Industrial Engineering
Newsletter Fall 2022

ENGINEERED FOR WHAT'S NEXT.



Cullen College of Engineering
UNIVERSITY OF HOUSTON

Letter from the Chair



Dear Colleagues,

Greetings and I hope that the fall semester has treated you well so far! I am proud to share some of the highlights and exciting accomplishments we have accomplished over the last six months. We had a record high graduate enrollment, recruited high-caliber faculty, significantly enhanced two new programs (B.S. degree in Systems Engineering and Master's degree in Engineering Management), graduated well-trained students to secure high-paying jobs upon graduation, connected with outstanding alumni, established new scholarships, and improved graduate program rankings. I encourage you to reach out and visit our department when able, we are always seeking new and exciting partnerships.

Warm Regards,

Gino J. Lim, Ph.D.

R. Larry and Gerlene (Gerri) R. Snider Endowed Chair in Industrial Engineering Cullen College of Engineering University of Houston

UH IE BY THE NUMBERS





33 B.S. 60 M.S.





University of Houston | Cullen College of Engineering INDUSTRIAL ENGINEERING

DEPARTMENT HIGHLIGHTS

NSF CAREER AWARD WINNER

JOINS UH IE DEPARTMENT FOR 2022–23 ACADEMIC YEAR

When given the opportunity to join the faculty of the Industrial Engineering Department at the Cullen College of Engineering, Yisha Xiang pointed to the facilities and the proximity to major industries as significant factors for her decision.

Xiang joins the Cullen College of Engineering as an Associate Professor for the Fall 2022 semester. Prior to joining UHIE, she was E. L. Derr Assistant Professor of Industrial, Manufacturing and Systems Engineering at Texas Tech University. She had also taught at Lamar University and internationally. Xiang earned her doctorate and M.S. from the University of Arkansas in 2009 and 2006, respectively, and her B.S. from the Nanjing University of Aeronautics & Astronautics in China.

Xiang's research was selected for an NSF CAREER award in April 2020, while she was at Texas Tech. The funding supports early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. The grant, "Enhancing Environmental and Economic Sustainability of Additive Manufacturing-based Remanufacturing," is for \$508,805 and runs through an estimated end date of August 2025.

Xiang said the research aims to enhance the environmental and economic sustainability of "additive manufacturing-based remanufacturing." Broadly, remanufacturing is the rebuilding of a product to the specs of the original manufactured product using a combination of reused, repaired and new parts.





EARN YOUR MASTER'S IN

ENGINEERING MANAGEMENT

AND BRIDGE

THE GAP BETWEEN

ENGINEERING & OPERATIONS



UH IE CLIMBS IN LATEST

U.S. NEWS & WORLD REPORT RANKINGS

The graduate level programs in Industrial Engineering at the University of Houston's Cullen College of Engineering improved significantly, according to the latest rankings edition of *U.S. News* & World Report.

Industrial Engineering improved from the nation's No. 54 ranked department to No. 42 ranked.

One of the department's noted newer offerings is its fully online master's of Engineering Management. The program is designed for students seeking fully online degree and certificate programs that are both convenient and affordable. Students can currently take an online 30-credit hour Master's in Engineering Management starting as of this fall.

EXTENDING BATTERY LIFE OF SMALL DRONES TO

STRENGTHEN BORDER SECURITY

To enhance security of the nation's border, a pioneer in drone technology at the University of Houston is proposing a continuous flight of small drones over its perimeter. One small problem: The battery limitation of small drones (they last about 30 minutes) is a major obstacle to continuous flight time.

To address this problem, **Gino Lim**, R. Larry and Gerlene (Gerri) R. Snider Endowed Chair of Industrial Engineering, proposes the use of drones with a built-in wireless electrification line (E-line) battery charging system. Lim pioneered that technology in 2017.

"Smart border patrol using small-size drones may provide significant help in patrolling areas inaccessible to patrol agents, reduce agent response time, and increase the safety of patrol agents working in dangerous regions. To strengthen border security and reduce the need for patrolling via human agents, we propose the use of drones coupled with the use of E-lines for continuous border surveillance," Lim reports in the journal Computers & Industrial Engineering. The paper's

first author is **Navid Ahmadian**, a former doctoral student in Lim's lab.

The E-line system charges the drones during their surveillance, enables a continuous and seamless flight over the border and eliminates the need for battery charging stations. Continuous monitoring sends live information about different locations of the borderline to the designated control centers, helping enhance border security and reducing the necessity of systems operated by people.

In developing their model, the team reviewed a case study of a segment of the U.S.-Mexico borderline spanning 22.8 miles and located between two border crossings within the Cochise County limits in Arizona. Although drones have been the subject of many studies, few studies have focused on the implementation of the drone for continuous border surveillance. In previous work Lim provided a template for drone routes targeting chronic patients in rural areas to assist in medicine delivery via drone.





IE'S KEEDY RECOGNIZED

FOR TEACHING EXCELLENCE

Now that **Elias Keedy** is a lecturer for the Industrial Engineering Department at the Cullen College of Engineering, he keeps one thing at the forefront of his mind when teaching classes.

"I constantly ask myself, 'If I were still a student, what would I want to get from my education?' The answer to this key question encourages me to look for more pedagogical elements to help my classes' contents fulfill our students' mission in education."

Keedy's relatable approach in the classroom has been recognized by the administration of the College, as he was one of four faculty members to earn a Teaching Excellence Award this year. Keedy earned his doctorate in Industrial Engineering from UH in 2013, after earning his master's degree in Industrial Engineering 2010. He also earned a master's degree in Electrical Engineering in 2008 and a B.S. in Electrical and Electronics Engineering in 2006, both from the University of Balamand in Lebanon.

"I am humbled to receive this award from the department in which I was once a student," he said of the honor. "Peerto-peer interaction as well as real-word case applications have been a priority in my approach to enable the IE Department's mission of helping students gain knowledge and skills to contribute to our society."

Keedy has been a lecturer for the Cullen College of Engineering since Fall 2014. He also served as a lecturer for the University of Houston-Downtown for about seven years, and still works there as an MBA professor, a role he has held for more than four years.

Keedy is currently the Operations Manager of the HCL plant at Covestro Industrial Site in Baytown (formerly known as Bayer MaterialScience). He started his career at Bayer in 2011 as a I&E trainer, took the role of Unit Engineer, and then I&E Reliability & Functional Safety site lead.

FACULTY ACCOLADES

IE'S WANG PROMOTED TO

INSTRUCTIONAL ASSOCIATE PROFESSOR

For **Yaping Wang**, a newly promoted Instructional Associate Professor in the Industrial Engineering Department at the Cullen College of Engineering, the fulfillment she received from teaching became apparent as she was finishing her own studies.

"Teaching as a Ph.D. student at Texas A&M opened my eyes about what impact I can make as a teacher," she said. "I love Texas, and I wanted to pursue my teaching career and raise my family in this amazing state. The University of Houston was my number one choice because its Industrial Engineering program is highly ranked, and the Cullen College of Engineering and university offer great faculty development resources and support for instructional faculty. I was fortunate enough to get the Instructional Assistant Professor position before graduation. Now looking back to my six years at UH, I'm happy to say that it was one of my best decisions I made in my life."

Wang joined the university in 2016, after completing her doctorate at A&M. She is also the Director of the Industrial Engineering Undergraduate Program, a role she took on in July 2020.

Beyond her promotion this year, Wang won the Industrial Engineering Shiny Nut Award in 2017 for demonstrating the most student engagement throughout the year. In 2021, she received the Cullen College Teaching Excellence Award recognizing her outstanding teaching and service to students. Earlier this year, she was recognized by the Institute of Industrial & Systems Engineering (IISE) with an Outstanding Faculty Advisor Award in Region 5. In the classroom, Wang stresses the importance of open communication, as well as providing students multiple ways to get help.



ALUMNI SPOTLIGHT

UH IISE EARNS

GOLD CHAPTER AWARD

The University of Houston's IISE student group has earned the Gold Chapter Award for its performance during the 2021-22 academic year. The president of the student chapter for that time period was **Emilia Diaz**, a Spring 2022 Cullen College of Engineering graduate with a B.S. in Industrial engineering. **Yaping Wang**, now an Instructional Associate Professor, served as the faculty advisor for the group.

According to the IISE, Gold chapter status is achieved by holding at least four meetings per year, being in contact with members once per month, setup an officer succession plan for the group for the next year, and graduating two college-level members to IISE Young Professional status.

UH was only one of three universities in Texas to achieve this status, and among about 90 chapters globally with Gold chapter status. The chapter also achieved Gold status in 2019-20.





IE ALUM MARÍA PATRICIA ECHEVERRY LATEST MEMBER OF INDUSTRY ADVISORY BOARD



In a way, **María Patricia Echeverry** serving on the Industrial Engineering Department's Industry Advisory Board is a "full circle" moment for the UH graduate – from an undergrad collaborating with the college, to

Master's student and industry professional, and now, an expert lending her expertise back to the school.

Echeverry earned her B.S. in Industrial Engineering from Universidad Javeriana in Colombia. While there, she learned about the links between that college and Cullen, and it made her interested in attending when she found herself in the metro area.

Echeverry earned her Master's in 2004, and soon joined Cadeco Industries – the sister company of Gulf Coast Distillers – as a production manager in October 2004. She was promoted to general manager in 2007, serving in that role for more than seven years.

In 2014, Echeverry was deeply involved in the process of creating Gulf Coast Distillers from its inception. After working as GM for

Gulf Coast Distillers for a couple of years, Echeverry became the Vice President of Operations for the group of companies in 2016, overseeing the coffee, distillery and sugar operations. Her total tenure with the group is now more than 18 years.

This isn't the first time that Echeverry has provided her time and expertise to the college either. For three semesters in 2013 and 2014, she served as an Adjunct Faculty Instructor at the College of Technology, teaching courses focused on Quality Improvement Methods and Lean Six Sigma.

"When Dr. **Gino Lim** [R. Larry and Gerlene R. Snider Endowed Chairman of IE] invited me to be part of the Advisory Board, it was an honor, and I love the opportunity of being able to strengthen my link to the IE Department, and to give back to the university and learn from my colleagues," she said, oting that her range of experiences in the work force allow her to bring vital skills to the IAB.



LOCATION, OPPORTUNITY

ALLOW IE GRAD LUO TO THRIVE

For **David Luo**, it was the combination of location, finances and a faster-paced curriculum that challenged him, which drew him to the University of Houston's Cullen College of Engineering.

Since graduating with his master's degree in December 2019, Luo has worked as a Healthcare Systems Engineer focusing on Human Factors for the University of Texas M.D. Anderson Cancer Center. Earning both his B.S. and master's degree from the Industrial Engineering program at Cullen, Luo knew of UH after growing up in the area. Among other duties at M.D. Anderson, Luo's job involves designing and implementing the institution's Tiered Readiness Briefings to ensure the timely resolution of safety concerns, and automating their Covid-19 screening algorithm to reduce errors. Asked to describe his role, Luo said he specializes in the "human factors" of the hospital environment.

"Dr. **Gino Lim** believed that I had what it takes to be a successful engineer. Dr. **Randal Sitton** introduced me to the world of Industrial Engineering in Health Care, and Drs. **Ali Kamrani** and **Yaping Wang**, my two undergraduate advisors, helped facilitate my goal of graduating with my bachelor's and master's degrees in four years."

The University of Houston Cullen College of Engineering

The University of Houston Cullen College of Engineering addresses key challenges in energy, healthcare, infrastructure and the environment by conducting cutting-edge research and graduating hundreds of world-class engineers each year. With research expenditures topping \$40 million and increasing each year, we continue to follow our tradition of excellence in spearheading research that has a real, direct impact in the Houston region and beyond.





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