win-win situation

Alumni at ACV collaborated with UB faculty to help fill workforce needs and provide students with real-world opportunities.

Engineering a healthier future for dogs

A biomedical engineering graduate student's love for animals inspired him to create a 3D prosthetic to replace a dog's missing leg.

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Cover photo: At ACV's R&D lab, SEAS alumni work with students to design and develop new products for the used car market. From left are William Giegerich, Dennis Fedorishin, Philip Schneider, Livio Forte and Maggie Donnelly. Photo by the Onion Studio, Inc.

Some photos that appear in this magazine were taken prior to the COVID-19 pandemic and therefore may not accurately reflect current operations or adherence to UB's Health and Safety Guidelines.

CAN A FUNGUS HELP CLEAN UP LEAD-CONTAMINATED SOIL?

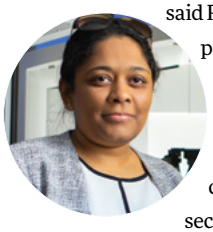
Urban gardening is on the rise in cities across America. But in cities like Buffalo, where lead and other contaminants have seeped into the soil over decades of heavy industry, it can be extremely dangerous to grow food.

Help, however, may be on the way in the form of a fungus.

Prathima Nalam, an assistant professor in the Department of Materials Design and Innovation, is part of a project funded by the U.S. Department of Housing and Urban Development (HUD) that aims to shed light on the merits of mycelium-based soil remediation, while educating the public about the potential hazards of lead-contaminated soil.

Mycelium is the branched, thread-like root system from which mushrooms form. It has shown tremendous promise as a solution to cleaning up environmental pollutants in soil, but requires expertise in growing and maintaining mycelium and mushrooms.

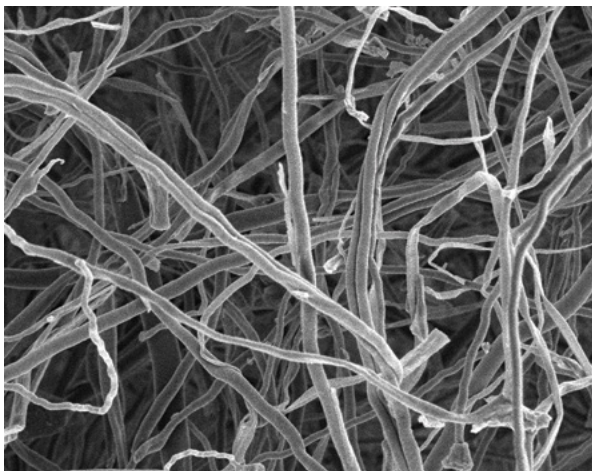
"This novel biomaterial generates sustainable and highly resilient membranes that can be easily deployed in the soil and later be recovered," said Prathima Nalam, who has been investigating the properties of mycelium and its potential to clean up soils and water for the past five years.



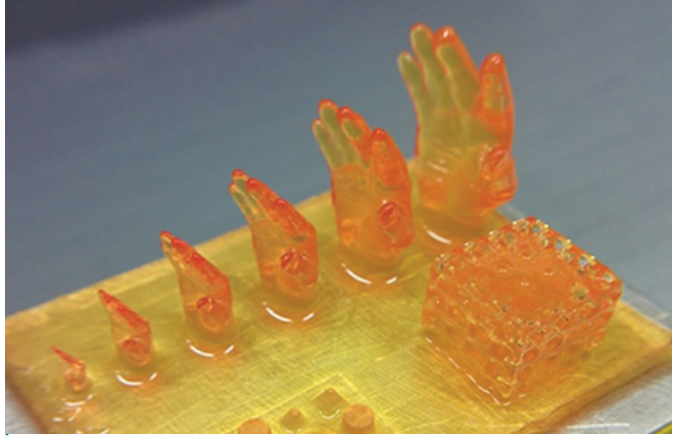
"Because we are working with dried mycelium, we are focusing on adsorption, or the ability of mycelium cell walls to bind and hold on to lead," added Nalam. "The second mechanism we're testing is biomineralization, or the precipitation of lead minerals around the mycelium fibers."

The team plans to speak with gardeners and other potential users of mycelium membranes to understand their willingness to use the material, and will conduct analyses of local policies to understand how mycelium could work alongside existing lead remediation approaches.

The project is led by Katarzyna Kordas from the UB School of Public Health and Health Professions. In addition to Nalam, the team includes Olga Wodo from MDI and faculty from the School of Architecture and Planning. It also includes community partners from the City of Buffalo and Grassroots Gardens of WNY, as well as researchers from the University of Louisiana at Lafayette. It is funded through a three-year, $659,499 HUD grant.



Mycelium fibers and lead adsorbed onto mycelium (white specks), magnified under an electron microscope.



RAPID 3D PRINTING METHOD MOVES TOWARD 3D-PRINTED ORGANS

A machine dips into a shallow vat of translucent yellow goo and pulls out a life-sized model of a hand. The hand, which is created by a 3D printing method called stereolithography and jelly-like materials known as hydrogels, takes about 19 minutes to create, and demonstrates what UB engineers say is progress toward 3D-printed human tissue and organs — biotechnology that could eventually save countless lives lost due to the shortage of donor organs. The study, led by biomedical engineer **Ruogang Zhao** and industrial engineer **Chi Zhou,** was reported in Advanced Healthcare Materials.

GOYAL APPOINTED TO NATIONAL ACADEMIES COMMITTEE

Amit Goyal has been appointed to the National Academies of Sciences, Engineering and Medicine (NASEM) ad hoc Committee on "Advising NSF on its Efforts to Achieve the Nation's Vision for the Materials Genome Initiative."

The committee will examine the impact of the National Science Foundation's program 'Designing Materials to Revolutionize and Engineer Our Future' with the goal of furthering the nation's vision for the Materials Genome Initiative. It will evaluate the program's goals, progress, and scientific accomplishments within the context of similar efforts both within the U.S. and abroad.

Goyal, a member of the National Academy of Engineering, is a SUNY Distinguished Professor and SUNY Empire Innovation Professor in the Department of Chemical and Biological Engineering and has an adjunct position in UB's Department of Physics.

UB's Olli, mobility solution and the world's first co-created, self-driving, electric and cognitive shuttle.

ADVOCATING FOR INCLUSIVE DESIGN OF AUTONOMOUS VEHICLES

Victor Paquet presented at the U.S. Access Board's first virtual public meeting on inclusive design of autonomous vehicles (AVs) this past spring. The session focused on accessibility for passengers with mobility impairments while entering and exiting vehicles. The Access Board is the federal agency that promotes equality for people with disabilities through leadership in accessible design and the development of accessibility guidelines and standards.

Access Board Chair Gregory S. Fehribach opened the session and introduced a message from Secretary of Transportation Pete Buttigieg, who highlighted the need to make AVs both safe and accessible for people with disabilities.

Paquet, professor and chair of the Department of Industrial and Systems Engineering, presented the results of two UB vehicle ramp research studies that were funded by the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR), and discussed the importance of minimizing ramp slopes, automatic vehicle doors, and inclusive pick up and drop off locations design features to meet the needs of those who have mobility impairments.

MODIFIED HEADPHONES TRANSLATE SIGN LANGUAGE VIA DOPPLER

PROPOSED TECH MEASURES ECHO CREATED BY HAND MOVEMENTS; COULD HELP BOOST COMMUNICATION BETWEEN DEAF AND HEARING POPULATIONS

A research team led by **Zhanpeng Jin** has modified noise-cancelling headphones, enabling the common electronic device to "see" and translate American Sign Language (ASL) when paired with a smartphone.

Reported in the journal Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, the headphone-based system uses Doppler technology to sense tiny fluctuations, or echoes, in acoustic soundwaves that are created by the hands of someone signing.

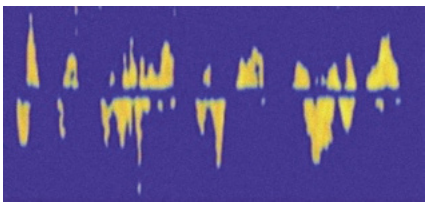
Dubbed SonicASL, the system proved 93.8% effective in tests performed indoors and outdoors involving 42 words. Word examples include "love," "space," and "camera." Under the same conditions involving 30 simple sentences—for example, "Nice to meet you"—SonicASL was 90.6% effective.

"SonicASL is an exciting proof-of-concept that could eventually help greatly improve communication between deaf and hearing populations," says Jin, associate professor in the Department of Computer Science and Engineering.

The next steps, says Jin, will be expanding the sign vocabulary that can be recognized and differentiated by SonicASL as well as working to incorporate the ability to read facial expressions.

Researcher wears headphones to understand sign language.

Acoustic soundwaves created by signing the phrase "I need help."



REVERSING AGING OF SKELETAL MUSCLE

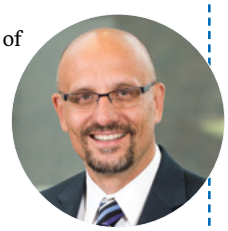
THE RESEARCH COULD HELP LEAD TO TREATMENTS FOR ATHEROSCLEROSIS, OSTEOPOROSIS AND OTHER AGE-RELATED DISORDERS

Stelios Andreadis is leading a research team that has discovered that a protein named for the mythical land of youth in Irish folklore is effective at reversing aging in skeletal muscle cells.

Published in Science Advances, the study centers on the protein NANOG, which is derived from Tír na nÓg, a place in Irish lore renowned for everlasting youth, beauty and health.

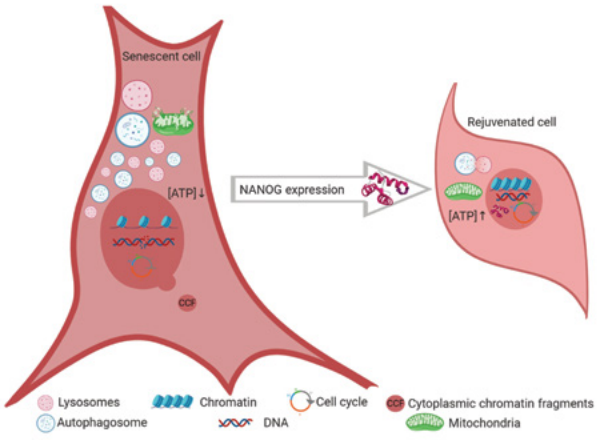
In a series of experiments, researchers overexpressed NANOG in myoblasts, which are the embryonic precursors to muscle tissue. The myoblasts were senescent, meaning they were no longer able to divide and grow.

The overexpression ameliorated some of the primary characteristics associated with age-related deterioration of cells, including autophagy, energy homeostasis, genomic stability, nuclear integrity and mitochondrial function.



Most notably, NANOG increased the number of muscle stem cells in the muscle of prematurely aging mice. This demonstrated the feasibility of reversing cellular aging in the body without the need to reprogram cells to an embryonic pluripotent state, a process that's often used in stem cell therapy but runs the risk of forming tumors.

In addition to Andreadis, a SUNY Distinguished Professor in the Department of Chemical and Biological Engineering and director of the Center for Cell, Gene and Tissue Engineering, co-authors are from the UB Departments of Chemical and Biological Engineering, Biomedical Engineering, and Medicine, and the Department of Biostatistics and Bioinformatics at Roswell Park Comprehensive Cancer Center.



The illustration shows a senescent muscle cell (left), including the numerous factors that led to its declining ability to divide and grow. It also shows the same type of cell after the overexpression of NANOG, which reversed many of the factors.

UB FORMS INSTITUTE FOR ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Artificial intelligence and data science are at the forefront of innovation in robotics, health care, materials science, autonomous vehicles and countless other areas that are key to the future economy and security of the U.S.

They offer hope for solving complex problems like detecting fraud buried deep in financial systems, reducing human bias in the judicial system and efficiently finding the right compound for the safest and most effective medicine.

To continue growing its research expertise and educational leadership position in artificial intelligence and data science, as well as support Western New York's growing entrepreneurial ecosystem, UB has formed the Institute for Artificial Intelligence and Data Science.

The new institute combines two UB research organizations: the Artificial Intelligence Institute and the Institute for Computational and Data Sciences.

It is led by **David Doermann,** a SUNY Empire Innovation Professor in the Department of Computer Science and Engineering. **Nalini Ratha,** also a SUNY Empire Innovation Professor in the Department of Computer Science and Engineering, will serve as associate director for research, and **Rachael Hageman Blair,** associate professor of biostatistics, is the associate director for education.

Located in newly built facilities at 215 Lockwood Library on the North Campus, the Institute will work with educators across decanal units to understand the artificial intelligence and data science needs of students throughout UB. It will offer courses and certificate programs, as well as master's degree programs in both artificial intelligence and data science.

Learn more about the new institute here: **buffalo.edu/iad**.

NEW BUILDING PLANNED TO ACCOMMODATE CONTINUED GROWTH IN SEAS

The University at Buffalo is moving ahead with plans to construct a new engineering and applied sciences building on the North Campus.

The effort took a major step forward earlier this year when Gov. Kathy Hochul announced funding for the $102 million project in her State of the State address. The support is part of a broader initiative focusing on the State University of New York, including naming UB and Stony Brook University as flagships of the SUNY system.

Designed to be a hub for student activity, the new building will feature an "engineering commons," which will include collaborative spaces for student clubs as well as maker spaces, student support services and programs that support entrepreneurism and student startups, says Kemper Lewis, dean of the School of Engineering and Applied Sciences.

"This new building will become the home for all students interested in engineering and computer science. It will be a place that students are invited to gather, collaborate, and work as a singular community driven by their curiosity," he says. "It will be a home that welcomes and supports students at every step of their education to ensure everyone has the opportunity to succeed."

The building will be located near existing engineering buildings on the North Campus. Its size, exact location, and a timeline for construction are still being determined.

DEEPFAKES: A LIGHT IN THE EYE

Researchers developed a tool that identifies deepfake images by analyzing reflections of light on people's corneas. Typically, in genuine photos and videos, both eyes should have very similar reflective patterns because they're seeing the same thing, according to **Siwei Lyu,** a SUNY Empire Innovation Professor in the Department of Computer Science and Engineering. Deviations can indicate trickery, as AI-generated deepfakes failed to accurately or consistently reproduce uniform reflections. Lyu's tool exploits this shortcoming by spotting tiny deviations in reflected light in the eyes of deepfake images.

Illustration showing a satellite monitoring debris in outer space with Earth nearby.

UB Nanosatellite Laboratory students Chet Knorr (left) and Charles Dicus (right) are investigating space debris as part of the AFRL's University Nanosatellite Program.

UB AWARDED $5 MILLION TO LEAD SPACE UNIVERSITY RESEARCH INITIATIVE PROJECT

John Crassidis and **Moises Sudit** are leading a new five-year, $5 million research program to improve the nation's ability in tracking and monitoring spacecraft and other objects such as debris and meteoroids.

The award, one of two issued nationwide, is part of a newly established Space University Research Initiative program that was created to spur university research into new technologies for the Air Force and U.S. Space Force.

The grant's principal investigator is John Crassidis, SUNY Distinguished Professor and Samuel P. Capen Chair Professor in the Department of Mechanical and Aerospace Engineering. Moises Sudit, executive director of UB's Center for Multisource Information Fusion and a professor in the Department of Industrial and Systems Engineering, is co-principal investigator.

Sudit says there is data that can help improve space domain awareness, but first researchers must develop tools to better process and analyze that data. "We are drowning in data yet starved for useful information," he says. "This project will allow us to find that actionable information for space decision-making that is otherwise buried among unusable noise."

The new grant also builds upon other aerospace grants UB has received in recent years. Last year, the Department of Energy awarded UB an $8.5 million grant to study hybrid rockets, which could provide a safer and less expensive way to explore space compared to conventional rockets, and both AFRL and NASA have awarded UB funding to build nanosatellites that track space debris.

SPACE DOMAIN AWARENESS

Space domain awareness involves the detection, identification, tracking and cataloging of objects in space. It is of growing importance because certain areas of space, such as low-Earth orbit, are becoming increasingly crowded with satellites, debris, meteoroids and other objects that threaten existing and future space missions.

The Space Force is responsible for tracking objects in space, providing information to all satellite operators on potential collisions and maintaining awareness of threatening situations.

Because of the large distances involved — most Space Force satellites are 36,000 kilometers above the Earth, and the moon is 10 times further than that — a detailed understanding of the thousands of objects in orbit requires increasingly sophisticated methods to detect them in the first place, confidently identify them, predict their trajectories, and understand their characteristics and activities.

The focus of the grant is to develop cutting-edge techniques pertaining to sensors and measurement strategies, data fusion and autonomy, as well as improving algorithms to better predict the movements of objects in space.

"We tend to think of space as this vast, limitless area, but the reality is that it's becoming increasingly small, especially near Earth," Crassidis says. "We're tracking more than 27,000 pieces of debris orbiting Earth. These objects can threaten human and robotic space missions, satellites and other spacecraft."

Partner institutions on the grant include Pennsylvania State University, Georgia Institute of Technology, Massachusetts Institute of Technology and Purdue University.

MAKING AN IMPACT AROUND THE WORLD

6 FACULTY MEMBERS RECEIVE NSF CAREER AWARDS

CAREER awards from the National Science Foundation are one of the nation's most prestigious honors for early-career scientists and engineers. The highly competetive program provides investigators with funding to conduct research and develop educational programming in STEM for K-12 students, university students and members of the public.

BAISHAKHI MAZUMDER

Assistant Professor, Materials Design and Innovation

Award amount: $642,450

Award Title: Atomic Scale Understanding of the Doping Incorporation and Transport Properties in Ultrawide Band Gap Semiconductors

Award year: 2022

Mazumder's award will support her research to improve electrical conductivity in ultrawide band gap semiconductors. Her research could lead to energy and cost savings in a wide range of consumer electronics and appliances, all-electric and hybrid-electric vehicles, and extraction and conversion of renewable energy sources by saving energy.

DANIAL FAGHIHI

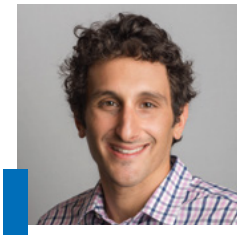
Assistant Professor, Mechanical and Aerospace Engineering

Award amount: $595,593

Award Title: Reliable Superinsulated Building Envelopes via Predictive Multiphysics Modeling

Award year: 2022

Faghihi's award will support his research to design superinsulation materials for use in buildings via advanced data-driven computational simulations. His research could reduce energy consumption and carbon dioxide emission of next-generation buildings, leading to environmental benefits, improved human health, and enhanced national economic competitiveness.



KENNY JOSEPH

Assistant Professor, Computer Science and Engineering

Award amount: $574,710

Award Title: Promoting Equal Opportunities through Measurement, Simulation, and Education

Award year: 2022

Joseph's award will support the development of computational tools to better understand what social media users believe about the existence and causes of racial inequity. The aim of his work is to use these new tools, together with social theory and large datasets, to help address social inequality.

MINGHUI ZHENG

Assistant Professor, Mechanical and Aerospace Engineering

Award amount: $571,087

Award Title: Facilitating Autonomy of Robots Through Learning-Based Control

Award year: 2021

Zheng's award will provide support for her research to equip uncrewed aerial vehicles, or drones, with the capability to learn from the experience of other drones, despite their different dynamics and platforms, via a novel learning-based control framework.

WEIHANG WANG

Assistant Professor, Computer Science and Engineering

Award amount: $500,000

Award Title: Cross-Boundary Program Analyses for Web Applications

Award year: 2021

Wang's award will support her research to mitigate the challenges associated with complex web applications, which are built atop the integration of programs written in diverse programming languages and distributed by multiple parties.

SOUMA CHOWDHURY

Assistant Professor, Mechanical and Aerospace Engineering

Award amount: $500,000

Award Title: Automated Design of Decentralized Robust and Explainable Swarm Systems

Award year: 2021

Chowdhury's award will support his research to design teams of autonomous robots, also referred to as swarms, that can operate collectively in a predictable way and adapt to a variety of environmental conditions. The research has implications in a wide variety of fields, including disaster response, environment monitoring, military operations and space exploration.

TRAINING THE NEXT GENERATION OF SURGEONS

HUMAN FACTORS ENGINEERING PROJECTS AIM TO IMPROVE HEALTHCARE

Photo: Orion Studio, Inc.

Cavuoto, right, works with student Yaoyu Fu in the SurgE lab.

Lora Cavuoto leads a research group at UB's Surgery Ergonomics and Human Factors (SurgE) laboratory. Cavuoto, an associate professor of industrial and systems engineering, collaborates with teams from Rensselaer Polytechnic Institute, Purdue University, and Kitware, Inc. on projects funded by the National Institutes of Health and U.S. Army totaling over $1.8 million.

The lab, located within UB's Jacobs School of Medicine and Biomedical Sciences, is a place where graduate-level industrial engineering students can interact with surgeons and other healthcare professionals on human factors engineering projects, such as designing mixed reality display interfaces for surgeons. Projects focus on human factors experiments to improve healthcare, with particular emphasis on surgical training and usability evaluations.

"Advancing training and improving workflow will allow clinicians to provide better care, with more efficient treatment and fewer errors," says Cavuoto.

Current projects in the SurgE laboratory include two projects funded by the U.S. Army on the integration of neuroimaging, computer vision, and artificial intelligence for the assessment of clinical skill and skill acquisition; an NIH-funded project on the development and validation of a simulator to train experienced surgeons to handle rare and adverse events; and industry-funded work on human factors and workflow challenges related to the implementation of robot assisted surgery. These studies will contribute to understanding the development of surgical skill and the impact of training methods on the attainment and maintenance of proficiency.

TOP 35

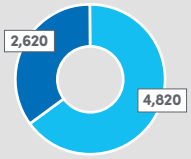
Public engineering school, *U.S. News and World Report*, 2022

$80 MILLION

Research expenditures total $80 million annually

256

256 full-time faculty members and growing



Our fall student body consists of 2,620 graduate students, the largest in school history, and 4,820 undergraduates

SCHOOL OF ENGINEERING AND APPLIED SCIENCES

BY THE NUMBERS

2,105

2,105 degrees awarded in the 2020–2021 academic year

ACADEMIC RANKING OF WORLD UNIVERSITIES

No. 4 in the nation and No. 17 worldwide in civil engineering, *Global Ranking of Academic Subjects by the Shanghai Ranking Consultancy*, 2021

RANKED #16

No. 16 among all industrial engineering programs at public universities, *U.S. News and World Report*, 2023

RANKED #49

No. 49 online engineering management program in the first year of eligibility, *U.S. News and World Report*, 2022

8 IMPACTFUL RESEARCH PROJECTS

1 CYBER ANALYTICS MANUFACTURING PLATFORM

Hongyue Sun, Department of Industrial and Systems Engineering, is leading a $2.3 million NSF grant to create and validate a general purpose cyber-coordinated analytical platform that connects and coordinates various manufacturing processes, operating at different manufacturing stages. Co-PIs include Chi Zhou (ISE) and Wenyao Xu (CSE) and two faculty from Arizona State University.

2 BETTER MEDICAL IMAGING FOR LEG ULCERS

Jun Xia, Department of Biomedical Engineering, is leading a $1.6 million four-year project focused on finding a noninvasive, accurate imaging tool to assess post-surgical circulation. The project is funded by the National Institutes of Health and includes collaborators from the surgery clinic of UBMD Physician's Group and other UB researchers.

3 IMPROVED TRAFFIC INCIDENT MANAGEMENT

Adel Sadek, Department of Civil, Structural and Environmental Engineering, and Chunming Qiao, Department of Computer Science and Engineering, are working to accelerate the use of an Integrated Incident Management System (IIMS) for traffic incident data collection and management. The $1.1 million project is funded by the U.S. Department of Transportation and New York State Department of Transportation.

4 EXPLORING VENUS

Javid Bayandor, Department of Mechanical and Aerospace Engineering, received a $600,000 two-year award from NASA's Innovative Advanced Concepts program to further develop a ray-inspired airship for aerial exploration of Venus.

5 EXPANDING INTERNET ACCESS IN BUFFALO'S FRUIT BELT

Filippo Malandra and Nick Mastronarde, Department of Electrical Engineering, are serving as project managers together with the non-profit Mission: Ignite and other community partners to build a wireless network that will provide free internet service to 150 households on Buffalo's East side. The group was awarded $300,000 in federal funding and will use part of the wireless spectrum known as Citizens Broadband Radio Service.

6 FIGHTING ONLINE DISINFORMATION

Siwei Lyu, Department of Computer Science and Engineering, is heading a multidisciplinary team to develop a suite of digital literacy tools and advanced educational techniques to reduce the harmful effects of online disinformation. The $750,000 NSF grant includes experts in artificial intelligence, the humanities, information science and other fields. In addition to UB, the project includes researchers from Clemson University, University of Illinois Urbana-Champaign, Lehigh University and Northeastern University.

7 CREATING MORE INCLUSIVE COLLEGE CLASSROOMS

Adrienne Decker, Department of Engineering Education, is a co-principal investigator on a two-year, $293,000 NSF grant to improve the educational experiences of neurodivergent students who may have difficulties succeeding in traditional computer science courses. Decker will work with UB's Open Education Research Lab to develop and disseminate free educational materials.

8 FLEXIBLE HYBRID ELECTRONICS

Shenqiang Ren, Department of Mechanical and Aerospace Engineering, is leading a research team that is developing a new generation of high-temperature sensor electronics that bend and conform to different shapes. The advanced materials and associated manufacturing processes are expected to lead to new applications in medical devices, the aerospace industry, robotics and more. Funded by a $650,000 grant from NextFlex, the team includes Jason Armstrong (MAE) and Chi Zhou (ISE) at UB, Tapecon Inc., Corning Inc. and Binghamton University.


Kofke


Swihart


Tsianou


Wu


Anastasopoulos


Atkinson


Lyu


Ratha


Upadhyaya


Winikus


Ziarek


Langberg


Sánchez-Peña


Mukherjee

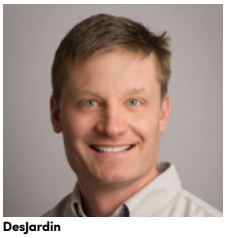

Paquet


Zhuang


Jia


Chen


Crassidis


DesJardin


Singh

FACULTY HONORS AND AWARDS

Chemical and Biological Engineering: **David Kofke** was named the first Walter E. Schmid Chair; **Mark Swihart** was named a SUNY Distinguished Professor; **Marina Tsianou** received a SUNY Chancellor's Award for Excellence in Teaching; **Gang Wu** received a SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities and was again named a Highly Cited Researcher by Clarivate Analytics.

Civil, Structural and Environmental Engineering: **Panos Anastasopoulos** was again named a Highly Cited Researcher by Clarivate Analytics; **John Atkinson** was named the first Scott and Coleen Stevens Chair in Engineering Sustainability.

Computer Science and Engineering: **Siwei Lyu** was named a Fellow of the Institute of Electrical and Electronics Engineers; **Nalini Ratha** was named a Fellow of the National Academy of Inventors; **Shambhu Upadhyaya** received a 2021-22 Excellence in Graduate Student Mentoring Award from UB's Graduate School and was named a Fellow of the Institute of Electrical and Electronics Engineers; **Jennifer Winikus** received the Distinguished New Engineer Award from the Society of Women Engineers; **Luke Ziarek** received the President Emeritus and Mrs. Meyerson Award for Distinguished Undergraduate Teaching and Mentoring from UB.

Electrical Engineering: **Michael Langberg** was named a Fellow of the Institute of Electrical and Electronics Engineers.

Department of Engineering Education: **Matilde Sánchez-Peña** received a 2021 Apprentice Faculty Grant Award from the Educational Research and Methods Division of the American Society of Engineering Education.

Industrial and Systems Engineering: **Sayanti Mukherjee** received the Outstanding Young Investigator Award in Energy Systems from the Institute of Industrial and Systems Engineers; **Victor Paquet** received a SUNY Chancellor's Award for Excellence in Faculty Service; **Jun Zhuang** received a SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities.

Materials Design and Innovation: **Quanxi Jia** was named a SUNY Distinguished Professor.

Mechanical and Aerospace Engineering: **James Chen** received the Rising Star Award from the Electrostatics Society of America and was named an Associate Fellow by the American Institute of Aeronautics and Astronautics; **John Crassidis** received the Dirk Brouwer Award from the American Astronautical Society; **Paul DesJardin** was elected a Fellow of the American Society of Mechanical Engineers; **Tarunraj Singh** received the Yasundo Takahashi Education Award from the Dynamic Systems & Control Division of the American Society of Mechanical Engineers.

SOAR DRONE TESTING FACILITY OPENS

COMPLEX IS AMONG THE NATION'S LARGEST

Photos by the Onion Studio, Inc.

This past fall, the UB and WNY community were able to visit UB's new outdoor testing facility for uncrewed aerial vehicles (UAVs, commonly known as drones) and see some current research projects in action.

The facility, known as SOAR (Structure for Outdoor Autonomy Research), is a 24,000-square-foot netted structure located off Maple Road on the North Campus. It is among the nation's largest such facilities on university campuses.

SOAR enables UB researchers, students and partners to develop cutting-edge technological solutions using UAVs to address challenges in transportation and delivery services, disaster response and national security.

Because it is enclosed, and thus considered an indoor flight facility, researchers are not subject to Federal Aviation Administration rules when testing UAVs.

Chase Murray, an assistant professor in the Department of Industrial and Systems Engineering, hosted the event. Faculty and students from the departments of Industrial and Systems Engineering, Mechanical and Aerospace Engineering, Computer Science and Engineering, and Electrical Engineering provided demonstrations highlighting government and privately funded research and development projects.

The blue poles of UB's new netted drone facility rise up out of the parking lot in front of Crofts Hall.

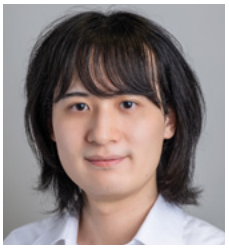
Students prepping drones for flight.

Kemper Lewis, dean of the School of Engineering and Applied Sciences, welcomes attendees to the event.

EIGHT NEW FACULTY JOIN THE SCHOOL OF ENGINEERING AND APPLIED SCIENCES

COMPUTER SCIENCE AND ENGINEERING

Jinjun Xiong, SUNY Empire Innovation Professor
Joins UB from: IBM's Thomas J. Watson Research Center, where he was the program director for Cognitive Computing Systems Research.
Research interests: Cognitive computing, big data analytics, deep learning, smarter energy, and application of cognitive computing for industrial solutions.



Zhuoyue Zhao, Assistant Professor
Joins UB from: The University of Utah, where he earned his PhD in 2021.
Research interests: Large-scale data management systems, with an emphasis on approximate query processing and query optimization, OLTP and OLAP systems, and streaming processing.

Nazmus Sakib, Assistant Professor of Teaching
Joins UB from: Marquette University, where he was a PhD student and graduate teaching/research assistant.
Research interests: Clinical data science, medical informatics, mHealth, ethics of data science, and computational sustainability.

Ifeoma Nwogu, Associate Professor
Joins UB from: Rochester Institute of Technology, where she was an assistant professor in the Golisano College of Computing and Information Sciences.
Research interests: Human behavior modeling, sign language understanding and probabilistic modeling.

Paul Dickson, Assistant Professor of Teaching
Joins UB from: Ithaca College, where he was an associate professor of computer science.
Research interests: Computer science education with an emphasis on introductory computer science courses.

Alina Vereshchaka, Assistant Professor of Teaching
Joins UB from: She was already at UB, working as a teaching assistant while earning her PhD.
Research interests: Optimal control in complex systems, including social behavior modeling, deep reinforcement learning, multi-agent settings, deep learning, and large-scale social system dynamics.

ENGINEERING EDUCATION

Jill Mariniuk, Assistant Professor of Teaching
Joins UB from: The University of South Florida, where she was a visiting instructor and digital teaching fellow in the Department of English.
Research interests: Digital pedagogy, inclusive online learning, user experience, social media and the woman question, 20th Century post-modern Russian literature, travel narratives.

MECHANICAL AND AEROSPACE ENGINEERING

Sangwoo Shin, Assistant Professor
Joins UB from: The University of Hawaii at Manoa, where he was an assistant professor of mechanical engineering.
Research interests: Complex fluids and soft matter, transport phenomena, micro/nanofluidics, electrokinetics, drug delivery, bioseparation, bacterial motility, and hydrocarbon recovery.

GROUNDBREAKING COMPUTER SCIENTIST SARGUR SRIHARI DIES AT 72

Sargur "Hari" Srihari, an internationally renowned UB professor of computer science who taught computers to read handwriting and significantly advanced the fields of pattern recognition, computational forensics and machine learning, died March 8, at age 72.

A SUNY Distinguished Professor of Computer Science and Engineering and faculty member for more than 40 years, Srihari founded the Center of Excellence for Document Analysis and Recognition (CEDAR), which did groundbreaking research for the U.S. Postal Service and received more than $60 million in funding over 25 years.

Srihari's research advances, which have received seven U.S. patents, 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 also remains influential in fields such as 3D printing.

Born in Bangalore, India, Srihari earned his PhD in 1976 from The Ohio State University, before joining UB in 1978. He is survived by his wife, Rohini, a UB professor of computer science and engineering; his sons, Dileep and Ashok (Caroline); and granddaughter, Vera.

A memorial fund has been established to support student scholarships. Visit **buffalo.edu/campaign/srihari** to make a donation.

DAVID EASON, DEVELOPED UB'S CLEANROOM

The technical leader of the SEAS Shared Instrumentation Laboratories and the Davis Hall Cleanroom, David Eason, passed away on January 20, 2022. Eason, who joined UB in 2008, led the technical development of UB's seven-bay, 5,000 sq. ft. Davis Hall Cleanroom. Largely due to his knowledge and leadership, the facility is the most advanced cleanroom in the Buffalo Niagara region and supports faculty from across UB, other institutions, and industry partners.

He also held a volunteer appointment in the Department of Materials Design and Innovation, and served as adjunct faculty in the Department of Electrical Engineering. He is survived by his wife Saori and children Julia, Ryan and Sean.

FACULTY ENTREPRENEURS

MODERNIZING WIND TURBINES

UB spinoff Atrevida Science is developing dynamic wind turbine blades that automatically adjust to real-time changes in wind speed and direction. Dubbed active morphing blades™, the design helps turbines more efficiently capture wind while also significantly reducing the likelihood of failure. The technology was developed in the lab of **John Hall,** assistant professor of mechanical and aerospace engineering, who serves as the science advisor to Atrevida.

FREEZE-DRIED VACCINES

POP Biotechnologies, Inc. received almost $600,000 in funding from the National Institute of Allergy and Infectious Diseases to develop a liposome-based COVID-19 vaccine that could be freeze-dried and then stored at room temperature. This could eliminate the logistical challenges that can impact vaccination campaigns, such as the need for ultra-cold storage. The company, co-founded by biomedical engineer **Jonathan Lovell,** also received a Small Business Innovation Research (SBIR) award from the National Institutes of Health.

COULD AI HELP OPTIMIZE ANEURYSM SURGERIES?

QAS.AI is using artificial intelligence to improve treatment of vascular lesions in the brain, starting with intracranial aneurysms. Led by **Ciprian Ionita,** the company is developing software for use by neurosurgeons in the operating room. The program is trained on data from past surgeries and uses live video data analysis to forecast how likely a selected treatment method is to succeed in a new patient—all while a procedure is taking place, giving the neurosurgeon the ability to readjust the treatment in real-time. Ionita is the CEO of QAS.AI and an assistant professor of biomedical engineering.

Photos by the Onion Studio, Inc.

A WIN-WIN SITUATION

PARTNERSHIP BETWEEN ACV AND UB OFFERS REAL-WORLD OPPORTUNITIES TO STUDENTS AND BRINGS TALENT TO ACV

By Nicole Capozziello

In 2018, Kyle Pierre was a senior in electrical engineering with no prior internship experience. "My career beyond school always seemed so confusing. I could never quite see the picture of how I fit into the exciting world beyond the classroom," says Pierre (BS '19, MS '21, electrical engineering). "But that changed when ACV paired with UB to conduct my senior design course. I finally got my first taste of what it felt like to be an engineer."

Over the following 14 weeks of his capstone class, Pierre worked with classmates and professionals from ACV on a real-world problem: vehicle emissions testing.

ACV research engineer Livio Forte watches as intern Will Giegerich inserts a smart phone into the Virtual Lift, an ACV product that allows their vehicle inspectors to check the underside of a vehicle without using a lift.

ACV research engineer Maggie Donnelly shows software engineer and PhD student Dennis Fedorishin the results from measuring the various vibration signals seen within an engine.

> "We see a true partnership between ACV and UB, in that they are investing their most valuable resource—their time and knowledge—to make a lasting impact on our students.
>
> **Jennifer Zirnheld,** Maxwell Technologies Inc.
> Professor in the Department of Electrical Engineering

While the project, which involved creating a volatile organic compound integrated sensor platform, was challenging and engaging, what really made Pierre feel like an engineer was the relationships he formed. "Above all, ACV has shown me what is vital to any engineer's success—the support system you build through networking and sharing your ideas with others."

Over the last few years, stories like Pierre's have proliferated across the School of Engineering and Applied Sciences as students have gained crucial hands-on experience at ACV, a Buffalo-based start-up company that applies innovative technology to the wholesale used car market.

No matter their background or discipline, students echo that ACV is an instructive and inspiring space for them to develop what they've learned in the classroom.

"The exciting part is that ACV is a local company where we see UB alumni who are invested in not only Western New York but in the university," says Jennifer Zirnheld, Maxwell Technologies Inc. Professor in the Department of Electrical Engineering, who partners with ACV as part of her senior design class. "We see a true partnership between ACV and UB, in that they are investing their most valuable resource—their time and knowledge—to make a lasting impact on our students."

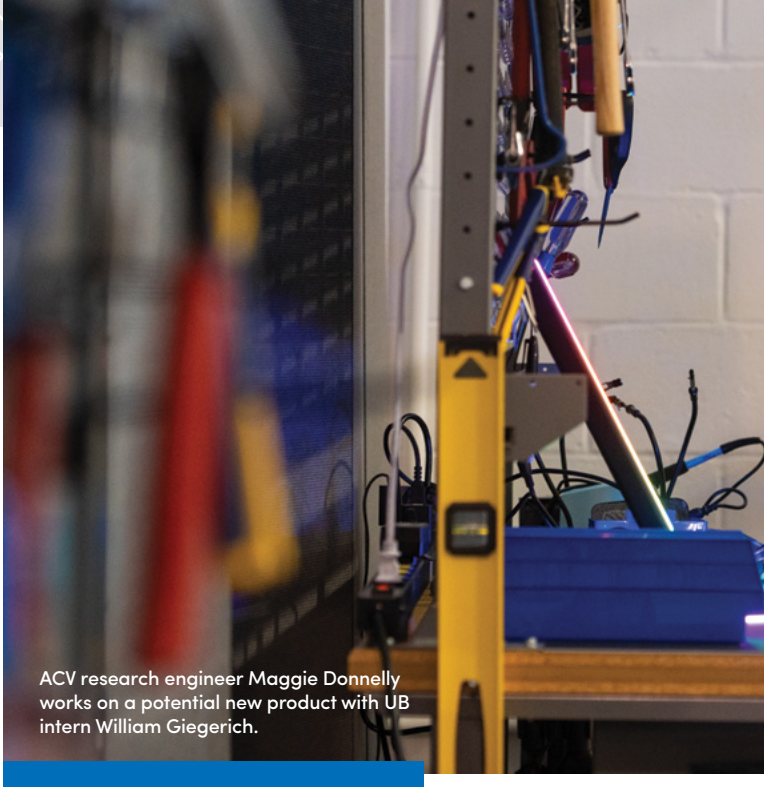
PRIORITIZING A SEAS CONNECTION FROM THE BEGINNING

ACV Auctions was founded in 2015 by Joseph Neiman (BS '08 management), Jack Greco and Dan Magnuszewski (BS '05 computer science) to provide high-quality wholesale vehicles to dealerships via a technologically advanced online platform. The winner of a $1 million 43North grant, ACV currently employs over 1,500 nationally, with about 300 people in Buffalo, including many UB graduates. The company has expanded into every state and, as of December 2021, had a market capitalization of $2.95 billion. It went public in early 2021—becoming Western New York's first start-up unicorn.

The company, which was named the School of Engineering and Applied Sciences Corporate Partner of the Year in 2019, has been committed to sharing its prosperity with the school from the beginning. ACV is an active supporter in the UB community, through initiatives such as sponsored research, student club sponsorship, and hackathons. Members of ACV's leadership also serve in advisory capacities on the Computer Science and Engineering Department Advisory Board and in the School of Management.

But the company's greatest contribution is less easily quantifiable: providing mentorship and professional development opportunities for students.

"Our motto so far has been to 'just say yes to everything' because we really want to help take UB to the next level," says Magnuszewski. "ACV's involvement has been a win-win situation. For ACV, we get to come in contact with so many talented students. For students, they're getting the challenge of working on real-world projects."



ACV research engineer Maggie Donnelly works on a potential new product with UB intern William Giegerich.

BUILDING THE SEAS TO ACV BRIDGE

This bridge from SEAS to ACV is no accident. It is the result of dedicated work, spearheaded by passionate UB alums who are now ACV employees.

Though he's not a civil engineer by trade, a major designer of this bridge has been Phil Schneider, PhD (BS '14, MS '16, PhD '18 electrical engineering), ACV's senior manager of research and development.

Schneider, who lives by the motto, "If you want to go fast, go alone. If you want to go far, go together," started at ACV in 2018. Immediately, he found ACV's innovative spirit and dedication to Buffalo to be a natural fit for him. As a part of his role in R&D, he took over ACV's SEAS partnership, which was ripe for growth and formalization.

"The skills that UB gave me space to practice, I've translated to ACV," says Schneider. "Now I'm growing a team, helping cultivate this talent—things I've already done at UB. My advisors were incredibly supportive–they allowed me to create, invent, do research–and gave me a lab space. But most importantly, they gave me a whole community and ecosystem that I could leverage."

CREATING LEARNING OPPORTUNITIES FOR STUDENTS

While ACV has been supporting the school for years, Schneider saw an opportunity to grow it through more direct connections between ACV professionals and students. Schneider's goal was for ACV to provide students with the needed real-world experience that could prepare them for successful careers after graduation.

He began by reaching out to his mentor Zirnheld. They worked together to weave ACV into her senior design course, giving electrical engineering students the opportunity to apply their skills to a problem related to ACV's work.

"Advancing through the UB SEAS program, I was able to grow my understanding of the engineering process and complete research in fields of science that have direct impact on industry today," says William Giegerich, a senior in electrical engineering who is currently an intern at ACV. "ACV has provided me with the opportunity to apply this knowledge to real-world problems and truly grow as a professional engineer."

As part of his internship, Giegerich works with UB alums and ACV research engineers Maggie Donnelly (BS '18, MS '20 electrical engineering) and Livio Forte (BS '16 mechanical engineering, MS '19 aerospace engineering), to design and implement new ACV products such as the virtual lift.

ACV was one of the sponsors of UB Hacking, UB's annual student-run hackathon.

ACV's Phil Schneider looks on as PhD student Dennis Fedorishin uses ACV Audio Motor Profile (AMP) technology to diagnosis sounds coming from the engine.

Donnelly credits her time in UB's Energy Systems Integration Lab, led by Zirnheld, with inspiring her to pursue a career as a research engineer. "I became interested in designing electronics with projects like the RASCAL Robo-Ops Competition, which showed me how to bring the expansive ideas of R&D to real-life hardware," says Donnelly.

"The entire R&D team made themselves available as an asset to work and consult with at any time of day," added Giegerich. "Since joining ACV, I have been able to contribute and grow my technical skills through the use of classical computer vision, machine learning, data analytics and so much more."

Schneider is of course happy when a student's experience at ACV leads to a job at the company, but he's also inspired by the many other ways it can propel a student's career.

"You hear the stories about where some of these students end up, and where they take some of the work they've done with ACV and it's just mind-blowing," says Schneider. "These students are telling us, 'I applied for a WNY Prosperity Fellowship because working with ACV inspired me to be an entrepreneur' or 'working with ACV helped me realize I was capable of going to graduate school.' This partnership has had so many impacts I could never have predicted."

> "I'm growing a team, helping cultivate this talent—things I've already done at UB."
>
> **Phil Schneider,** Senior manager of R&D, ACV

A BEACON OF RESEARCH AND INDUSTRY PARTNERSHIP

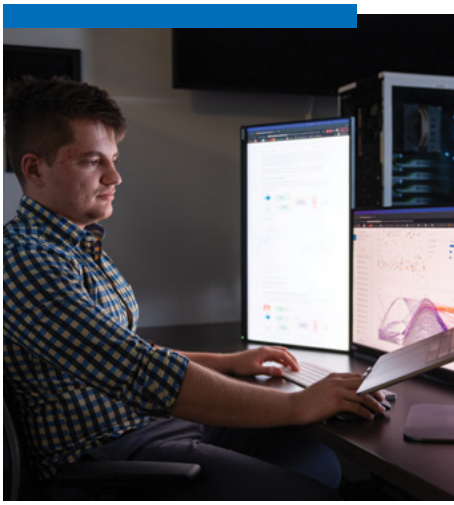
One such unexpected outcome began with the development of a new product in 2018. Schneider and a few other ACV engineers created a tool called the audio motor profile (AMP), a microphone that attaches to a smartphone to record a car's sounds, like that of the engine. These sounds, captured by the AMP in the field, can then be played to a potential buyer, helping them make an informed decision about buying a vehicle.

Forte, who was instrumental in creating AMP, reflects, "During my time at UB, I particularly enjoyed being involved with the tinkering lab and the Society for Automotive Engineers (SAE). Now, this tinkering is my favorite part of the job, and allows me to contribute to the creation of new technology that enables inspectors to evaluate the value of our vehicles by detecting potential abnormalities."

As is often true at a tech start-up, the turnaround on product development and manufacturing was fast. Once the product was out in the market, Schneider decided to turn to UB students and ask, "How can we make this model better?"

Dennis Fedorishin, who was an undergraduate in computer science at the time, used this opportunity to apply his interest in machine learning. He wondered if he could use audio samples to train a computer to detect what could be going wrong with a car.

ACV software engineer and UB PhD student Dennis Fedorishin leverages machine learning to create state-of-the-art algorithms to diagnosis a vehicle's condition based on the sound.

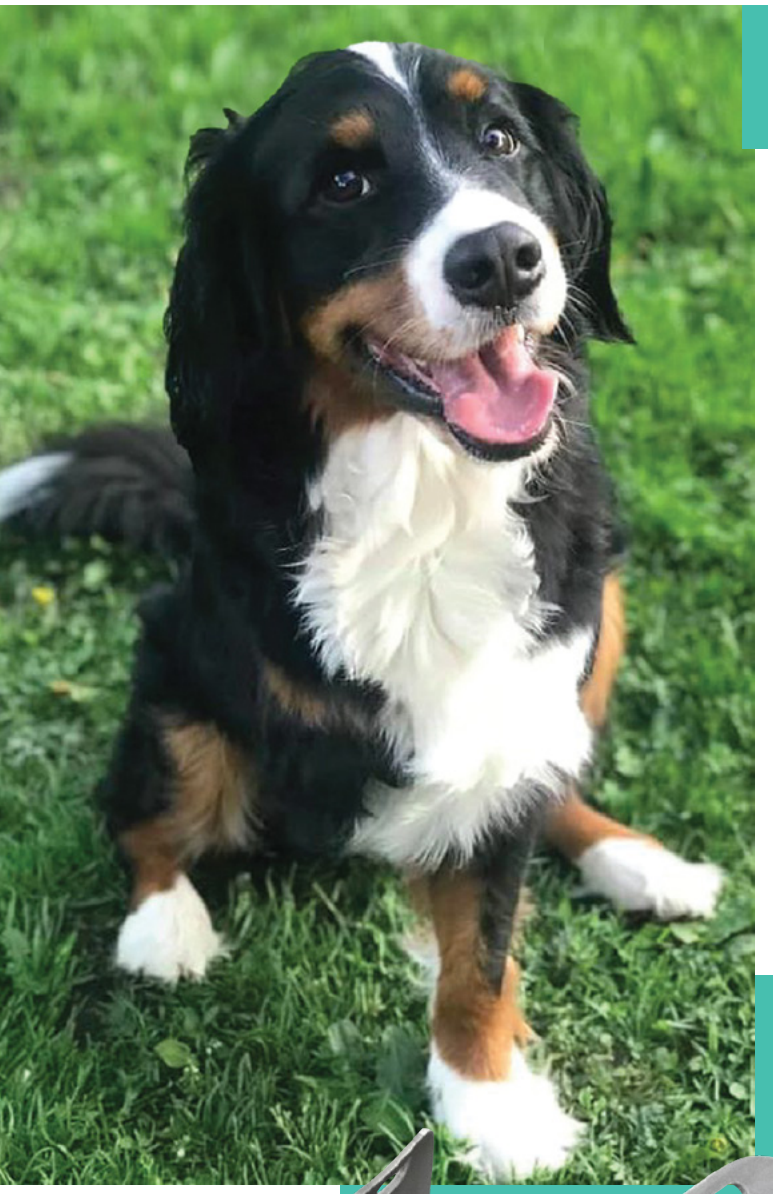


It turns out he could and, three years later, Fedorishin is writing an NSF grant to build on this research. "Having this never-before-created technology allows our users to better understand the vehicles they are buying, in addition to saving ACV millions each year through avoiding covering repair costs," says Fedorishin, who's still working at ACV as a software engineer, while completing his PhD in computer science.

"I never could have imagined that me posing a challenge around this technology would turn into someone's PhD, much less become a gamechanger for the automotive industry," says Schneider.

For Schneider, Fedorishin's story is a testament to not just anticipated growth but the unexpected gifts that are possible when you create space for a true education and industry partnership.

"Anyone can write a check. But working with a student for three years, getting them from point A to point B, that is what changes a life," says Schneider.



Meet Rex, whose right front leg was amputated due to a birth deformity.

ENGINEERING A HEALTHIER FUTURE FOR DOGS

BIOMEDICAL ENGINEERING STUDENT USES 3D PRINTING TO CREATE A FULL LIMB CANINE PROSTHESIS

By Nicole Capozziello

Biomedical engineering student Sibi Ramachandran is about to see his patient. He's come prepared with plenty of treats and knows that Rex, an energetic four-year-old Bernese Mountain Dog/Cavalier King Charles Spaniel mix, will likely want a pet between the ears as well.

Ramachandran, a Buffalo-area native who graduated with his master's degree in May of 2021, thrives on creating unique solutions to help others stand on their two feet—or in this case four. Inspired by his deep love and connection to animals, Ramachandran worked with Filip Stefanovic, a teaching assistant professor of biomedical engineering, on a project that focused on helping a small but distinct subset of dogs: tripods (also called tripawds), or dogs with one missing limb.

While there aren't statistics on how many of America's 63 million dog-owning households include a tripod, it is by no means unheard of.

"I've seen many tripod dogs over the years, but it wasn't until my dog Nodin tore his cruciate ligament and needed surgery that I really started to be cognizant of dogs with disabilities,

particularly those that are missing limbs," says Ramachandran. "I started thinking of the idea as a concept from that point, around 10th grade onwards, but didn't know how I'd go about actually making what was in my head. This project was a great opportunity to turn my dream into reality."

Guided by his brother Uvun, who was in veterinary school at the time, Ramachandran conceived of a project that utilized 3D printing technology to create a prosthesis for a tripod that was durable, comfortable and reproducible.

Dogs may become tripods for a variety of reasons, from genetic deformities at birth to accidents to diseases like bone cancer. While Ramachandran says that most tripods, particularly ones with full limb amputations, function well without a prosthetic, even the most well-adjusted dog is likely to have issues down the road. The change to their gait and the cumulative effect of their other limbs compensating makes them more likely to develop spinal problems and arthritic joints than their four-legged counterparts. Ultimately, this leads to a decreased quality of life and shorter lifespan for an otherwise healthy dog.

> "We typically rely on animals as part of our quest to improve human health, but this project flips that model around and we use what we know about humans to help our pets."
>
> **Albert Titus,** professor and chair of biomedical engineering

USING 3D PRINTING TO HELP OUR PETS

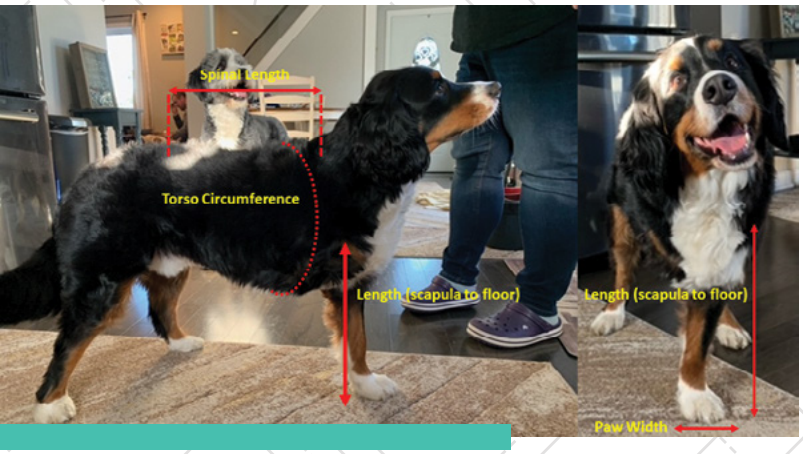
Ramachandran began by advertising his project at UB, Pine Woods Animal Hospital and online. He drew 51 respondents from across the country, and through a lengthy selection process, decided on Rex, of Depew, New York, owned by Michelle and Andrew Dudzinski. Rex was a tripod when the Dudzinskis rescued him; a congenital limb deformity at birth led to his front right limb being removed by surgery early in life.

"Rex is an amazing dog. He listens well, he's up for anything, he loves people. So, knowing he could have issues down the road, we just want to give him as happy and healthy of a life as possible," says Andrew Dudzinski. "And Rex was a champ through the whole process."

Animal patients in need of a prosthetic device face many of the same challenges as humans. First, there's cost: due in part to the high price of materials, prosthetics are expensive. And, an effective prosthetic must be highly customized. The process of casting, molding and manufacturing is time-consuming and there is no guarantee that the end product will be an excellent fit for the patient. Dog patients face additional challenges, such as a limited number of companies making devices and that the prosthesis needs to fit not only the dog's body but also its temperament.

3D printing technology, however, provides a potential, underexplored solution. So, thought Ramachandran, why not apply this technology to the veterinary field? "3D printed systems are much easier to manufacture than traditional prosthetics and as a result, they have the potential to be more affordable to more people," says Stefanovic. "Typically, I develop these systems for humans, but when Sibi approached me and said he was looking to do this kind of work on animals, it presented a unique opportunity."

"This is an excellent example of how our students and faculty make a real-world impact," says Albert Titus, professor and chair of the Department of Biomedical Engineering. "What's so interesting about Sibi's work is that we typically rely on animals as part of our quest to improve human health, but this project flips that model around and we use what we know about humans to help our pets. And, we can even use this to learn how to create better prosthetics for humans."



Rex is measured to fit the harness and pylon.

CREATING THE PROSTHETIC DEVICE

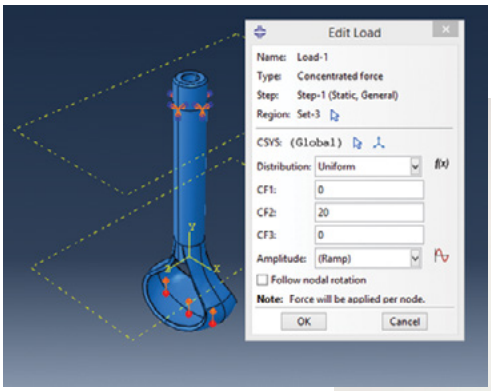
First, Ramachandran met with Rex, getting the measurements necessary for the initial step: making a fiberglass cast that would be used as a harness on the dog's torso, attaching to the prosthetic. Then, Ramachandran created a 3D scan of the cast, which he was able edit and improve digitally.

The second component of this kind of prosthesis is a pylon, which acts as the substitute shin, providing the weight bearing, shock-absorbing shaft for the prosthesis. In this case, Ramachandran designed the pylon and foot as one piece, with a rocking design for the "foot."

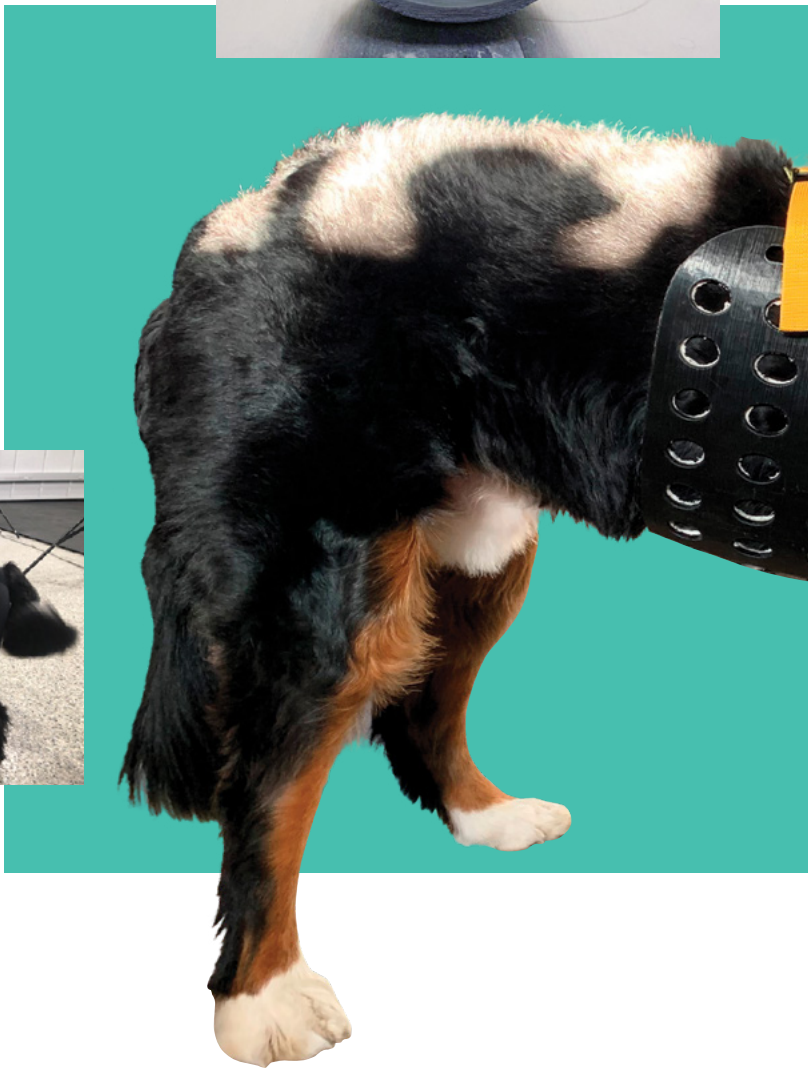
Finally, he used 3D printing to bring his designs to life.

"I had minimal experience with 3D printing prior to this project so the learning curve was extreme, exacerbated by the pandemic," says Ramachandran. "Although a prosthesis is easily reproducible when the sizing is correct, the iterations to get there can take a really long time due to print times—a day or two per iteration not including post-processing like sanding and adding the liner/cushion."

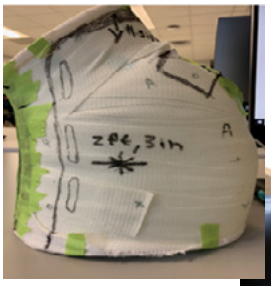
However, with a lot of support and on the fly problem-solving, Ramachandran met the challenges that came his way. For instance, after several failed attempts to scan the fiberglass cast of Rex's torso as one piece, he eventually scanned each half of the cast separately and combined them using Meshmixer software.



3D printed rendering and printed pylon



Retroreflective markers were used to capture Rex's motion with and without the prosthetic.



The harness is created from a 3D scan of the cast.

Rex learns to use the prototype.

TESTING OUT THE PROTOTYPE

Six months after they began working together, Ramachandran was finally able to test the design out on Rex. Fitting the prosthetic was one part while training Rex to use the prosthesis was another process.

Because he'd been a tripod for his whole adult life, Rex had to unlearn some habits, like placing his remaining front limb inwards to stabilize his gait. Training took place gradually over a period of six weeks, beginning with getting Rex used to the weight and feel of the harness before adding the pylon attachment.

Ramachandran used the SMART Motion Lab at UB's North Campus to record and analyze the implementation phase using motion capture experiments over a period of four weeks.

"It was a long process but it went well, and Sibi was great throughout," says Dudzinski. "It was fun for Michelle and I to visit UB and see the technology, which was honestly incredible." And, he adds, Rex really enjoyed his visits to campus as well.

"I can't praise Sibi enough for his passion and motivation on this project," says Stefanovic. "He not only did a lot of great engineering work, but also contributed significantly to the community."

Ramachandran learned a lot from the process and already has ideas for how to improve future designs. His main idea revolves around using thermoplastics for the foot portion, which soften when heated and harden when cooled, allowing them to be both flexible and durable. Because thermoplastics are not currently a 3D printable material, this part of the design would have to be manufactured separately and attached to the 3D printed pylon.

Unfortunately, regardless of material, a custom 3D printed prosthesis is not currently a reality for all animals or humans in need. Barriers include cost and access to the technology—not everyone is lucky enough to have state-of-the-art labs at their disposal. And as Ramachandran found out, working with 3D printing technology, which is ever-evolving, presents its own challenges. However, propelled by his love of animals and commitment to partnering with others, Ramachandran hopes to keep fine-tuning his idea.

"I really like working with animals and, even though this was a first functional prototype, there were several instances where I saw the prosthesis working as it should and I could see the direction this project could take in the future if further iterations are explored," says Ramachandran.

TEAM PROTO EARNS BRONZE IN AMAZON'S ALEXA SOCIALBOT COMPETITION

STRENGTHS IN LINGUISTICS AND COMPUTER SCIENCE COMBINE TO EARN TEAM $50,000 PRIZE

By Nicole Capozziello

In fall of 2020, an interdisciplinary team from UB embarked on what would become a nearly yearlong, life-changing journey.

Under the direction of computer science and engineering professor Rohini Srihari, Team Proto, made up of four PhD students, entered the Alexa Prize Socialbot Grand Challenge 4, sponsored by Amazon.

Photo Illustration: Douglas Levere

Team Proto earned bronze and a $50,000 prize in Amazon's Alexa Prize Socialbot Grand Challenge. Team members (from left) are Erin Pacquetet, Elizabeth Soper, Souvik Das and Sougata Saha, and advisor Rohini Srihari.

Their task was to create a socialbot — think Alexa or Siri — that could converse coherently and engagingly with users for 20 minutes on a range of topics, from politics to fashion to technology. Team Proto was one of nine teams from around the world competing not only for a substantial grand prize, but to use AI to make a real impact.

After months of building its design, the team's bot went live in January 2021. Every day, it interacted with more than 7,000 people, who conversed with it at length and provided valuable feedback after the experience. The team worked to constantly improve their bot and, in the summer, advanced to the final round of the competition. Team Proto, comprised of Sougata Saha and Souvik Das, PhD students in the Department of Computer Science and Engineering, and Elizabeth Soper and Erin Pacquetet, PhD students in the Department of Linguistics, ultimately won bronze, which includes a $50,000 prize.

"I am especially proud of Team Proto and the incredible effort they put into this competition. Our performance is particularly impressive because we were the smallest team and were participating for the first time," says Srihari.

The hands-on competition gave students the opportunity to learn about the current state of research on AI and socialbots, or chatbots, as well as the field's far-reaching potential. "If we can figure out how to develop socialbots that can conduct purposeful, personalized, empathetic conversations with users, it opens up so many applications, ranging from personal health coaching to combating disinformation," says Srihari.

Team Proto members particularly valued the experience of getting to interact with and learn from Alexa users across the country, which genuinely challenged their perspectives and training.

"It was eye-opening to realize that the way we think about conversations as researchers and linguists is different from the real-world data we obtained every day," notes Pacquetet.

Another highlight for the students was working on such a big project as a small team. "This experience of working on a team was different than any I'd had before," says Das. "We operated like a group of friends working toward building a start-up."

Srihari plans to enter the competition with another team, including some of the same students, again. And this time, the team will come in with a base of experience. In the meantime, Alexa customers can continue to engage with the winning teams' socialbots simply by saying, "Alexa, let's chat."

"I love the feeling that at any given point, someone somewhere in the United States is interacting with an AI that we created, and witnessing an experience that we designed," Saha says.

"So many people have come out to support me with this project. It's helped with my grieving, and I think my dad would be really proud. "

Courtney Burris

INDUSTRIAL ENGINEERING STUDENT'S PERSONAL LOSS LEADS TO INNOVATION

By Nicole Capozziello

Industrial engineering PhD student Courtney Burris lost her dad Robert to a battle with colon cancer in May of 2020. It was the most difficult experience of her life—and one that she's found herself sharing over and over during the last year as she's pitched a device she designed that was inspired by him.

"When I was coming up with ideas, I thought about what my dad struggled with before he passed," says Burris.

She recalled how one of his major challenges had been showering and how demoralizing it was for him. Her solution, "The Aiding Arm," is a clip-on shower chair attachment that preserves independence and privacy while bathing by utilizing a lever that moves a removable showerhead along a track.

Burris's design earned her first place at the Aging Innovation Challenge, presented by Blackstone LaunchPad and UB's Center for Successful Aging. Since then, she has gone on to participate in other pitch competitions on campus, including as a finalist in the Henry A. Panasci Jr. Technology Entrepreneurship Competition, the largest competition on campus.

Taking part in these events has been a great way for Burris to garner attention for The Aiding Arm and bring it closer to the reality of helping people in need. It's also connected her with a supportive community of entrepreneurial-minded people within ISE and throughout UB. Most recently, she won $20,000 and access to mentors, webinars, and venture capitalists in the Swarm Starter Competition, held by the University of Rochester.

"Courtney is the perfect example of an entrepreneurial industrial engineer who is destined for success," says Victor Paquet, professor and ISE chair. "She is a passionate innovator and problem-solver who truly cares about all of those around her."

Paquet got involved in the project when Burris approached him to discuss her design idea in December of 2020. "I always find it exciting to explore new ideas, specifically ones like Courtney's that are aimed at benefiting society in meaningful ways," says Paquet, who was able to secure some departmental funds for product development and joined Burris's advisory board. "I was truly honored to be able to offer advice about how to integrate inclusive design into her showering system."

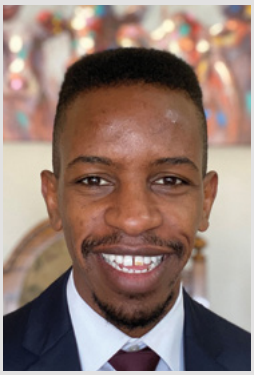
He says, "It is my hope that this project will serve to inspire other industrial engineering students and faculty to collaborate on entrepreneurial activities in the future."

ECO-FRIENDLY FOOD CONTAINERS

Chemical engineering seniors Jenna Armband, Zoe Beitzel, Benjamin Davis and Stephen Klein came up with a unique solution for an eco-friendly food container. They designed a bamboo box with interior beeswax lining which is not only 100% biodegradable, but has the additional benefits of being naturally antifungal, antibacterial, antimicrobial and waterproof, which make it a perfect choice as an eco-friendly food container. The project was part of CE404 Product Design, taught by Monica Lupion, assistant professor of teaching.

TWO STUDENTS NAMED LEADERSHIP DEVELOPMENT FELLOWS

NEW PROGRAM OFFERS STIPEND, MENTORING AND LEADERSHIP SKILLS DEVELOPMENT



Haryana Thomas and Peter Cruz are the first two students to receive a new fellowship specifically designed to enhance the leadership and mentoring skills of underrepresented students in the School of Engineering and Applied Sciences.

The Leadership Development Fellow program recognizes and supports underrepresented students with a $1500 stipend and provides them with research and mentorship opportunities. In addition, Fellows meet individually with Dean Kemper Lewis, to support their development as researchers, mentors and leaders.

Originally from Addis Ababa, Ethiopia, Haryana Thomas came to UB in January of 2021 to earn his PhD in chemical engineering. He is part of the Ashlee N. Ford Versypt research group, where his research focuses on developing models to predict the progression of diabetic kidney damage. He is a member of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers and currently volunteers at PEER Servants, a microfinance organization that helps people in developing countries start businesses.

Peter Cruz, a master's student in civil engineering, hails from New Rochelle, N.Y. After graduating from UB in 2017, he joined Stantec as a structural engineer. He returned to UB in 2020 to earn his graduate degree. He is currently working on a project that uses thermal-mechanical numerical modeling to determine the impact of fire on bridge girders. Cruz's advisor is Samuel P. Capen Professor and SUNY Distinguished Professor Michael C. Constantinou.

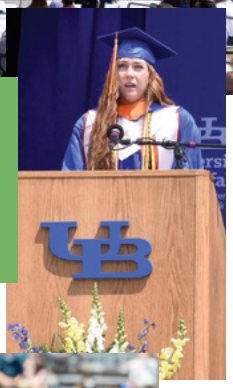
PHOTOS

After winning the regional competition last spring, the American Society of Civil Engineers' concrete canoe team placed 17th in the national competition.

Uma Pratheebha, a PhD student in electrical engineering, received a highly competitive STEM Diversity Scholarship from Advanced Energy. UB was one of five institutions invited to participate in the program.

UB Students for the Exploration and Development of Space (UB SEDS) earned first place in the 10K Solid Rocket-Student Researched & Developed Components category at the Spaceport America Cup. The photos show members of the team checking over part of the lower structure and the rocket after manufacturing.

On a beautiful sunny weekend in May, the School of Engineering and Applied Sciences celebrated its over 2,000 graduates at two in-person commencement ceremonies at the University at Buffalo Stadium. Amy Faville, a mechanical engineering major from Avon, N.Y., was the student speaker at the undergraduate commencement ceremony.



UB Hacking returned to an in-person format this year, with over 300 students convening in Davis Hall. Students worked in teams of up to four people to develop a project in 24 hours. This year's sponsors included M&T Tech, ACV Auctions, Foundry, Moog, Wegmans, ValueCentric/IQVIA, Teknic, Stark & Wayne, and Willis Towers Watson.

Barnard Uche Onyenucheya, a PhD student in electrical engineering, was the student speaker at the graduate ceremony.

The Biomedical Engineering Society (BMES) hosted Life Size Operation as part of Engineers Week.

A team of computer science and engineering graduate students placed 5th worldwide and 1st in the U.S. in the DEFCON AutoDriving Capture the Flag competition organized by Baidu.

"AudUBon Racing," the entry created by a team of computer science and engineering students, was the runner-up in IEEE's F1TENTH Autonomous Racing virtual competition. 37 teams from around the world took part in the virtual event. Shown from left are: Karthik Dantu (faculty advisor), and students Harshita, Rishi Vedula and Harjot Singh Barn.

UB's American Society of Civil Engineers' steel bridge team placed 5th overall in the American Institute of Steel Construction's (AISC) national steel bridge competition, the second-best finish in team history. The team had to carry out the design and load tests on campus.

BUFFALO CONSTRUCTION CONSULTANTS WINS FAST 46 COMPETITION

OVER 25% OF FINALISTS AFFILIATED WITH SEAS

By Peter Murphy

Civil engineering alumnus Joe Mannarino and his company Buffalo Construction Consultants, Inc. won the first Fast 46 Award from UB.

The award, named in honor of the University's founding in 1846, recognizes and celebrates the success of 46 of the fastest-growing businesses owned or led by UB alumni or former students around the world. Each finalist had to meet a set of criteria, including number of years in business and verifiable revenues.

"It means the world to me to receive this recognition. I only wish my dad was still with us to see what we have accomplished," Mannarino says. "To start a business and compete with many local and national companies and gain our share of the market in a short period of time has been exhilarating."

"We're proud of Joe, and all of our alumni who were honored with this recognition," says Kemper Lewis, dean of the School of Engineering and Applied Sciences. "Our graduates are industry leaders and these organizations have experienced significant growth. It's great to see them earn this distinction."

Mannarino co-founded Buffalo Construction Consultants with William Mahoney in 2017. The construction management firm

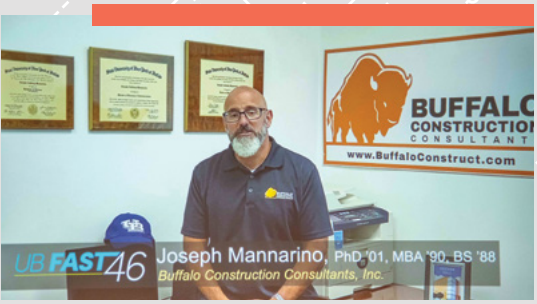
provides agency and at-risk construction management services to its customers. The firm also provides design, build and general construction services along with owner representative services for both public and private clients.

The decision to start the business came out of necessity, Mannarino says, as the company he had worked for decided to wind down operations, and he was not ready to retire. He and Mahoney joined forces to form Buffalo Construction Consultants and, according to Mannarino, it has been one of the best decisions of his life.

"I guess it starts with a vision," Mannarino says. "We knew we were skilled in managing construction and felt that we could build something sustainable. Through my years of teaching at UB, I had hired many quality engineering and architecture graduates who were willing to take a chance and join us in our new business. Construction management is a people-driven business and we have the right people."

Mannarino received all three of his degrees, a PhD, MBA and BS, from UB. He also taught courses in the Department of Civil, Structural and Environmental Engineering for 16 years, and has served on the Department Advisory Board for eight years.

"I have always been a big proponent of UB and the tremendous education I received," Mannarino says. "It has been great to give back to the University through my years of service. The friendships I have made through my connections at UB have lasted my lifetime and been influential in my success. I could not have gotten here without my education, and I owe a debt of gratitude to all of my past professors and advisors in helping to make this possible."



FAST 46 FINALISTS FROM THE SCHOOL OF ENGINEERING AND APPLIED SCIENCES

(listed in rank order)

- **Joe Mannarino** (PhD '01, MBA '90, BS '88), Buffalo Construction Consultants, Inc.
- **Adam Prentice** (BS '17, Mechanical Engineering), Hatchets & Hops LLC
- **Mustafa Ilgin** (BS '08, Civil Engineering), Metsel Construction Co. Ltd.
- **Shawn Patterson** (BS '03, Chemical Engineering), Resolution Medical LLC
- **James Herrmann** (BS '81, Electrical and Computer Engineering), AppliedLogix LLC
- **Parimal Patel** (BS '02, Electrical Engineering), Stratecha, LLC
- **Sutano Lunarso** (MS '04, BS '03, Computer Science), PT Smart Multi Finance
- **Deep Shah MS** (MS '08, Industrial Engineering), Shubh Die Castings Ltd.
- **Steven Metzger** (BS '94, Civil Engineering), LaBella Associates, P.C.
- **John Besse** (BS '93, Electrical Engineering), ACSYES, Inc.
- **Stewart Haney** (BS '87, Electrical and Computer Engineering), Wendel
- **Kay Stanney** (BS '86, Industrial Engineering), Design Interactive, Inc.
- **Richard Henry** (BS '90, Civil Engineering), Clark Patterson Lee
- **Matt Kahn** (BS '98, Chemical Engineering), Big Ditch Brewing Company

ALUMNI PROFILE

MEET ANNIKA SAMUELS

DIRECTOR OF DIVERSITY AND INCLUSION, NATIONAL FUEL GAS COMPANY

UB alumna Annika Samuels earned her BS degree in industrial engineering in 2003, and her MBA in 2006. She is currently the director of diversity and inclusion at National Fuel Gas Company. She shared her thoughts with us about her time at UB.

Why did you choose UB, and how did your education prepare you for a successful career at National Fuel?

I chose UB because they had a reputable industrial engineering department and I wanted to pursue a career that would utilize my math and analytical skills while helping people. I was always intrigued by ergonomics, facility design, and methods to create efficient systems that integrate workers, machines, materials, information and energy to make a product or provide a service.

What clubs or organizations were you a part of during your time at UB? How were they formative?

The National Society of Black Engineers (NSBE) and the Cora P Maloney programs such as Collegiate Science Technology Entry Program (CSTEP) were an integral part of my collegiate experience. My study buddies who later became my lifelong friends were all made through countless hours together during these programs. These friends are my engineering colleagues and family.

Tell us about your current job and what you like most about it.

As the director of diversity and inclusion at National Fuel, I champion the development of the company's initiatives in diversifying the employee group, supplier group, and internal and external communication.

What lessons and skills have you learned along the way that have helped prepare you for your current role?

Engineering taught me great problem solving skills and how to examine processes for improvement. In my current role, it is critical that we measure the effectiveness of our initiatives in a quantitative and qualitative manner so that we can achieve the results that we are hoping for.

Do you have some advice for other aspiring black engineers?

Connect with your professors, alumni, your network, and pursue good internships at great companies.

Looking back, is there anything that you wish you'd known earlier on?

I wish I understood the impact of networking especially as you pursue your first internships and jobs.

TWO ALUMS RECOGNIZED FOR WORK UPLIFTING DIVERSE IDENTITIES IN STEM

ABEDA ALAM AND ANNA SMITH NAMED 40 LGBTQ LEADERS UNDER 40 BY BEQ PRIDE MAGAZINE

On a fall evening in 2015, Anna C. Smith, a chemical engineering undergrad at the time, called to order the first meeting of the campus chapter of oSTEM (out in STEM).

Among the students who showed up that day was Abeda Alam (they/them), a then-undergraduate who would go on to become a member and eventually leader of the group, who was also looking to build community.

Fast forward six years. At UB, oSTEM is still an active student organization. And Smith and Alam have carried their passion for promoting diverse identities with them into their careers.

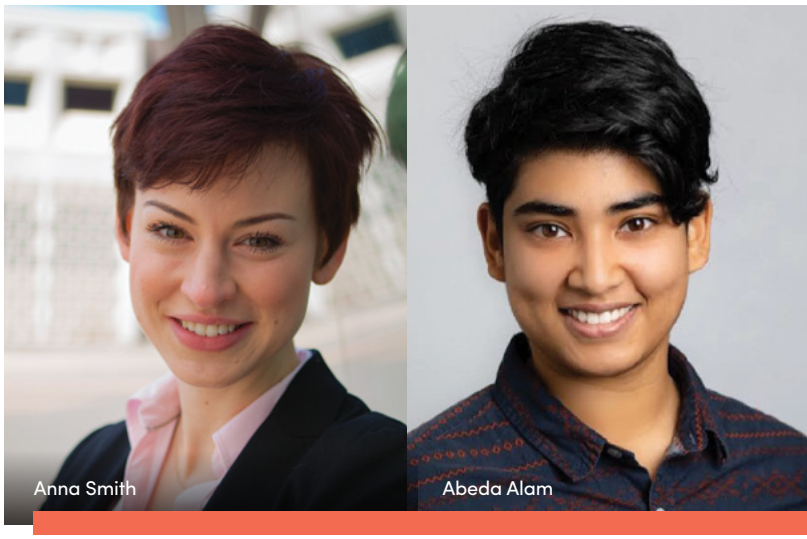
Both were named to Business Equality (BEQ) Pride Magazine's 2021 list of 40 LGBTQ Leaders Under 40 for their outstanding leadership and contributions. The list honors individuals across North America who are demonstrating exceptional leadership and major contributions in government, corporate, academia, nonprofit or small business.

Smith (BS '17), who is now a senior specialist, data scientist at global pharmaceutical company Merck, reflects, "My passion has always been around professional development and helping people bridge the gap between being a student and being a professional. I'm hopeful that this recognition will grow efforts to make my company and field more open and inclusive."

Since graduating from UB, Smith has been a part of the international organization Lesbians Who Tech and has continued to be involved in oSTEM, but from an industry standpoint.

When she joined Merck in 2018, Smith joined the company's Rainbow Alliance, where she's now the Outreach Recruitment Lead. "In just two years, we've gone from no formal strategy to actually hiring people from this community. It's huge to think about—and exciting that I've been able to influence that at a large company," says Smith, who helped launch the Out for Undergrad (O4U)—Engineering effort at Merck.

Alam, a mechanical engineering alum (BS '18), currently works as a process quality engineer at GE Power in Greenville, S.C. Since graduation, they've continued to be a leader at oSTEM, including serving as programming chair for the national organization for two years.



Alam is also the first non-binary South Asian member on the Board of Charleston Pride and is an active member of GE Power's LGBTA employee resource group. "I'm humbled by this recent distinction from BEQ and am grateful to my mentors at UB who through the years have kickstarted, recognized and supported my hard work and dedication to LGBTQ+ inclusion in STEM spaces," says Alam.

Both Alam and Smith are passionate about staying engaged in this work, using their perspective and voices to effect change at their companies, mentor and engage members of their community and make the engineering field more inclusive and supportive.

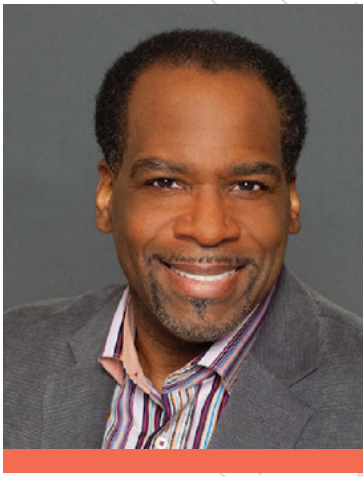
Alam says, "Identities like mine have been and still are marginalized. However, I'm grateful to be a part of a community that not only validates these identities but is working to overcome them by advocating, offering resources, and creating larger social collectives and platforms to help people become more visible leaders, engineers, and entrepreneurs."

"I hope that by being on this list, I will inspire and encourage others to be their whole selves at home, in the classroom, and at work."

By Nicole Capozziello

DEXTER JOHNSON NAMED ENGINEER OF THE YEAR

URGES STUDENTS TO "SEEK, SEIZE AND SQUEEZE TO MAKE THE MOST OF YOUR LIFE AND ENGINEERING CAREER OPPORTUNITIES"



Ever since his years as an undergraduate student, Dexter Johnson (PhD '95, MS '89 mechanical, BS '87 aerospace) has been dedicated to supporting others, everywhere that he goes. For this work, on top of his numerous contributions to the aerospace field, Johnson was named the Engineer of the Year by the University at Buffalo Engineering and Applied Sciences Alumni Association (UBEAA).

Each year, the award recognizes a school alumnus or closely affiliated person with distinguishing activities in alumni, community, business and professional affairs.

Johnson is a Technical Fellow for Loads and Dynamics at NASA, where he celebrated his 30th anniversary in 2020. In addition to his role at NASA, he is also a minister, entrepreneur and frequent motivational speaker. As "Dr Dex," he speaks on a range of topics involving STEM, faith and inspiration, personal excellence, building healthy relationships and career success.

"We are proud of what Dr. Johnson has accomplished through his service to the UB community, the nation, and the profession," says UBEAA President Jordan Walbesser. "Dr. Johnson exemplifies the ideals of engineering—not just technical excellence, but servant-leadership and a passion for improving the lives of others. As such, the UBEAA is proud to give him our highest award—Engineer of the Year."

Over the years, Johnson has remained dedicated to his alma mater, serving on the School of Engineering and Applied Sciences Dean's Advisory Council from 2009-2015, and currently on the UB Alumni Association Board of Directors and the President's Advisory Council on Race. His numerous past awards include the NASA Honor Award—Equal Employment Opportunity Medal, the Diversity and Inclusion Award from the American Institute of Aeronautics and Astronautics and the Celestial Torch Award–Aerospace Pioneer of the Year from National Society of Black Engineers (NSBE) Aerospace Systems Conference.

"I am honored to be selected as the UB Engineer of the Year. Engineering excellence and technology advancement has been a major focus of my career and a primary factor in my professional success," says Johnson. "UB provided me with the foundation for engineering success, and I want to see the next great engineering alumnus represent this fine University as an ambassador to the world. I want them to be a trailblazer in uncharted territory helping solve the world's most challenging engineering problems!"

A Buffalo native, Johnson got his start in engineering through the precursor to the program now known as the Buffalo-area Engineering Awareness Program (BEAM). While at UB, he was one of the founders of the UB chapter of NSBE, which he continues to be an active member of today.

Of current SEAS students and engineering professionals, Johnson asks, "Are you outstanding . . . or just standing out? In our world of heightened social media engagement, many people seek to stand out, which can be easy and fleeting. However, it's better to be outstanding, though more challenging, in order to have a lasting positive world impact!"

By Nicole Capozziello

Front row: Alicia Miller Callery, Katia DeFazio Hellert, Deirdre Pascale Morhet, Christine Jandreau Kent. Back row: Rajan Batta, Doug Wittman, Mike Strom, Holly Stanek Strom and Jim Reilley.

CELEBRATING 30 YEARS

Members of the ISE Class of 1991 returned to campus for a 30-year reunion this past summer. The visit included an informal meeting with SUNY Distinguished Professor Rajan Batta, followed by a tour of the department's Bell Hall labs given by ISE professor and chair Victor Paquet.

Now spread across the country, the group of alumni has kept in touch since graduation and has celebrated their 10th and 20th reunions together.

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.

1970s

Milind Ajinkya (PhD 1975, MS 1972, chemical) received the SEAS Distinguished Alumni Award from the UB Alumni Association. He worked at Exxon in the reaction engineering field for 35 years and serves on the advisory board for UB's Department of Chemical and Biological Engineering.

1980s

Rob Jacoby (MS 1980, civil) received the Clifford C. Furnas Memorial Award from the UB Alumni Association. He serves on the SEAS Dean's Advisory Council and spent his 34-year career in the energy industry for Royal Dutch Shell.

Maria Lehman (BS 1981, civil) was named president-elect of the American Society of Civil Engineers (ASCE), a multinational professional association with over 150,000 members. She is serving as president-elect this year and will transition to president in 2023.

1990s

Joseph N. Del Vecchio (MS 1990, BS 1988, mechanical) was appointed senior vice president of National Fuel Gas Supply Corporation, where he is responsible for Field Operations and the Engineering Services Department for Supply Corporation, National Fuel Gas Distribution Corporation, and National Fuel Gas Midstream Company. He joined the company in 1995, and earned a law degree from UB in 1996. He lives in East Aurora, N.Y.

Nicos Makris (PhD 1992, MS 1990, civil) has been named a Fellow of the American Society of Civil Engineers. Makris is the Addy Family Centennial Professor in Civil Engineering at Southern Methodist University in Dallas, Texas.

Palanivel Thiagarajan (PhD 1995, MS 1989, industrial) has been named minister of Finance and Human Resource Management of Tamil Nadu, India. He was previously an investment banker at Lehman Brothers and with Standard Chartered in Singapore. He also earned his MBA from MIT's Sloan School of Management.

Christian Yungbluth P.E. (BS 1995, mechanical) was promoted to director of global marketing at Hatco. Yungbluth has been in the foodservice equipment industry for 16 years and joined Hatco earlier this year as the director of business development for Ovention Ovens. Prior to that, he held various roles at ITW Food Equipment Group and The Middleby Corporation.

John Hubert P.E. (ME 1998, BS 1991, civil) joined Bergmann as vice president of the company's Northeast Infrastructure division. Hubert comes to Bergmann with over 30 years of experience managing design teams and award-winning infrastructure projects across New York State, including four that have been selected for ACEC NY platinum awards.

2000s

Dustin J. Clark P.E. (BS 2004, civil), an engineer, has been promoted to associate in Barton & Loguidice's Watertown office. A resident of Adams Center, N.Y. he is a member of the water resources practice area.

Jayant Singh (PhD 2005, chemical; MS 2002, computer science) was elected a Fellow of the National Academy of Sciences, India. He also received the Herdillia Award For "Excellence in Basic Research in Chemical Engineering" from the Indian Institute of Chemical Engineers.

2010s

Alexander S. Kerr (MS 2010, BS 2009, civil) has been promoted to managing engineer at Barton & Loguidice's Syracuse, N.Y. office, where he is a member of the transportation practice area. He resides in Liverpool, N.Y.

Kourtney Brown (BS 2010, computer engineering), former UB women's basketball player, has been inducted into the Dr. and Mrs. Edmund J. Gicewicz Family UB Athletics Hall of Fame. She played for the Bulls from 2011-16 and is currently a process integration engineer at Samsung in Austin, Texas.

Christoph Hoog Antink (MS 2011, mechanical) accepted a position as professor of biomedical engineering at the Technical University of Darmstadt in Germany. He earned his PhD from RWTH Aachen University.

Gouthaam Gajendran (BS 2014, chemical) received a 2021 30 under 30 award from Buffalo Business First. He is the co-founder and CEO of the Pro Nextdoor, a software platform that enables home services professionals to showcase their work, and a chemical engineer at Utech Basement Waterproofing, where he developed a meal service for all field employees and created a refuge program. He lives in Clarence Center, N.Y.

Ryan Proud (BS 2015, civil) was promoted to project manager at LeChase Construction's Rochester office, where he will manage, develop, maintain and oversee all functions of assigned projects at the preconstruction, construction and post-construction phases.

Vienna Mott (BS 2016, biomedical) joined semiconductor manufacturer AMD in Austin, Texas, as a technical program manager. Prior to that, she worked at Draper in the greater Boston area. She earned her MS in mechanical engineering from Tufts University.

Rohan Shah (BS 2016, computer science) received a 2021 30 under 30 award from Buffalo Business First. He is the CEO and founder of Classavo, a startup that lets professors download and alter textbooks, deliver lesson plans, assign grading and see real-time analytics on student performance.

Emily Brooks (PhD 2017, BS 2012, biomedical) was named to Buffalo Business First's 2021 class of 40 under 40 professionals. She is a staff engineer at Qualcomm, serves on the Western New York Invention Convention board, and is cofounder of "Fun Inspiring Science," with the mission of engaging kids in science.

Philip Schneider (PhD 2018, MS 2016, BS 2014, electrical) received a 2021 30 under 30 award from Buffalo Business First. He is the senior manager of research and development at ACV and serves on the Western New York Invention Convention board.

Karen Meess (MS 2019, biomedical) received a 2021 30 under 30 award from Buffalo Business First. She is an R&D engineer at The Jacobs Institute, where she is building preclinical medical device testing capabilities for clients in the U.S. and abroad.

2020s

Zach Steever (PhD 2021, MS 2018, BS 2016, industrial) joined the NFL's Philadelphia Eagles as a quantitative analyst.

Justin Gerace (MS 2021, BS 2019, civil) has accepted a position as assistant county engineer in the Highway Department in Genesee County, N.Y.

Zoya Atiq (BS 2021, biomedical) has accepted a position as a medical device compliance engineer at BioElectronics Corporation in the Washington, D.C. area.

"When I look at the past and present of SEAS over the years/decades, it is nothing short of amazing on how far we have come as an engineering school."

John Schneider, vice president of technology, Qualcomm

JOHN SCHNEIDER HONORED FOR LEAVING MARK ON FINGERPRINT IDENTIFICATION TECHNOLOGY

Every day, millions of Americans use fingerprint identification technology on their smartphones. This reality is in large part possible due to the efforts of John Schneider, who has been working to improve fingerprint technology for 40 years.

Schneider, a three-time alumnus of the Department of Electrical Engineering (BS '80, MS '87, PhD '90), was recognized for his contributions to engineering and society with the Dean's Award for Achievement, the highest honor presented by the University at Buffalo School of Engineering and Applied Sciences.

"There is no greater honor or professional joy than being recognized by your peers," says Schneider. "When I look at the past and present of SEAS over the years/decades, it is nothing short of amazing on how far we have come as an engineering school. Looking at what the future holds under the leadership of Dean Lewis, I am truly excited and so glad to be a very small part of it."

After graduating from UB in 1990, Schneider founded Ultra-Scan Corporation, building on his graduate research focused on developing a better fingerprint technology. For the next 24 years, the company focused on pioneering the use of high frequency ultrasound for fingerprint identification.

In 2012, Ultra-Scan made history when it received FBI certification for a groundbreaking invention: an ultrasonic chip capable of reading fingerprints with up to 100 times the accuracy of other methods. The technology has since been deployed in a variety of smartphones, including the Samsung Galaxy S10 and S21.

The next year, Ultra-Scan was acquired by Qualcomm, a multinational semiconductor and telecommunications company. Now, as Qualcomm's vice president of technology, Schneider works on developing the next generation of wearable technology for a variety of health care initiatives.

Schneider holds over 250 patents and has authored numerous papers and books on the topic of fingerprint identification. Among his many awards and recognitions, he was inducted into the U.S. Hall of Fame and was bestowed a lifetime achievement award, which was presented to him at the White House in 2014.

Schneider has partnered with UB in a plethora of ways, including working as an adjunct professor, as well as collaborating with faculty and students on research. He's also a driving force behind the Qualcomm Faculty Awards which recognize faculty from across the country, including two from UB, for research that "inspires students and sparks new approaches in key technology areas."

Throughout his long career, Schneider has proudly kept his roots in Buffalo. "Home is where the heart is and certainly a big part of my heart resides with the School of Engineering and Applied Sciences," says Schneider. "To receive this award is like a child hearing from his parent, well done!"

"MY FAVORITE MEMORY WAS MY TIME IN A LAB PERFORMING THERMODYNAMIC EXPERIMENTS ON PHASE-CHANGE HEAT TRANSFER. THAT LED TO MY LOVE OF CRYOGENICS AND A VERY PRODUCTIVE AND ENJOYABLE CAREER." - **Jim Kois**

After graduating from UB in 1963, mechanical engineering alumnus Jim Kois worked for the Linde Division of Union Carbide Corporation from 1963 to 1967. He transferred to the Nuclear Division in Oak Ridge, Tenn. in 1967, where he worked on insulation systems for space flight tankage for the Apollo moon mission. After retiring in 2006, he worked as a consultant supporting the design of the Highly Enriched Uranium Materials Facility for the Y-12 National Security Complex. He lives in Knoxville, Tenn.

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[1]New member, Spring 2022 [2]Outgoing member, Spring 2022

BOLD MEANS A HEALTHY PLANET.

John Atkinson, the Scott and Coleen Stevens Chair in Engineering Sustainabity, and his environmental engineering students visit the Hacienda El Viejo Wetlands in Costa Rica.

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**

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Photo: Douglas Levere

ENGINEERS WEEK RETURNS

UB's engineering and applied sciences clubs took over the Student Union the week of February 20 as part of national Discover Engineering week. The annual event promotes interaction among the clubs and the campus community. This year, 17 clubs hosted 24 activities, which culminated in Bot Wars, the marquee event of the week. Special events included UB Engineering Day at the Buffalo Museum of Science, Pledge to Professionalism ceremonies, and a career-focused panel discussion with representatives from the SEAS Engineering Partners Program. New this year, Matilde Sánchez-Peña, an assistant professor in the Department of Engineering Education, gave a talk on women in engineering and tech as part of the national DiscoverE's Persist Series. View a recap here: **https://engineering.buffalo.edu/e-week**

The Society of Women Engineers challenged students to build a tower using spaghetti noodles and marshmallows under a strict deadline.