



University at Buffalo

Department of Industrial  
and Systems Engineering

School of Engineering and Applied Sciences

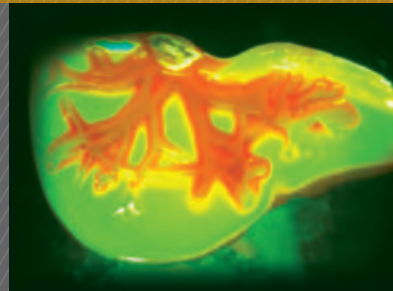


# Industrial and Systems Engineering

-----  
// 2021 DEPARTMENT NEWS



**ISE75**  
1946-2021





Dear alumni and friends,  
Over the past year, UB ISE has taken several great steps to implement our comprehensive strategic plan to further our reputation as a department known for its **innovation, productivity and impact**. We have **capitalized on our existing research strengths** while leading the construction efforts of UB's SurgeE Surgery Ergonomics and Human Factors Laboratory and the Structure for Outdoor Autonomy Research (SOAR).

We have **created alumni panels, workshops, lecture series and on-campus activities** to support the life-long professional goals of students, alumni, staff and faculty. We are **strengthening our entrepreneurship culture** by holding student innovation design competitions and supporting students in product development activities. We are leading the school's efforts in **integrating effective teaching methods** into all aspects of our on-campus, blended and remote educational curriculum.

In this newsletter, we highlight just some of the recent achievements of our faculty, students and alumni. We are very proud of our UB ISE community. As we celebrate our 75th anniversary throughout this academic year, we take this time to reflect on the important scholarly and professional accomplishments of our faculty, students and alumni, and look towards increasing our impact on the ISE profession in the years to come. //

Sincerely,

**Victor Paquet**  
Professor and Chair,  
Department of Industrial and Systems Engineering



Cavuoto, right, works with student Yaoyu Fu in the SurgeE Lab.

# TRAINING THE NEXT GENERATION OF SURGEONS



## IMPROVED HEALTHCARE BY UNDERSTANDING THE HUMAN FACTORS OF ROBOTICS SURGERY

**Ora Cavuoto** leads a research group at UB's Surgery Ergonomics and Human Factors (SurgE) Laboratory. Cavuoto, an associate professor, collaborates with teams from Rensselaer Polytechnic Institute, Purdue University, and Kitware, Inc. on projects funded by the NIH 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.

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. //

"ADVANCING TRAINING AND IMPROVING WORKFLOW WILL ALLOW CLINICIANS TO PROVIDE BETTER CARE, WITH MORE EFFICIENT TREATMENT AND FEWER ERRORS."

— Cavuoto





Murray in the ISE Optimator (Optimization for Industrial & Military Applications thru Operations Research) lab.

## USING AI TO MODEL UAV FLIGHT PATTERNS

**Chase Murray** and **Moises Sudit** received a Defense Advanced Research Projects Agency (DARPA) grant to explore techniques for reconstructing routing optimization models used by uncrewed aerial vehicles (UAVs).

The project is part of DARPA's ReMath AI Exploration program, which aims to discover if AI techniques can effectively recover mathematical structures implemented in software in natural mathematical forms of expression. CUBRC is a research partner on the grant.

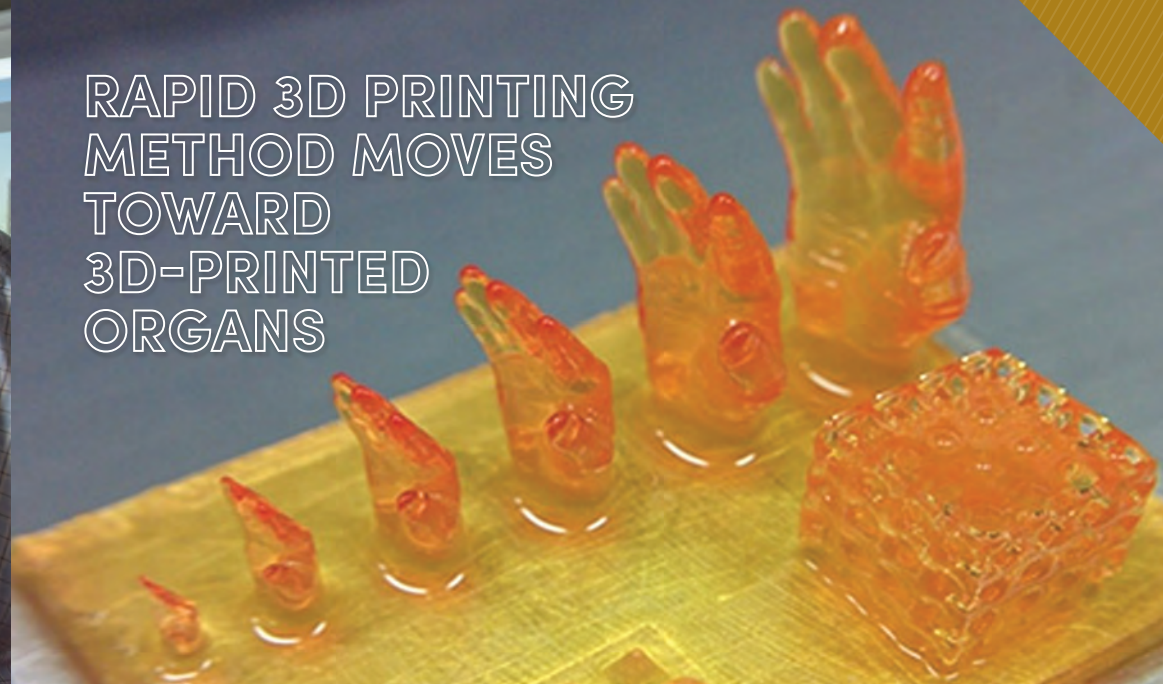
UAVs can be tasked to perform a wide variety of missions, such as conducting surveillance, delivering small parcels, jamming enemy air defenses, or monitoring air quality. The flight plans defining these missions are often created by solving mixed integer linear programs, which specify constraints on a set of integer variables and then compute a maximum value for some goal-defining quantity to derive the best strategy.

For this project, Murray, an assistant professor, says the team's goal was to work backwards. "Usually we build optimization models that will determine the most effective or efficient vehicle routes. Now, we're 'reverse engineering' from routes back to the optimization models that generated those routes."

In Phase I of the project, the team started with a modest collection of about a dozen optimization formulations, designing techniques to select one of these formulations for a given UAV route. The UAV routing data were generated from Murray's drone flight simulator.

In Phase II, which is in progress, the team is transitioning to using flight data from real UAVs flown within UB's Structure for Outdoor Autonomy Research (SOAR) drone testing facility. Additionally, rather than selecting one of a small number of pre-defined complete optimization models, the team is using the flight data to regenerate hybrid optimization models that may consist of a mixture of constraints from several reference models. This will allow the system to work with more complex UAV behaviors. Beyond drone-based applications, the techniques developed in this research could be used to automatically generate a wide array of optimization models directly from observational data. //

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



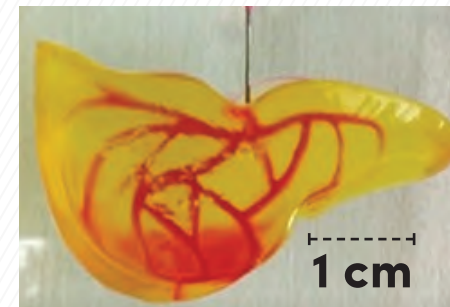
It looks like science fiction: A machine dips into a shallow vat of translucent yellow goo and pulls out what becomes a life-sized hand. But the hand, which takes about six hours to create using conventional 3D printing methods, demonstrates what UB engineers say is progress toward 3D-printed human tissue and organs — biotechnology that could eventually save countless lives lost due to the shortage of donor organs.

The work is described in the journal of *Advanced Healthcare Materials*. It centers on a 3D printing method called stereolithography and jelly-like materials known as hydrogels, which are used to create, among other things, diapers, contact lenses and scaffolds in tissue engineering. The latter application is particularly useful in 3D printing, and it's something the research team led by **Chi Zhou**, associate professor, and **Ruogang Zhao**, UB associate professor of biomedical engineering, focused on in their effort to optimize an incredibly fast and accurate 3D printing technique.



The method is particularly suitable for printing cells with embedded blood vessel networks, which is key to the production of 3D-printed human tissue and organs. The work has the potential to address fundamental challenges in

tissue engineering and promote its wide applications in regenerative medicine such as in vitro drug screening. It also paves the way towards production of engineered functional organs suitable for organ transplantation and dialysis. //



"THIS IS A GAME-CHANGING TECHNOLOGY, IT CREATES LARGE-SIZE SOFT TISSUES SEVERAL ORDERS OF MAGNITUDE FASTER THAN THE TRADITIONAL 3D BIOPRINTING TECHNIQUES."

— Zhou



# APPLYING AI TO PROVIDE EQUITABLE FOSTER CARE SERVICES

“THE MOST INTERESTING ASPECT OF MY ROLE IN THIS PROJECT IS TO APPLY COGNITIVE MODELLING TOOLS TO SOLVE PROBLEMS IN A NEW (FOR HUMAN FACTORS) DOMAIN, I.E., HOW TO MODEL THE SOURCES AND PROPAGATION OF BIASES IN DECISION MAKING IN FOSTER CARE.”

— Chen

**W**innie Chen is collaborating with a team of UB computer scientists and social workers on a project jointly funded by NSF and Amazon to develop machine learning tools that will help caseworkers determine the best available services, fairly and equitably, to support the safety and well-being of adolescents in foster care.



In the United States, more than 20,000 youths annually age out of foster care without rejoining their families. These youths often experience high-risk outcomes such as unemployment, not completing high school, and homelessness, all of which have significant and costly impacts on the youth and society. There are services in foster care programming that may improve life outcomes, but it is challenging to proactively match children with effective services, especially when resources are limited.

These decisions in service allocation are complex and involve both case data and interpretation of that data given the caseworker’s training and experiences. Machine learning algorithms (e.g., predictive models based on historical and administrative data) may be the much needed solution for evidence-based decisions, with the additional benefit of eliminating some of the biases and variability inherent to human decision-making. However, in practice, algorithms are often equally or more biased than humans, and questions remain on how to best integrate algorithms with traditional casework.

Partnering with the Hillside Family of Agencies (Rochester, N.Y.), Chen, an assistant professor, and her students are utilizing cognitive engineering methods to model caseworkers’ service allocation decisions to make design recommendations for the decision support tools that the UB team will develop. Their modeling approach will also help identify where biases may stem from in the service allocation process and gain a deeper understanding of what fairness means for the many stakeholders involved. //

## ADVOCATING FOR INCLUSIVE DESIGN OF AVS



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

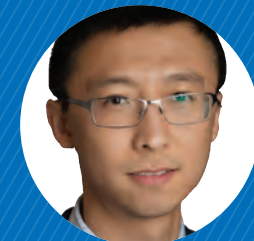
**Victor Paquet** presented at the U.S. Access Board’s first virtual public meeting on inclusive design of autonomous vehicles (AVs) this past spring. The session focused on accessibility for passengers with mobility disabilities while entering and exiting vehicles. The Access Board is the federal agency 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 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. //



## NSF AWARDS \$2.3 MILLION FOR CYBER ANALYTICS MANUFACTURING PLATFORM



NSF has awarded a \$2.3 million grant to create and validate a general-purpose cyber-coordinated analytical platform that will enable the vertical integration of multi-stage and distributed manufacturing processes and will synchronize and optimize them online. The team, led by ISE Assistant Professor **Hongyue Sun**, left, includes **Chi Zhou** (ISE), right, **Wenyao Xu** (CSE) and two faculty from Arizona State University.

The increased digitization in manufacturing has allowed for better production process description and decision-making, and this trend is accelerated by 5G mobile communication technology. However, many companies, especially small to medium enterprises (SMEs), have not fully taken advantage of the digital revolution. This is mainly because there is a lack of tools for complex production system coordination and synchronization that consider the dynamics and dependencies of heterogeneous manufacturing processes and machines.

This project will have a long-lasting impact on increasing the competitiveness of U.S. manufacturing by transforming the operations and control of manufacturing systems, and reducing losses in quality, cost and productivity. It also will transform the skill-sets needed by the manufacturing workforce, and enable a prosperous economy and community. //



1



# SOAR DRONE TESTING FACILITY OPENS

THE COMPLEX IS AMONG THE NATION'S LARGEST

Earlier this 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** 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. //

2



3



4



5



6



7



1. The blue poles of UB's new netted drone facility rise up out of the parking lot in front of Crofts Hall. 2. Aero on ground and rover and student. 3. Students prepping drones for flight. 4. From left, Nick Mastronarde, Adam Czerniejewski, Farshad Ghanei and Karhik Dantu show off their drones. 5. Students testing drones. 6. Chase Murray describes one of the demonstration projects to the crowd outside SOAR. 7. Kemper Lewis, dean of the School of Engineering and Applied Sciences, welcomes attendees to the event.



## JUN ZHUANG NAMED MORTON C. FRANK PROFESSOR

Since joining UB ISE in 2008, **Jun Zhuang** has been exemplary in every realm of academia: research, teaching and mentorship, and service. Most recently, Zhuang was named the new Morton C. Frank Professor, which is awarded to an outstanding industrial and systems engineering faculty member working within the field of operations research.

An internationally renowned scholar, Zhuang's research has made advancements in homeland security, disaster relief and other areas. His research integrates a handful of fields – operations research, big data analytics, game theory, decision analysis – to create data-driven models that help decision makers mitigate risks, often during times of crisis or disaster. Examples include how to best allocate resources, how to manage misinformation, and how to create functional partnerships among disparate organizations.

Zhuang has been a principal investigator of over 30 research grants funded by the National Science Foundation, Department of Homeland Security, Department of Energy, Air Force Office of Scientific Research, and National Fire Protection Association. His publications include 116 peer-reviewed journal articles, 20 conference papers, nine book chapters, and six edited books and journal special issues.

A dedicated educator, Zhuang has mentored over 150 students and professionals ranging from high school students to visiting scholars. He has received the 2020 UB Teaching Innovation Award, the 2019-2020 UB Excellence in Graduate Student Mentoring Award, the 2019 UB Student Engagement's Exemplary Faculty/Staff Mentor Award, as well as the 2012 UB President Emeritus and Mrs. Martin Meyerson Award for Distinguished Teaching and Mentoring. //



"MENTORING STUDENTS HAS BEEN A SIGNIFICANT AND MEANINGFUL PART OF MY CAREER. IN WORKING WITH STUDENTS, MY MAIN PRIORITY IS HELPING THEM TO ACHIEVE THEIR OWN LIFE, ACADEMIC AND CAREER GOALS."

— Bisantz

## BISANTZ NAMED HUMAN FACTORS AND ERGONOMICS SOCIETY'S WOMAN MENTOR OF THE YEAR

**Ann Bisantz**, ISE professor and Dean of Undergraduate Education at UB, has been selected as the HFE WOMAN Mentor of the Year. This prestigious award recognizes the outstanding contributions of a mid-to-late career individual with an extended history of mentoring, sponsoring and/or otherwise advancing women professionals and students in the field of human factors. //



## MUKHERJEE RECOGNIZED BY IISE AS OUTSTANDING YOUNG INVESTIGATOR

Assistant Professor **Sayanti Mukherjee** was the recipient of the 2021 Outstanding Young Investigator Award in Energy Systems from the Institute of Industrial and Systems Engineers (IISE). The annual award recognizes an IISE Energy Systems Division member under the age of 35 for their technical contributions to the field.

Mukherjee's research includes enhancing climate-resilience of energy infrastructure systems, modeling climate change and natural disasters' impact on socio-technical systems, and investigating community safety and social justice issues. //



## TWO RECEIVE SUNY CHANCELLOR'S AWARDS FOR EXCELLENCE

**Victor Paquet** and **Jun Zhuang** were among the twenty-one UB faculty honored with the 2021 SUNY Chancellor's Awards for Excellence. The SUNY-level awards acknowledge and provide system-wide recognition for consistently superior professional achievement and encourage the ongoing pursuit of excellence.

Paquet received the SUNY Chancellor's Award for Excellence in Faculty Service and Zhuang received the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities. //

"I AM PARTICULARLY EXCITED AS THE MISSION OF THE JOURNAL ALIGNS WELL WITH MY OWN PERSONAL RESEARCH INTERESTS AND I AM DELIGHTED TO BE PART OF ACCELERATING SCHOLARSHIP IN THE DOMAIN OF QUANTITATIVE ANALYSIS OF PUBLIC SYSTEMS."

— Batta



## BATTA NAMED EDITOR-IN-CHIEF OF SOCIO-ECONOMIC PLANNING SCIENCES JOURNAL

**Rajan Batta**, SUNY Distinguished Professor and Associate Dean for Faculty Affairs and Diversity in the School of Engineering and Applied Sciences, was named editor-in-chief of the Socio-Economic Planning Sciences (SEPS) journal. The quarterly peer-reviewed scientific journal covers socio-economics as it relates to development economics and public policy. Batta had previously served as an associate editor of SEPS for the past 10 years. //



## DRURY NAMED ERGONOMICS PRACTITIONER OF THE YEAR

SUNY Distinguished Professor Emeritus **Colin Drury** received the 2021 Ergonomics Practitioner of the Year Award from the Foundation for Professional Ergonomics (FPE). The annual award recognizes colleagues who have demonstrated outstanding contributions to the practice of ergonomics through their professional lifetime achievements and/or specific implementation projects. Drury is the president of Applied Ergonomics Group, Inc. //

## WELCOMING OUR NEW FACULTY



## Cecilia MARTINEZ LEON

PHD, SYSTEMS AND ENGINEERING MANAGEMENT, TEXAS TECH AND SCD, ENGINEERING SCIENCES, TECNOLÓGICO DE MONTERREY, MEXICO

Associate professor of teaching Martinez Leon joined UB ISE from Clarkson University, where she was an associate professor of engineering and management. Her research interests include quality management, project management and lean systems engineering. She focuses on identifying, articulating, and integrating engineering and management principles for developing effective product development and continuous improvement deployment frameworks for successful and sustained performance excellence. //

## OUR NEWLY TENURED FACULTY



## Jee Eun "Jamie" KANG

Associate professor Kang's research aims to improve the design, planning and operations of complex public and private transportation systems using mathematical optimization methods that consider realistic transportation behaviors. Her research focuses on applications such as the evaluation of infrastructure requirements for alternatively fueled vehicles, impacts of autonomous vehicles on transportation systems, optimization of paratransit services, disaster operations management, and understanding rider preferences in multi-modal transportation systems. Her research contributions can be found in top-tier journals of her field such as Transportation Research, Transportation Science, and the European Journal of Operations Research. She is an active member of the Institute for Operations Research and Management Sciences (INFORMS) and the Transportation Research Board (TRB) conferences. //

## OTHER PROMOTIONS



## Sabrina CASUCCI

An associate professor of teaching, Casucci is also the Director of UB ISE's Engineering Management Program. Casucci is a 2020 Open SUNY Online Teaching Ambassador, a program that celebrates exemplary online educators. In addition to her leadership on online education, she is co-PI on a new \$1.5 million grant awarded to the UB School of Nursing by the Health Resources and Services Administration to increase access to mental health and substance abuse treatment in rural Western New York. Her research interests include health information technology, healthcare systems modeling, and design and evaluation of healthcare interventions on patient and organizational outcomes. //



“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.”

— Burris



# ISE STUDENT’S PERSONAL LOSS LEADS TO INNOVATION

In May of 2020, industrial engineering PhD student **Courtney Burris** lost her dad Robert to a battle with colon cancer. 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 benefitting 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 UB ISE students and faculty to collaborate on other entrepreneurial activities in the future.” //





## // STUDENT AWARDS AND HONORS



During Engineering Week, group members headed to the Buffalo Museum of Science where they shared Human Factors engineering concepts with primary school students.

## HFES STUDENT CHAPTER RECOGNIZED AS ONE OF THE BEST IN THE COUNTRY

“BEING RECOGNIZED AT THE GOLD LEVEL, THE HIGHEST RANK AVAILABLE, SHOWS THAT UB HAS ONE OF THE MOST VIBRANT HUMAN FACTORS RESEARCH PROGRAMS IN THE COUNTRY.”

— Bolton

Mentorship, creativity and information dissemination are just some of the values that define UB’s student chapter of the Human Factors and Ergonomics Society (HFES) – which is why the group received the Outstanding Student Chapter Award from the national organization.

“The award is a well-deserved recognition of the accomplishments of our HFES students in terms of research, student engagement and outreach to UB and the surrounding area,” says **Matthew Bolton**, associate professor of industrial and systems engineering and one of the UB chapter’s faculty advisors.

“Students in our department are doing research in a number of exciting areas from human interaction with autonomy (like unmanned air vehicles, self-driving cars, robots, and artificial intelligence) to inclusive design to occupational safety and health.”

Founded over two decades ago, the UB HFES student chapter is one of the oldest student chapters. The chapter’s 20 active members come from an array of cultures and disciplines, including engineering, psychology, occupational therapy, and cognitive science, united by their interest in improving the human interaction with the products, processes and systems that make up our world.

The group has hosted social events that promote member bonding, such as potluck dinners and a Bills game night at a sports bar, introducing their international members to American football and local culture. //

## ANNUAL DEPARTMENTAL AWARDS



CHAIR’S AWARD  
**Madison Dailey**



GRADUATE STUDENT RESEARCHER OF THE YEAR AWARD  
**Zipeng Guo**



GRADUATE STUDENT SERVICE AND LEADERSHIP AWARD  
**Courtney Burris**



GRADUATE STUDENT TEACHING AWARD  
**John Fontecha**

## KYLE HUNT RECEIVES HAROLD O. WOLF AWARD



ISE PhD student **Kyle Hunt** was the recipient of this year’s Harold O. Wolf Award. Given by Mary Wolf, the award honors her late husband Harold O. Wolf (BA ‘60, geology), and recognizes high achieving students who distinguish themselves through research, academic coursework and extracurricular activities.

Hunt’s research focuses on national/homeland security and humanitarian management. His research accomplishments include nine accepted journal articles, one conference paper, two magazine articles, and one book chapter, as well as many conference presentations.

Earlier this year, Hunt received an NSF Graduate Research Fellowship, which will fund the remainder of his graduate studies. He also recently received the 2021 Seth Bonder Scholarship for Applied Operations Research in Military and Security Applications, a highly competitive scholarship that is awarded by INFORMS. //

## MEGHAN DONAHUE RECEIVES SSA GRANT



ISE Graduate Student **Meghan Donahue** received a grant from the Social Security Administration’s Analyzing Relationships between Disability, Rehabilitation and Work (ARDRAW) small grant program. It is a one-year, \$10,000 stipend that allows graduate-level

students to conduct supervised independent research designed to foster new analysis of work, rehabilitation and disability issues, which may develop innovative and fresh perspectives on disability.

Meghan’s project, titled “Vocational Rehabilitation Service Interactions on Employment Wage Changes for Social Security Beneficiaries,” is the first step of her dissertation, “An Exploration of the Relationships Between Career Services and Training Services in Vocational Rehabilitation and Employment Outcomes.” Her major professor, Victor Paquet states that, “Meghan’s work will help us to better understand how Social Security benefits impact vocational rehabilitation service employment outcomes.” //





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

## CELEBRATING 30 YEARS

Members of the ISE Class of 1991 returned to campus for a 30-year reunion this 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. //

## ALUMNI-LED COMPANY FINDS WAY TO HELP DURING PANDEMIC

For the last few years, Tonawanda, NY-based Innosek has specialized in rapid prototyping, low volume manufacturing, project management and product development. But when the coronavirus hit, the start-up, co-founded by alum **Brian Bischoff** (BS '15 IE), pivoted. They manufactured thousands of face shields with their 3D printers, and partnered with Rapid Medical Parts to convert sleep apnea machines to emergency ventilators under a preliminary U.S. Defense Department contract. The company's assembly line is made up of more than 30 hi-tech 3D printers. Using those printers and other advanced manufacturing techniques, they can turn out a variety of plastic parts and products, including face shields for health care staffers and first responders.

The company also received a grant from FuzeHub, the New York Manufacturing Extension Partnership state center, to produce face shields for New York's first responders at no cost. //



## PHILADELPHIA EAGLES HIRE ISE PHD GRADUATE

**Zachary Steever** (PhD IE '21) landed a job with the NFL's Philadelphia Eagles as a quantitative analyst.

"Broadly, the job is to leverage data to support "football decisions." These types of decisions include roster moves (which players to sign), contract and cap management (how to best allocate a limited budget), in-game strategy decisions (e.g., what is the opponent most likely to do here, what's the best play call in this situation), pre-draft player evaluation (how to think this college player will translate to the NFL), in-draft strategy (e.g., trade valuation), and injury prevention (analyzing the relation between kinematic data and injury data)," says Steever.

While at UB, Steever worked with Mark Karwan, Praxair Professor of Operations Research and SUNY Distinguished Teaching Professor and Chase Murray, assistant professor, on a project funded by the NFL to lower the number of undesirable games during the season. //



## PROMOTING STANDARDS ON A GLOBAL SCALE

**Latasha Beckman** (BS IE '00) is the deputy director, Defense Standardization Program Office (DSPO), located in the Washington DC area. Since 2004, she has promoted the use of standardization as one of the key enablers to interoperability, securing the United

States industrial base, reducing total ownership costs, and maintaining operational readiness. Committed to multilateralism for the sake of strategic standardization, Ms. Beckman has been actively involved in engagement with military departments, defense agencies, standards development organizations, and U.S. allies and partners to develop and execute standardization policy and procedures. She is Lean Six Sigma (Green Belt) certified, and Defense Acquisition Workforce Improvement Act certified in multiple career fields. //



## ALUMNA LEADS THE NETWORK OF EXECUTIVE WOMEN

As vice president of strategic value, **Karianne Gomez** (BS IE '00) leads the development of the Network of Executive Women's (NEW) overarching strategic value platform and core initiatives. These include research and insights, learning programs, and solutions for corporate partners, NEW regions and members. Prior to joining NEW, Ms. Gomez focused on growth strategy, commercialization, and transformation across several companies and industries, including Pampered Chef, HAVI, and ZS, a management consulting firm. She serves on the board of the Chicago chapter of Compass Pro Bono and UB's School of Engineering and Applied Sciences Dean's Advisory Council. //





University at Buffalo

## Department of Industrial and Systems Engineering

School of Engineering and Applied Sciences

342 Bell Hall, Buffalo, New York 14260-2500

NON-PROFIT  
ORG.  
US POSTAGE  
**PAID**  
BUFFALO, N.Y.  
PERMIT #311

# ISE 75

1946-2021

## Get connected WITH US!

Here are just some of the ways to connect with us and make an impact on future IEs.

- Take a tour
- Take a course
- Attend a UB game
- Attend a speaker series
- Give a presentation
- Meet our students
- Post a job announcement
- Sponsor an internship
- Post a profile
- Recruit at a career fair
- Participate on the ISE Alumni Board

To learn more, visit: [engineering.buffalo.edu/ise](http://engineering.buffalo.edu/ise)



LINKEDIN  
search 'ISE at UB'



FACEBOOK  
[facebook.com/UBISEr](https://facebook.com/UBISEr)



TWITTER  
@UB\_ISE



INSTAGRAM  
ub\_ise