OPTIMUM

ENGINEERED FOR
WHAT'S NEXT.

Cullen College of Engineering
UNIVERSITY OF **HOUSTON**

Letter from the Chair

Dear Colleagues,

Greetings and I hope that the spring semester has treated you well! I am proud to share some of the highlights and exciting accomplishments we have accomplished over the last six months. We recruited high-caliber faculty, significantly enhanced two new programs (B.S. degree in Systems Engineering and Master's degree in Engineering Management) and connected with outstanding alumni. 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**

ENROLLMENT
(FALL 2023)

128 UNDERGRADUATE STUDENTS

213 GRADUATE STUDENTS

DEGREES AWARDED
(FY 2023)

38 B.S.

130 M.S.

4 PH.D.

UH IE GRADUATE PROGRAM RANKED IN TOP 50 BY U.S. NEWS & WOLRD REPORT

INDUSTRIAL ENGINEERING

The Industrial Engineering graduate program at the University of Houston's Cullen College of Engineering was named a top 50 program in the latest annual rankings edition of U.S. News & World Report.

Overall, the Cullen College of Engineering was rated as the No. 69 graduate school in the nation. As of Fall 2022, the Cullen College of Engineering had about 3,266 undergraduate students enrolled, as well as 1,044 students pursuing Masters' degrees, and 558 doctoral students. The College awarded 569 undergraduate degrees, 212 Master's degrees and 101 doctorates in FY 2022. ✿

Pictured: Gino Lim

UH IE CHAIRMAN PART OF **$3 MILLION NSF RESEARCH STUDY ON THE IMPACT OF DIGITAL PLATFORMS**

Gino J. Lim, professor and R. Larry and Gerlene (Gerri) R. Snider Endowed Chairman of the Industrial Engineering Department at the Cullen College of Engineering, is part of a prestigious research study funded by a $3 million grant from the National Science foundation that will develop a national research traineeship program called " Platforms for Exchange and Allocation of Resources (PEAR), which will study the impact of digital platforms on society.

Another facet of the grant is its focus on supporting underrepresented researchers and institutions. As such, the award will also enable Northeastern to partner with Hampton University, an HBCU, and the University of Houston, a Hispanic-Serving Institution, to support student trainees across all three universities, and develop an engineering graduate degree program at the latter. The program administrators hope that the associated training offered at the University of Houston will produce prospective students capable of pursuing postdoctoral work in the future. ✿

NEW PROJECT FUNDED BY THE DEPARTMENT OF EDUCATION TO ESTABLISH **A DEVELOPING MODELING & SIMULATION BASED PROGRAM**

Through the collaboration between the Industrial Engineering Department and the Engineering Technology Department at the University of Houston's Cullen College of Engineering, a group of UH researchers have received a grant from U.S. Department of Education Modeling and Simulation Program to develop and extend the System Modeling and Simulation (SMS) programs at UH. The research team includes **Dr. Weihang Zhu** (PI, Professor of Mechanical Engineering Technology), **Dr. Suresh Khator** (co-PI, Professor of Industrial Engineering), **Dr. Ying Lin** (co-PI, Associate Professor of Industrial Engineering, Dr. Paige Evans (co-PI, Clinical Professor of teachHOUSTON), and **Dr. Tomika Greer** (evaluator, Assistant Professor of Human Resources Management).

Having a solid knowledge of SMS opens various career opportunities in different industries. The SMS knowledge will be shared with K-12 students in summer camps organized by the project team members through collaboration with Cullen College of Engineering, tH, and the UTeach STEM Educators Association. The proposed project will positively influence students' learning and career paths, especially those from underserved districts and underrepresented groups. ⚙

MASTER'S OF ENGINEERING MANAGEMENT
A FULLY ONLINE OFFERING

LEARN MORE AND APPLY TODAY AT:
WWW.IE.UH.EDU

Students can take an online 30-credit hour master's in Engineering Management through the University of Houston's new UH Extend initiative. UH Extend is designed for students seeking fully online degree and certificate programs that are both convenient and affordable.

Engineering Management (EM) bridges the gap between engineering and technological problem-solving abilities of engineers with administrative skills for leading the day to day operations of today's complex organizations within the current global economy. The scope of EM includes engineering principles, business functions and advanced technologies. ⚙

NSF CAREER AWARD WINNER

JOINS UH IE DEPARTMENT IN SPRING 2024

Dr. Na Zou joined the Cullen College of Engineering as an Assistant Professor for the Spring 2024 semester. Zou currently serves as an Assistant Professor in the Department of Engineering Technology and Industrial Distribution at Texas A&M University. Zou's research focuses on developing data-centric fairness frameworks.

Zou's research was selected for an NSF CAREER award in 2023. 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, "Exploring and Exploiting Data-Centric Modeling for Fairness in Machine Learning," is for $547,741 and runs through an estimated end date of April 2028.

Zou believes the outcome of this project will lead to advances in facilitating fairness in computing. This project will produce effective and efficient algorithms to explore fair data characteristics from different perspectives and enhance generalizability and trust in the machine learning field. Zou's research is expected to impact the broad utilization of machine learning algorithms in essential applications, enabling non-discrimination decision-making processes and prompting more transparent platform for future information systems.

Zou says that fair machine learning has the potential to reduce or eliminate bias from the decision-making process, avoid making unwarranted implicit associations or amplifying societal stereotypes about people. ⚙

Pictured: Na Zou

UH IE PROFESSOR FOCUSES ON
AI AND INNOVATION IN THE CLASSROOM

Nathanial Wiggins joined the Cullen College of Engineering's Industrial Engineering Department in 2021 and was recently promoted to an Instructional Assistant professor in 2023. Prior to UH, Wiggins was a distinguished professor of Engineering and Mathematics at San Jacinto College for 12 years. He earned his doctorate in Systems and Engineering Management from Texas Tech in 2020.

Wiggins' research interests are in artificial intelligence, mixed reality, and complex dynamical systems. He has interest in developing systems that scaffold knowledge from basic repetition to knowledge utilization, particularly with information management in neural networks and intelligent infrastructure. He especially enjoys student-driven research projects. Partners include industries such as oil and gas, aerospace, and defense.

Wiggins pointed to his experience at San Jacinto as a reason why he was excited to start at UH.

"The Engineering Academy at Katy attracted me because it has the connection to the community college, which I'm comfortable with, and the unique Systems Engineering program, which is exciting," he said. "I think that the opportunity to move into a teaching position with UH, with the goal of eventually becoming a Teaching Professor, is one that I just couldn't pass up." ⚙

Pictured: Nathanial Wiggins

Pictured: Yisha Xiang and graduate students.

XIANG EARNS $500K GRANT TO DEVELOP DECISION ANALYTICS **TO IMPROVE ROBOTIC COOPERATIVE 3D PRINTING PROJECT**

Yisha Xiang, an associate professor in the Industrial Engineering Department, is the PI for an NSF proposal, "Integrated Framework for Cooperative 3D Printing: Uncertainty Quantification, Decision Models, and Algorithms." The $505,789 award will cover research through 2026.

Xiang's research is focused on advancing data analytics and decision-making methods for the efficiency of the novel cooperative 3D printing (C3DP) technology. According to the project's abstract, a critical barrier to the widespread adoption of additive manufacturing (AM) technologies has been slow printing speeds, leading to excessive printing times for large parts.

C3DP utilizes a fleet of printhead-carrying mobile robots to perform printing jobs cooperatively, significantly improving scalability and reducing print time. Effective methods for operational control of these systems must consider the accuracy degradation of mobile printers, which can lead to cascading effects in product quality and production efficiency, as well as various uncertain factors in the printing process that makes scheduling for C3DP extremely challenging. ⚙

FENG, LIN WILL USE AMI GRANT FOR SUPERCONDUCTOR MANUFACTURING REFINEMENT RESEARCH

A pair of professors from the Industrial Engineering Department at the Cullen College of Engineering have received a grant from the University of Houston's Advanced Manufacturing Institute (AMI) to investigate using machine learning to improve the manufacturing of superconductors.

"Machine Learning-based Process-Structure-Property (PSP) Modeling and Monitoring for Superconductor Manufacturing" is funded for $35,000. The AMI supports the transition of lab-scale technology to fully-fledged manufactured products for the market, and addresses manufacturing challenges by creating solutions in manufacturing R&D.

Qianmei (May) Feng – a professor, Brij and Sunita Agrawal Faculty Fellow and a Graduate Program Director in the Industrial Engineering Department – is the co- PI for the project.

Ying Lin, the lead PI an associate professor in the Industrial Engineering Department. Lin is also the director of the Smart Health & Intelligent Engineering Systems (SHINES) Lab.

According to an abstract for the project, their research is focused improving the manufacturing process for high-temperature superconductors (HTS). The research was started earlier this year, and will continue through the end of the year. The grant continues earlier research that the pair also received AMI funding for. ⚙

Pictured: L: Qianmei (May) Feng, R: Ying Lin

INDUSTRIAL ENGINEERING MAJORS
TOP 10 HIGHEST PAYING SALARIES

*LEARN MORE AND APPLY TODAY AT:*
WWW.IE.UH.EDU

The Industrial Engineering Profession has been recognized for having one of the top returns on investment from its degrees according to the Payscale's college salary report.

According to Payscale's college salary report industrial engineering graduates are on average earning over $90,000 with less than 5 years experience, while graduates with 10+ years experience are earning over $190,000 in 2023.

Additionally this report also indicates that, STEM degrees continue to dominate the rankings of highest-paying majors and STEM careers continue to offer highly competitive salaries in the job market. ✿

STUDENT

ORGANIZATIONS
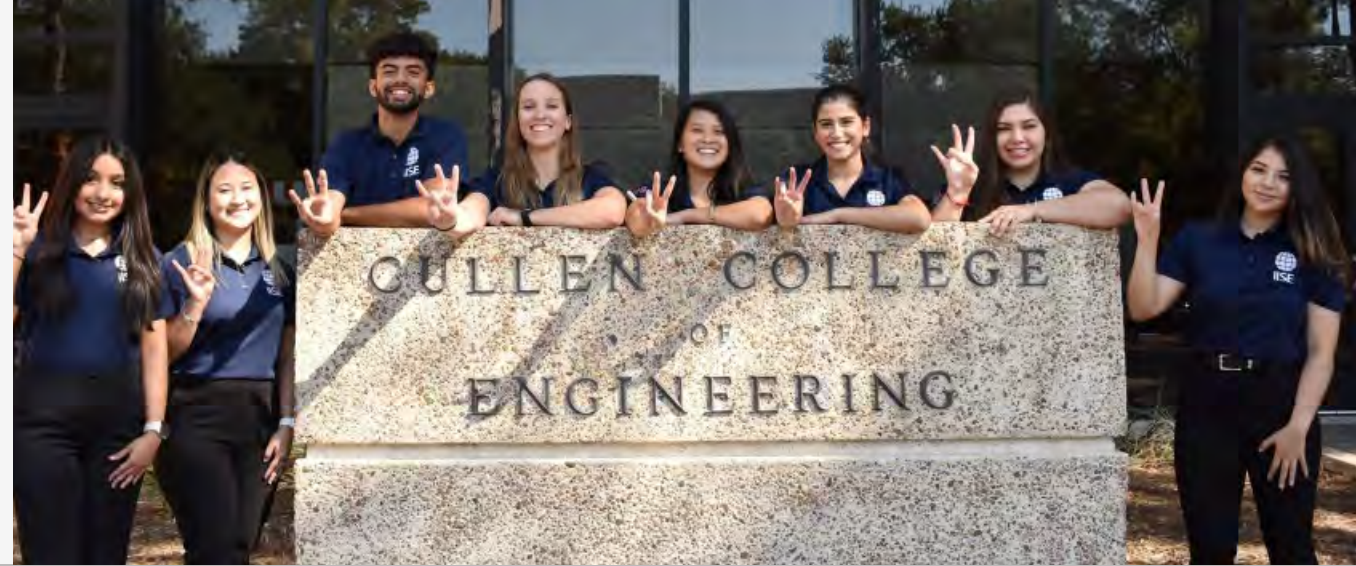
The UH Institute of Industrial and Systems Engineers has been awarded the Gold Chapter Award for the second straight year. The award is the highest honor in the IISE University Chapter Recognition Program. The president for the preceding academic year was Diane Nguyen, who is now a senior industrial engineering student at the Cullen College of Engineering. She said that when notified of the award, she was "extremely proud" of her fellow UH IISE officers that made it possible. ⚙

JORDYN SIBERT

STUDENT

SUCCESS

Jordyn Sibert, a systems engineering student in the Industrial Engineering Department at the Cullen College of Engineering, is the latest SMART scholarship recipient from the University of Houston. The scholarship will cover Sibert's tuition for the rest of her undergraduate degree pursuit, while also providing a stipend and a health allowance. Beyond financial support, the scholarship will also provide Sibert an opportunity to work directly in a government-affiliated, STEM-related field, via an internship in Summer 2024. ✿

Pictured: Viraj Lele

INDUSTRIAL ENGINEERING

IE GRAD PROVIDES A CASE STUDY FOR PERFORMANCE **IMPROVEMENTS & STANDARDIZATION THROUGH TRAINING MODELS**

Viraj Lele earned a Master of Engineering degree in 2017 from the University of Houston's Cullen College of Engineering. Combining his extensive knowledge with practical experience, Lele has become a highly valued member of DHL Supply Chain, where he takes on indispensable roles.

Drawing upon the expertise and understanding gained during his time at UH, Lele identified the root cause of associates low performances and traced it back to how their orientation and training was designed. After auditing the initial training process over several weeks he created a pathway of change. Implementation of visual aids and hands on training was a must to know if associates are really involved and comfortable in doing the work they signed up for.
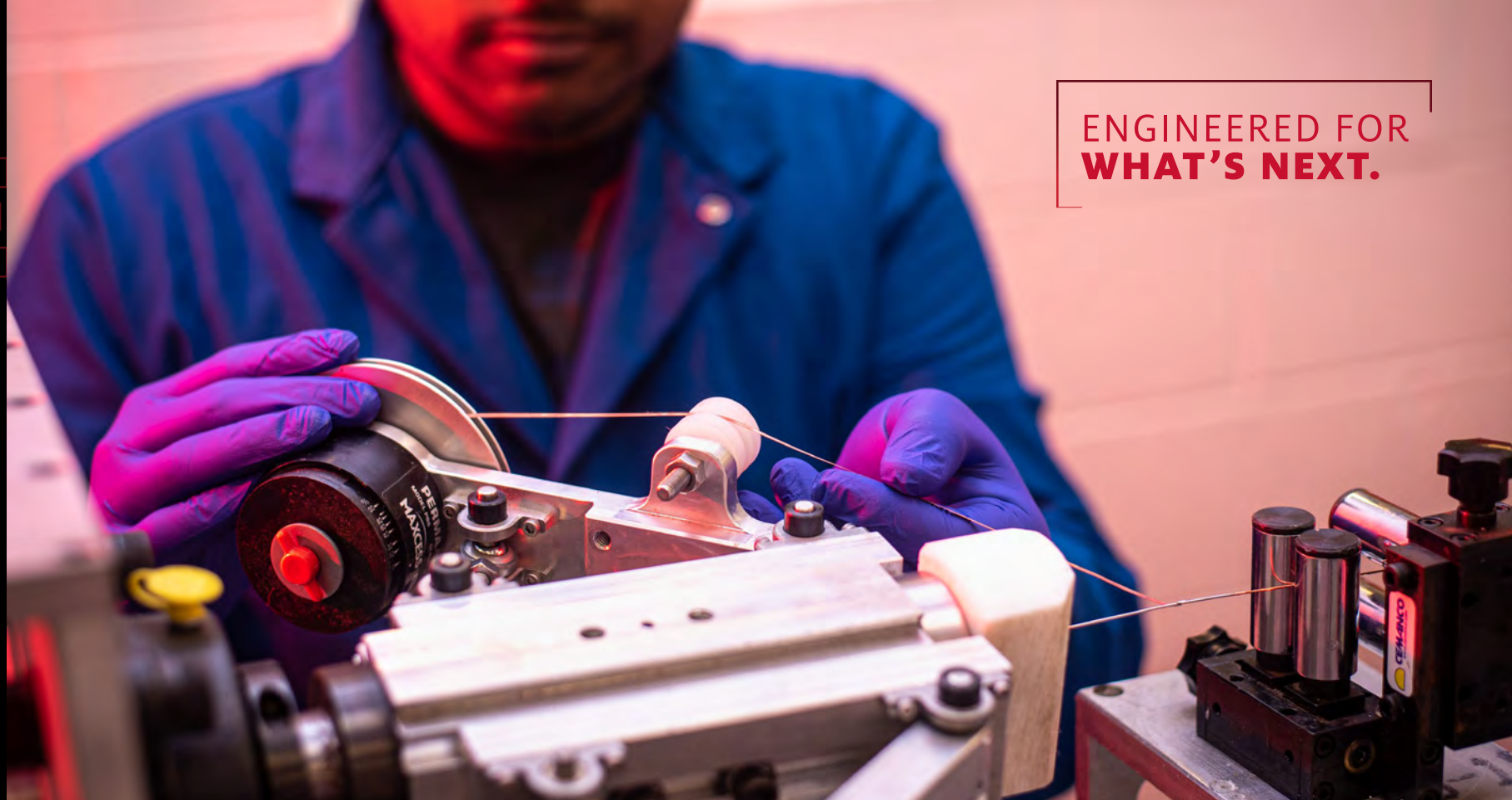
This led Lele to start working on the videos covering different operations of the facility. The purpose of these videos was to help the new associates understand the "WHY" behind each job function they will be performing and have this training stick in them.⚙

University of Houston | Cullen College of Engineering

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.

ENGINEERED FOR
WHAT'S NEXT.