College of Engineering Commencement 2022
Greetings to our loyal alumni, students, faculty, and friends,

What a banner year it has been for us here in the Mechanical and Industrial Engineering (MIE) Department, and we welcome your participation in our enjoyment! The excitement begins with our MIE students. During the 2021-2022 academic year, MIE’s SequesChar student team won second-place at the UMass Amherst Innovation Challenge.

Doctoral student Mary Sheehan received the prestigious Graduate Research Fellowship from the National Science Foundation (NSF). Another graduate student, Jamar Hawkins, was awarded an NAACP Scholarship, while Apoorva Hungund won an H. Clay Gabler Scholar’s Award. Senior Sarah Woodrow received a Women in Transportation Society Foundation Scholarship, and two other undergraduate students, Jahinaya Parker and Shivani Ray, each earned special honors from UMass Amherst: Parker was named a Spring 2022 Rising Researcher, and Ray was chosen as a William F. Field Alumni Scholar.

It was also an exceptional year for our highly accomplished MIE faculty members. Professor Erin Baker was named a Distinguished Professor by UMass Amherst, and Professor Yahya Modarres-Sadeghi was selected to participate in the very prestigious Harvard Radcliffe Institute Fellowship Program. Professor Hari Balasubramanian received an NSF award to improve the healthcare of patients with complex medical and social needs. In addition, Professor Wen Chen was named one of the Sandra L. Bouckley Outstanding Young Manufacturing Engineers, as recognized by SME (formerly the Society of Manufacturing Engineers).

In other faculty news, the Center for Disease Control and Prevention welcomed Professor Chaitra Gopalappa as a guest researcher,” Professor Golbon Zakeri was named as the inaugural editor of the new INFORMS-Springer Book Series, Toyota awarded Professor Anuj Pradhan a major grant for two vital studies on driver safety and behavior, and J. MacGregor Smith published a new textbook on the use and understanding of optimization and modeling. Beyond all those impressive attainments, Professor Jinglei Ping received the Trailblazer Award from the National Institutes of Health.

In 2022, the College of Engineering also saluted Professor Yubing Sun as one of its two Outstanding Faculty Members, and it honored Colby Norwood as the winner of the 2022 Dean’s Outstanding Service Award. Additionally, the college paid tribute to alumni Carl Christenson (’82, ’84 M.S.) and Thomas Sebastian (’12 Ph.D.) as the MIE department’s recipients of the 2022 Distinguished Alumni Award and the 2022 Outstanding Young Alumni Award, respectively.

I’d also like to mention that Professors Kourosh Danai and Jim Smith have now retired and will be sorely missed. And, in that context, the MIE department also welcomes two brand new faculty members, Muge Capan and Gina Olsen, who will be joining us in the fall.

We express a special note of admiration that the Institute of Industrial and Systems Engineers named MIE alumna and Intel Corporation Senior Principal Engineer Tiffany Sargent to its 2022 Class of Fellows.

I invite you to join the entire MIE department in celebrating these formidable accomplishments and many other achievements that are too numerous to mention here. We owe all this success to the mutual support of countless dedicated people working together to create the milestones, the innovations, and the fine educational institution that is our department in 2022.

In closing, I’d like to invite all of our students, faculty, and friends to our Alumni Reunion during UMass Homecoming on October 28 of 2022, when we will stage a gala event to celebrate 75 years of engineering education at UMass with departmental tours, a networking reception, a Homecoming Block Party, and attending a game to cheer on our Division 1 National Hockey Champions.

Wishing you good health and happiness,

Sundar Krishnamurty
Ronnie & Eugene M. Isenberg Distinguished Professor in Engineering
Department Head, Mechanical & Industrial Engineering

LETTER FROM THE DEPARTMENT HEAD
Erin Baker Obtains Much-deserved Honor as a Distinguished Professor

When the UMass Board of Trustees approved Erin Baker for the position of Distinguished Professor in the Mechanical and Industrial Engineering (MIE) Department this year, the emphasis was on *Distinguished Professor*. Baker is certainly worthy of that term in her new position, but, in this case, it’s a clear-cut understatement of her numerous achievements.

To start with, in addition to Baker’s recent appointment as a Distinguished Professor, she is currently the Faculty Director of the Energy Transition Institute. She served as the Associate Dean for Research and Graduate Affairs for the College of Engineering from 2018 to 2021, the college’s Director of Faculty Diversity from 2019 to 2021, the MIE Armstrong Professional Development Professor from 2017 to 2020, and she has been a full professor since 2014.

But those positions are just the beginning of Baker’s numerous accomplishments. Her research, for example, is world-renowned. According to Baker’s summary of her research, “It uses modeling to address questions about energy policy and planning in the face of climate change.” Accordingly, in this vital field she’s a much-sought-after expert. Baker’s research is, as she explains, “in decision making under uncertainty applied to the field of energy and the environment; with focus on energy justice and publicly funded energy technology research and development portfolios in the face of climate change.” In that context, Baker says that she “links models to bridge geographic and temporal scales and uses multiple parallel models to derive robust insights. Other topics include evaluating the sustainability of the electricity grid in New England, as well as in developing countries, and evaluating the environmental costs and benefits of offshore wind energy.”

As the head of the Energy Transition Institute, Baker guides the mission of the institute toward enabling a fast and fair transition to a decarbonized energy system in the United States. It also does stakeholder-engaged research at the UMass Amherst, with a dual focus on technology systems and human systems.

Related to that well-publicized research, Baker has generated well over $5-million in sponsored research as a principal investigator. She has published some 57 papers in refereed academic journals, four refereed conference papers, five book chapters, and eight working papers. She has also given four invited keynote and plenary addresses, 26 workshop presentations, 31 invited lectures, 55 conference presentations, and 11 public service presentations. Among her numerous honors, Baker has earned a prestigious NSF CAREER Award, the *Watkins Energy Journal* Best Paper Award, and the College of Engineering Outstanding Senior Faculty Award, Distinguished Graduate Mentor Award, and IEOR Advisor of the Year Award.

In addition, Baker is a member of the Institute of Operations Research and Management Sciences, the Association of Environmental and Resource Economists, the International Association for Energy Economics, and the Decision Analysis Society.

Professor Baker earned her B.A. at the University of California Berkeley and her M.S. and Ph.D. from Stanford University. Beyond Baker’s achievements that are partially summarized above, she often appears in such key media outlets as *Time Magazine, TedX, CNBC video*, and many others. All in all, her entire career path could well be described as “a Distinguished Professor in search of a time to happen.”
For Yubing Sun, in the words of an old “American Standard” song from the 20th century, “It was a very good year!”

Let’s begin with the year’s big highlights. Sun, an assistant professor in the MIE department and an adjunct in the Biomedical Engineering Department, was the recipient of the College of Engineering’s Barbara H. and Joseph J. Goldstein Outstanding Junior Faculty Award. Then Sun collaborated with ChangHui Pak of the Department of Biochemistry and Molecular Biology to co-edit the newest special issue of the Journal of Molecular Biology on “Organoids: Expanding Applications Enabled by Emerging Technologies.” This year, Sun and Dr. Pak were also awarded a $410,884 NIH grant to develop novel technologies for deriving brain organoids for modeling human brain development.

The Junior Faculty Award collectively honored Sun for a series of important achievements over the past few years, and the Journal of Molecular Biology editing position served to put the proverbial “cherry on top.”

Perhaps the most noteworthy of Sun’s earlier accomplishments was winning a prestigious National Science Foundation (NSF) CAREER Award in 2019. Sun’s NSF research project has been studying the mechanical and biochemical regulatory mechanisms of planar cell polarity (PCP) in vitro.

As Sun explained, “Epithelial cells line the surfaces of many organs in the body, including the inner surface of hollow organs. As such, they often exhibit different functional properties and abilities through the thickness of the cell – something that is called PCP.” Sun also said that, by researching PCP in vitro, “The project will systematically study the effects of geometrical confinement, matrix stiffness, mechanical strains, and chemical gradients on the initiation and maintenance of PCP, as well as identify the molecules that relay external mechanical signals to the cells for establishing PCP.”

Among other key grants obtained by Sun as a principal investigator (PI) include a $400,000 NSF Grant to study deadly and crippling neural tube defects, among the most common birth defects that affect more than 500,000 infants worldwide each year. He was also a PI on a $430,608 National Institutes of Health (NIH) grant to study how biophysical cues regulate the IVF embryo culture at cellular, genetic, and epigenetic levels. Additionally, he was a co-PI on a huge $1,366,330 NIH grant with PI Govind Srimathveeravalli to develop a pioneering bladder reconstruction technique. These research projects also led to publications in prestigious journals such as Matter and eLife.

Sun heads the Laboratory for Multiscale Bioengineering and Mechanobiology. As Sun has summarized the work of his lab, “Our research applies and integrates fundamental engineering principles, such as manufacturing, biomechanics, materials science, and micro/nanoengineering, to understand and harness the mechanobiology of stem cells for modeling currently incurable human diseases and for applications in regenerative medicine.”

According to MIE Head Sundar Krishnamurty, “In his short tenure, Professor Sun has established himself as a pioneering researcher with national and international impact in engineering and biomedical research, while simultaneously building a vibrant independent research program with robust interdisciplinary collaborations within the department and across campus.”

What better way to sum up Sun’s ultra-productive time at UMass Amherst than to mention the high praise of one senior faculty member: “In my 21 years at the University of Massachusetts, I have rarely seen a junior faculty member whose productivity can equal that of Professor Sun.” Yes, a very good year, indeed!
Yahya Modarres-Sadeghi Chosen for Harvard Radcliffe Institute Fellowship Program

Professor Yahya Modarres-Sadeghi has been selected as one of 50 fellows to participate in the very prestigious Harvard Radcliffe Institute Fellowship Program, which offers practitioners in many fields a rare opportunity to pursue their work in a vibrant interdisciplinary community. Modarres-Sadeghi will collaborate with the Harvard biologist George Lauder and his students to design and build a robotic fish that will enable the study of fish behavior in unexplored ocean environments.

SME Names Wen Chen One of Its 2022 Outstanding Young Manufacturing Engineers

Assistant Professor Wen Chen has been named one of 22 Sandra L. Bouckley Outstanding Young Manufacturing Engineers, as recognized by SME (formerly the Society of Manufacturing Engineers), a professional association committed to advancing manufacturing and developing a skilled workforce. The 22 recipients of the SME award, age 35 or younger, are recognized for exceptional contributions and accomplishments in manufacturing.

Jinglei Ping Receives Trailblazer Award from National Institutes Of Health

Assistant Professor Jinglei Ping received a National Institutes of Health (NIH) Trailblazer R21 Award to pursue his promising emerging research. The Trailblazer R21 Award provides recipients with funds over three years to pursue research programs of high interest to the NIH’s National Institute of Biomedical Imaging and Bioengineering (NIBIB). Ping’s project, “Highly Integrated Nucleic-Acid Analysis Using Graphene Bioelectronics,” has the long-term goal of developing micro-total microRNA (small single-strand RNA molecules) detection technology that can be used globally for rapid, point-of-care clinical diagnoses in resource-limited settings. In particular these next-generation sensors will be capable of providing accurate diagnosis results for diseases such as CoVID-19, HIV, and cancer.

Chaitra Gopalappa Chosen as CDC Guest Researcher

Associate Professor Chaitra Gopalappa has been approved for the prestigious position of “guest researcher” at the Center for Disease Control and Prevention (CDC), an arrangement that enables her close engagement with CDC research and access to the agency’s resources but doesn’t change her employment status at UMass Amherst. The guest researcher position at CDC will enable Gopalappa to participate in CDC research and utilize CDC facilities, thus providing a platform for more active collaboration between her research team and those at the CDC.

Gopalappa says this opportunity will also provide good training opportunities for her students to be involved in mathematical modeling work closely related to health policy.
Blair Perot Patents Pioneering Airfoils to Make Wind Farms More Efficient

Professor Blair Perot, head of the Theoretical and Computational Fluid Dynamics Laboratory, and his collaborator Shujaut Bader of Iowa State University have been awarded a U.S. Patent for their trailblazing concept of a “Wind Turbine Airfoil Structure for Increasing Wind Farm Efficiency.” The prime objective of Perot’s new patent is to facilitate full-velocity recovery by employing the proposed airfoil devices in precise configurations in and around the upstream turbines to control their wake flow in an optimal way for maximizing energy production throughout the wind farm.

As part of Perot’s research related to the new patent, some of his undergraduate students have created models of the airfoil devices and tested them in the UMass wind-tunnel facility, where they worked as predicted. The wind-tunnel experiments were supported through a UMass Acorn funding grant titled “Demonstration of a Wind Turbine Power Augmenter.”

"Sara's Wish" Inspires Bus Seatbelts That Could Save Thousands of Passengers

The death of a University of Pittsburgh student during a bus accident in India more than 25 years ago has inspired the U.S. patent of a groundbreaking retrofit seatbelt for buses and motor coaches that could save many lives and serious injuries. Two co-patent holders of the seatbelt invention are Sundar Krishnamurty, department head, and Senior Research Fellow Douglas Eddy. The name of the new patent is a “Retrofit seat belt system for motor coach, with impact dampers and cable support,” and it was issued on November 16, 2021. The new design of the retrofits will allow owners of buses and motor coaches to install seat belt retrofits for about one-third to one-half of the current cost and would potentially reduce fatalities in rollover bus accidents by some 70 percent. The new U.S. patent highlights improvements in the 2016 design to reduce the total bus-installation's estimated cost from about $20,000 per bus to about $18,000 per bus. This cost reduction in the latest version is made possible by a decrease in the overall weight of the casted aluminum structure from 37.5 pounds to 25 pounds, which thus reduces the cost of the main casted part proportionately.

Juan Jiménez Receives Grant to Study the Healing Role Played by Implanted Stents

Juan Jiménez, has been awarded a grant by Stryker Neurovascular to study how different properties of stents play a role in healing after stents are used clinically to treat intracranial atherosclerotic lesions. In the case of intracranial atherosclerotic disease, stents help keep arteries open, increase blood flow through the arteries, and reduce the chance of a stroke. “Unfortunately,” explains Jiménez, “stents harm the vessel during deployment, and healing can be affected by the design of the stent. The Jiménez group will be studying different stent properties that may affect healing.” As Jiménez observes about these laboratory experiments, “They are a necessary first step to elucidate which stent variables delay or inhibit healing after deployment.”
ELEVATE Fellow Ogechi Vivian Nwadiaru Examines Collaborative Investments in Energy Storage

Ogechi Vivian Nwadiaru, a PhD student in industrial engineering and operations research in Erin Baker’s E3Lab and a fellow in the Elevating Equity Values in the Transition of the Energy System (ELEVATE) program, hopes to play a substantial role in shaping this new global renewable energy system for the better. As part of her ELEVATE work, Nwadiaru is currently on an interdisciplinary research team studying Holyoke's energy transition process and the community’s perception of an equitable transition. The team's aim is to understand the energy values and assess the potential for collective investments in energy storage in Holyoke, Massachusetts. The research explores how community members might optimize energy use in ways that minimize upfront individual investment costs.

“If we each have to invest individually in batteries, the initial cost is usually fairly high, affordability and access becomes an issue for low-income communities. They might be deterred by the financial requirements and miss out on some benefits of the energy transition,” Nwadiaru explains. “But if we don’t necessarily need these batteries at the same time, my question is how can we maximize our benefits from a jointly owned system?” The team, which includes engineering, economics and anthropology researchers, is working closely with community members and stakeholders to ensure the researchers understand the values, concerns, and interests of the community —such as an emphasis on resilience or reliability of the energy source. Nwadiaru believes that having engineers participate in this type of participatory research is essential to ensure that engineering designs are people centered and meet the needs of target communities.

ALUMNI NEWS

Carl Christenson and Thomas Sebastian selected for Outstanding Alumni Awards

The MIE department selected Christenson to receive the Distinguished Alumni Award, rewarding visionary leaders in their fields. Recipients of this honor have reached exceptional levels of professional and personal achievement. This award recognizes distinguished leadership, service, teaching, innovation, and other exemplary accomplishments that positively impact society and the engineering profession.

Sebastian was named by the MIE department to receive its Outstanding Young Alumni Award, given to emerging leaders in the early stages of their careers. Recipients of this honor are generally no more than 10 years out from receiving their UMass Engineering PhD or generally no more than 15 years out from receiving their UMass engineering BS degree. This award recognizes outstanding professional and personal achievements and highlights each recipient's ambitions and potential to positively impact UMass, the Commonwealth, the nation, and the world.

Sebastian is a senior technical staff member of the Structural and Thermal-Fluids Engineering Group at MIT Lincoln Laboratory (MIT/LL), where he leads technical initiatives and early-stage development of novel technologies and concepts ranging from particle concentration and assay to high-energy laser system optics thermal management to re-entry/hypersonic phenomenology.
Graduate Student Mary Sheehan Backs up Her NSF Fellowship with Engineering Esprit de Corps

Mary Chase Sheehan, a graduate student in the research laboratory of MIE Professor Govind Srimathveeravalli, doesn't take her status as a highly rated academic prospect for granted. Yes, she's a gifted researcher, a fact recently demonstrated by her attainment of a very prestigious Graduate Research Fellowship from the National Science Foundation (NSF). But, beyond that, Sheehan aims to use her research accomplishments, her teaching skills, and her enormous energy to mentor women and other underrepresented students in her field to become skilled engineers in the future.

In this context, Sheehan has been actively working to design an equitable and inclusive climate for underrepresented students in the MIE department, the College of Engineering, and beyond. As examples, she has participated in K-12 engineering outreach programs in collaboration with local schools and in the Dean's Diversion, Equity, and Inclusion (DEI) Council from the College of Engineering. Sheehan is the perfect role model for the students she seeks to uplift. She is one of three College of Engineering students who are receiving distinguished NSF Graduate Research Fellowships, which provide a stipend and educational allowance of $46,000 annually for three years.

The purpose of the NSF Graduate Research Fellowship Program is to help ensure the quality, vitality, and diversity of the scientific and engineering workforce of the United States. For her NSF project, Sheehan is pursuing a research program at the intersection of computational modeling, medical devices, and women's health by creating a more precise technique for cancer biopsy. Sheehan's long-term goal is to advance the survival and well-being of cancer patients by creating technologies that improve the precision and accuracy of disease diagnosis. In so doing, she is developing the concept of a pioneering tumor biopsy technology that she characterizes as “needle-based volumetric tumor profiling” by building mathematical models and the accompanying methodology for a more thorough, revealing, and accurate form of biopsy than is currently available.

Meanwhile, Sheehan has also pursuing her passionate personal agenda of helping other women follow in her career path. Accordingly, she has been accepted into the College of Engineering’s Residential Academic Program with a teaching fellowship and will use this venue to build and teach a course on medical devices for women's health application, using that as a platform to recruit and foster effective allies for women engineers.

That course follows hot on the heels of other similar pursuits. For instance, during the spring semester of 2021, Srimathveeravalli and Sheehan organized, designed, and delivered a short course, coordinated by the DEI, to expose students from the Springfield Conservatory of the Arts to science, technology, engineering, and mathematics.

Sheehan says she aspires to become an engineering academic, university researcher, and mentor for underrepresented students. As such, her esteemed NSF fellowship, her zealous teaching activities, and her sophisticated research are certainly moving her toward that lofty goal in a big hurry.
Graduate Jahinaya Parker Does a Deep Dive into the Process of Becoming an Engineer

Recently graduated MIE student Jahinaya Parker has a succinct and very articulate analysis of an engineer's lot in life. As she explained in an article on her selection as a UMass Rising Researcher, “On the grand scale of things, you are the original inquirer—asking and answering questions that no one has asked before. There is so much room for originality and for you to leave your mark on science.” See Making Driving Technology Work for Humans: UMass Amherst.

As the Rising Researcher story noted, such soulful thinking about the engineering profession is nothing new for Parker. In fact, she first envisioned becoming an engineer way back in middle school. It was then that she first read a book called The Way Things Work, a 1988 nonfiction book by David Macaulay with technical text by Neil Ardley. From that point on, Parker began her long-term love affair with systems design.

Now Parker’s engineering dreams are reaching fruition, as evidenced by her selection as a UMass Rising Researcher and her contribution to four research projects and three published articles at the intersection between automobile drivers and vehicle technology. And all while she was still an undergraduate!

Parker was inspired to do this kind of research in her junior year at UMass Amherst, when she learned about the human aspect of design in her Mechanical and Industrial Engineering 460 class, Human Factors Engineering. This course stimulated Parker to seek out research opportunities geared toward user design, and she later received research positions in the Human Performance Lab with Shannon Roberts, an MIE assistant professor, and in the Learning Lab with Jennifer McDermott, associate professor of psychological and brain sciences.

As Roberts, who serves as Parker’s academic advisor and research supervisor, said about Parker in the Rising Researcher story, “Jahinaya has shown herself to be an incredibly thoughtful, thorough, engaged, and persistent undergraduate researcher.” Roberts also stressed how extraordinary it is that Parker already has three publications under her belt—two of which have her listed as first author.

Chasing her engineering ambitions, Parker began working in the summer of 2021 on two studies examining how drivers adjust to automation over time. One involved adults with attention deficit hyperactivity disorder in which Parker reviewed previously collected data and prepared a literature review. The second project was a study focused on new teen drivers in which Parker administered a series of computerized tasks to participants in the automobile driving simulator of the Human Performance Lab.

In the spring 2022, Parker got involved in yet another research project, a driving-simulator study examining the efficacy, trust, and acceptance of drivers involved in the interface between humans and machines.

All that research led to three journal publications for Parker, who plans to put all this valuable experience to work while pursuing her Ph.D. at the University of Wisconsin–Madison and conducting research to develop an adaptive user interface for vehicles with varying levels of automation.

As Parker summed up her career path as an engineer for the Rising Researcher story, “Without the immersive hands-on research experience I’ve had at UMass, I wouldn’t be curious about these topics or on my way to graduate school. This experience has changed my life for the better.”
UPow3r Undergraduate Team Creates Wearable Vest to Passively Create Electricity

What if you could create a wearable vest that uses the human body's natural heat loss in cold temperatures to passively generate electricity? UPow3r, a team of four mechanical engineering undergraduate students, did just that for their senior capstone design project. The team of Mischa deRuijter, Gabe Nadelstein, Tom Mazeika, and Cameron Greiner, also took second place in the Berthiaume Center for Entrepreneurship's Minute Pitch event for their work.

The team's project is a proof of concept wearable thermoelectric generator vest that utilizes thermoelectric generators (TEGs). TEGs collect energy from the body via the Seebeck effect, which uses the heat of human body temperature versus the ambient cold air outside to passively produce electricity from that simple temperature difference.

In December, the team presented their project during the Mechanical and Industrial Engineering Senior Capstone Design Event, where they took third place. Though the work of the capstone design course is complete, they hope to continue to work on the project, eventually patenting it. They also have further plans to expand the potential of the energy creation of the vest by coupling it with battery storage and are looking for sponsors within the UMass Amherst campus or industry to partner with as they continue the work.

MIE's SequesChar Team Wins second-place at Innovation Challenge

SequesChar, a startup venture company that proposes to transform the spent grains used by brewers into biochar for carbon capture, soil amendment, and renewable energy, has won the second-place, prize at the finals of the recent UMass Amherst Berthiaume Center for Entrepreneurship Innovation Challenge. Ethan Gorman, Megan Anderson, Lincoln Wiggan, Jack Sunko, Conor McGovern, and Joe Manchester make up the SequesChar team. “We all may be familiar with beer, but maybe we don’t realize the environmental impact,” Gorman said during his Tech Challenge pitch earlier this college year. “Producing just one six-pack of beer is equivalent to charging your phone 158 times or burning 1.4 pounds of coal.”

The SequesChar device uses a thermochemical treatment known as pyrolysis to shift 50 percent of the carbon in the biomass by transforming it into biochar. Biochar can then be safely stored underground for later use, where it “is a great soil amendment, helping to retain nutrients and water,” Gorman said.

Engineering Undergrads Tackle IALS Core Labs Summer Internships

Biomedical Engineering major Ben Arms ’23 and Mechanical Engineering majors Kadri Williams ’23 and Devin Dixon ’23 have each super-sized their future this summer by working in the Core Summer Internship Program, a paid 10-week internship through the UMass Institute for Applied Life Sciences (IALS), which offers students hands-on research experience as well as valuable soft-skills training and networking opportunities.
Mechanical Engineering Student Jabin Chen's Internships Provide Foundation for his Future

While all engineering students are encouraged to take on internships and co-op opportunities during their time at UMass in order to gain hands-on experience and explore a variety of career options, Chen chose the extreme sports version of this advice. Now a senior, Chen is currently completing his 7th internship, with an 8th at Amazon Robotics lined up for the summer. Chen's experiences include internships with Milara, Inc., Nanoramic Laboratories, Raytheon Missiles & Defense, Tesla, Rivian, and more. Perhaps the only thing Chen does more passionately than engage in these opportunities is advocate for them, sharing his experiences as inspiration to others.

On social media and in the Career Center, Chen often sees the pressure many students feel about landing internships and co-op opportunities, especially at big name companies, as well as the disappointment when they don't land them. Chen's advice? Start small and don't be afraid of rejection.

In the fall of 2021, Chen moved to California to work for Tesla, and then traveled to Central Illinois to work for Rivian, which had always been a dream of Chen's. To round out the year, Chen will work for Amazon Robotics in Boston over the summer before returning to UMass for his final year of coursework. “With hard work and optimism in the face of what felt like insurmountable rejection from different companies, I’ve managed to define my way to a successful foundation for my future,” Chen says. “I hope my story bolsters confidence in my peers both within and outside of the major, as I know finding a job and professional experience in general is very difficult. My goal is to inspire them and help them realize that their goals are very much attainable and within arm’s reach.”

Chen will return to campus next fall, and while the internships and co-op experiences have extended his time toward graduation, Chen has no regrets. He is excited to take on his senior year with a clearer focus and understanding of his interests, which would not have been possible without his experiential experiences.

Sarah Widrow Wins Transportation Scholarship

Sarah Widrow, a senior industrial engineering major, recently received a prestigious WTS (Women in Transportation Society) Foundation scholarship from the WTS-Boston chapter. The Sharon D. Banks Memorial/Jacquelyn R. Smith Memorial Scholarship is awarded to women pursuing undergraduate studies in transportation or a related field and honors Sharon D. Banks, general manager of Alameda-Contra Costa Transit District in Oakland, California, during most of the 1990s. Widrow has worked on transportation safety in various projects related to advanced vehicle technologies. In one transportation safety project she was instrumental in recruiting, data collection, preparing the data for analyses, and manuscript preparation. In a second, she was involved in critical tasks examining the role of drivers’ understanding of advanced driver-assistance systems in modern vehicles and their impact on safety from a human factors perspective. In addition, as the WTS-Boston scholarship announcement said, Widrow has served as a mentor for the Society of Women Engineers chapter in her school, she spent time on outreach days with Girl Scouts and high schoolers in her local area, and she is now actively involved with the Institute of Industrial and Systems Engineering as the recruiting chair and president. The WTS-Boston announcement concluded that “Sarah is looking forward to learning more about designing multi-model public transit systems with a focus on equity and sustainability.” WTS is a society for women in transportation with a mission to “…attract, sustain, connect, and advance women’s careers to strengthen the transportation industry” and a vision of “equity and access for women in transportation.”
2022 Annual Steve Malkin Lecture

As the fundamental building blocks of Industry 4.0, sensing and artificial intelligence play a critical role in advancing the science base for manufacturing. The ability in acquiring data in-situ and extracting clues from the data to guide the action of assistive infrastructure such as robots is essential to enhancing process control and production planning. This lecture series pays tribute to the late Distinguished Professor Stephen Malkin, who has inspired this year’s speaker, Dr. Robert Gao, Cady Staley Professor and Chair of the Department of Mechanical and Industrial Engineering at Case Western Reserve University to pursue a career in manufacturing. It highlights research that has led to the design, modeling, and experimental evaluation of novel sensors for manufacturing process monitoring.


The university’s Energy Transition Institute (ETI), Directed by Erin Baker received $995,000 to bolster three of its main objectives: to support community-engaged research to develop an equitable energy transition framework in Massachusetts’ gateway cities; to fund graduate and post-graduate energy transition research fellowships; and to support research and development of innovative low-cost methods for moving electricity distribution lines and broadband cables underground.

Prof. Krista Harper (Anthro); Paola Furlanetto (MIE); Ogechi Vivian Nwadiaru (MIE); Markey; McGovern; April Burrage (Econ); Emma Grazier (Resource Econ); Pedro Matos Llavona (Geo); Prof. Erin Baker (MIE).
MIE Graduate students, faculty, staff, and family members gathered in May at the 2022 MIE Picnic to celebrate our graduates.
SENIOR CAPSTONE DESIGN PROJECT SPRING 2022

SENIOR CAPSTONE DESIGN PROJECT FALL 2021
Warm Welcomes and Fond Farewells

Muge Capan joined us this Fall as an assistant professor. She received her Ph.D. in Industrial and Systems Engineering at North Carolina State University with a minor in Operations Research. Her research focuses on data science, statistical analysis, and decision modeling in health care to develop smart and connected clinical decision support systems. Examples include development and evaluation of stochastic models to identify optimal treatment policies, utilizing clinicians' perceptions in clinical risk display decisions, and evaluating rapid response interventions using quantitative risk scoring systems enhanced by nursing insights. She has authored 30 peer-reviewed publications in leading healthcare management science, health informatics, and medical journals. We are excited to have her join the department!

Gina Olson joined us as a part-time lecturer in July and as an assistant professor this Fall. She earned her doctorate in Robotics and Mechanical Engineering at Oregon State University, where she was advised by Dr. Yiğit Mengüç and Prof. Julie A. Adams. She previously worked as a Technical Lead Engineer at Meggitt Polymers and Composites, where she developed fire seals for aircraft engines. Assistant Professor Olson's current research interests are the soft and compliant structures within soft robots. Examples include the development and analysis of soft robotic structures, with a particular focus on the mechanics of soft arms. How structure and mechanics affect concepts critical to robotics, such as workspace size, applied force, control and planning. We are excited to have her join the department!

Kourosh Danai Retires After Brilliant 35-year Career

Everyone in the MIE department will deeply miss Professor Kourosh Danai as he retires following a highly productive career at UMass Amherst, beginning in 1987. Beyond being named a fellow of the American Society of Mechanical Engineers, Danai has devised the pattern classifying fault diagnostic method called “Multi-valued Influence Matrix” and the “Structure-based Connectionist Network” for fault diagnosis of helicopter gearboxes. Two important products of his research in manufacturing are the methods of “Recursive Constraint Bounding” and “Virtual Search.” The most recent product of Danai’s research is the “Parameter Signature Isolation Method,” for which he received a U.S. patent. In addition to many other honors, he has received three innovation awards from NASA.

Jim Smith Retires After Long and Industrious Career

The faculty, staff, and students of the MIE department wish Professor J. MacGregor Smith a wonderful, healthy, and fulfilling retirement after many years at UMass Amherst. Smith’s retirement comes soon after the publication of Introduction to Queueing Networks and his groundbreaking Springer textbook Combinatorial, Linear, Integer, and Nonlinear Optimization Apps, which introduces the use and understanding of optimization and modeling for upper-level undergraduate students in engineering and mathematics. Smith conducts research on topological network design, facility layout and location, and stochastic network design and analysis problems. Applications of Smith’s research include the design of manufacturing plants, healthcare facilities, and many other production- and service-oriented systems.
SAVE THE DATE!!!
MIE Alumni Reunion Event
at UMass Homecoming 2022
Friday, October 28, 2022

Please join us on October 28 for lunch and an afternoon of connecting with the campus, faculty, and your fellow MIE alumni. Hear about our newest programs while touring research labs and classrooms. Attend a networking social. Meet current students, view their design projects, and explore ways to stay engaged with this next generation of engineering leaders. Mark Your calendar and let us know if we can expect you by filling out the survey below.

Let Us Know You're Coming!

Giving

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