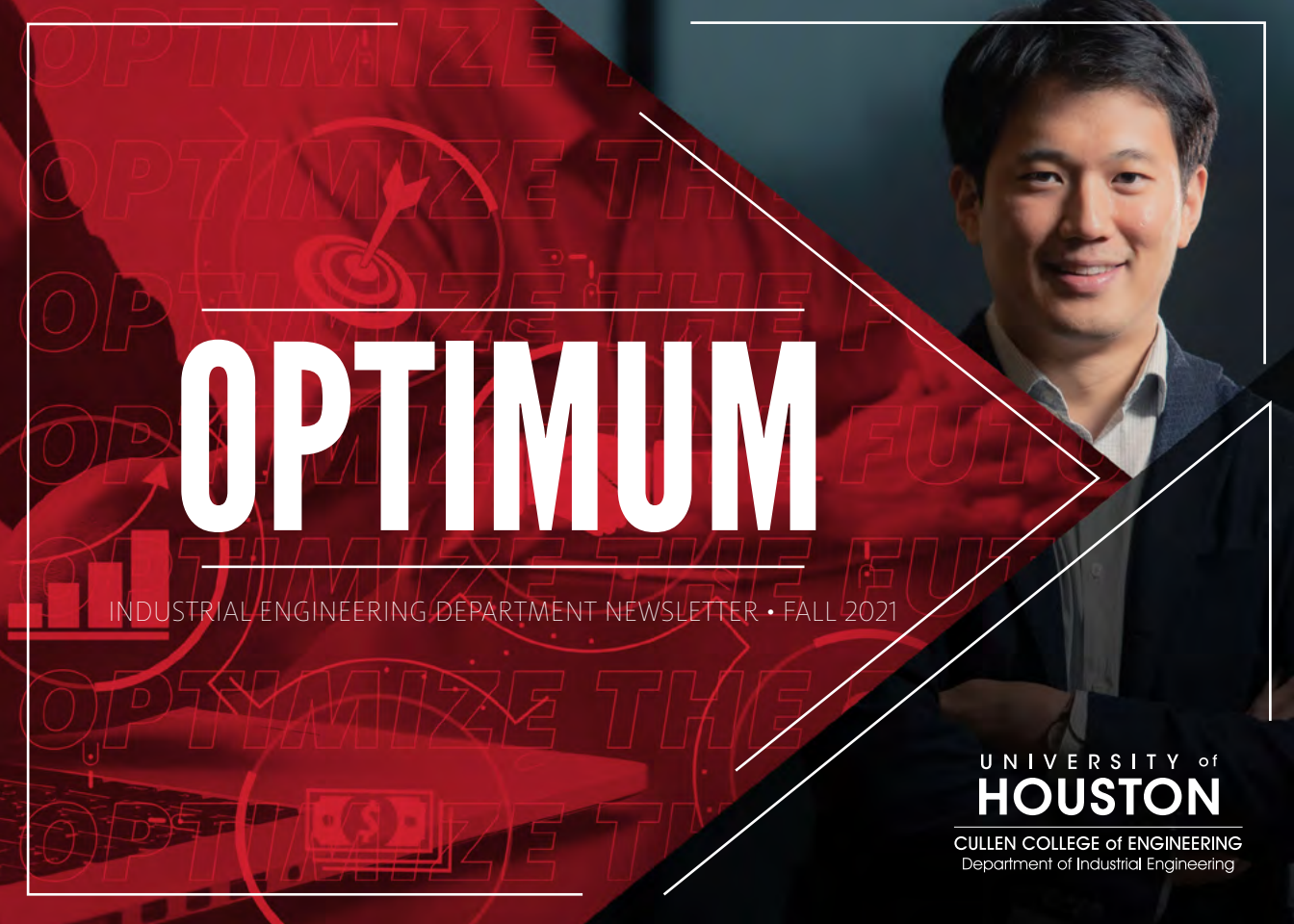


OPTIMUM

INDUSTRIAL ENGINEERING DEPARTMENT NEWSLETTER • FALL 2021

UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

Department of Industrial Engineering

Letter from the Chair

Dear Colleagues,

While we continue to closely monitor the effects of COVID-19 in the greater Houston area and beyond, we have now resumed full-in person functionality at the University of Houston campus. Despite the challenges from the last year, the University of Houston has had many successes, including record-high enrollment levels and an increase of 40% in research grants. This publication highlights some of the specific achievements of the Cullen College's industrial engineering department from the last six months. If you would like to know more about any of these projects, or wish to collaborate, I invite you to contact me directly.

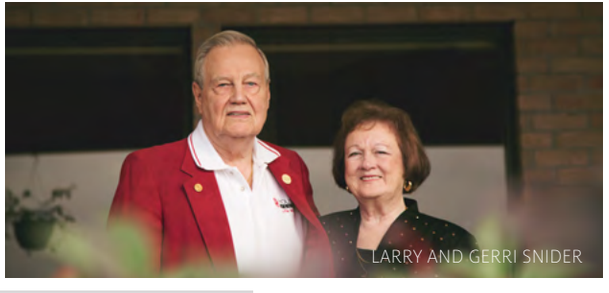
Warm Regards,

Gino J. Lim, Ph.D.
Chair, Department of Industrial Engineering
Cullen College of Engineering
University of Houston

LARRY AND GERRI SNIDER

GIFT $1M FOR FIRST INDUSTRIAL ENGINEERING ENDOWED CHAIR

University of Houston alumnus Larry Snider achieved great success throughout his career as an engineer, leading companies and optimizing systems around the world. Now enjoying retirement, the Snider legacy will live on for generations with a $1 million gift to the UH Cullen College of Engineering to establish the **R. Larry and Gerlene (Gerri) R. Snider Endowed Chair in Industrial Engineering** – the first fully funded endowed chair in the department's history.



LARRY AND GERRI SNIDER

The UH Industrial Engineering program offers excellent educational training to approximately 300 undergraduate and graduate students interested in careers that apply mathematics to improving system performance in an array of industries including health, energy, manufacturing, human factors, logistics and supply chains.

Beginning March 1, 2022, the chair of the UH Department of Industrial Engineering, currently **Gino Lim**, will be appointed and known as the R. Larry and Gerlene (Gerri) R. Snider Endowed Chair in Industrial Engineering.

Gino Lim has been the department chair since 2011, and calls industrial engineers the "most flexible" engineers on the planet because of their ability to collaborate across a wide range of sectors to find solutions. From writing algorithms to improve the efficiency of health care systems to working with municipalities to achieve faster recovery times from hurricanes and blackouts, IE professionals are problem solvers.

ABOUT LARRY AND GERRI SNIDER

Working full-time to put himself through college, in 1955 Larry earned his bachelor's degree in process engineering, a combination of industrial and chemical engineering. Gerri also worked full-time and managed their household. For decades, the Sniders have been passionate supporters of the University and steadfast proponents of hard-working students, currently funding three scholarships at Cullen College; one for Native Americans, in honor of Larry's membership in the Cherokee Nation, and two scholarships for women in honor of their daughters Melody Kathryn and Rebecca Lee.

Larry's distinguished career took him and his family to many major cities in the United States and around the world. His career began at Sheffield Steel & Kaiser Steel where he held senior engineering positions and later joined Booz Allen Hamilton as a consultant, before progressing to vice president in charge of the Production Inventory Control Division. Larry then joined Peat Marwick Mitchell as its Houston partner in charge of commercial consulting before leaving to become president/COO of Sterling Electronics. Snider worked as the president/CEO of RAPACO Energy, establishing it as an active coal mining company. Upon the sale of the company, Larry returned to his first love of consulting as managing consulting partner for Coopers Lybrand in the southwest region, the position from which he retired. Larry established RLS Professional Services LLC to continue consulting for companies he had previously served.

In 2015, the Sniders established a $4.2 million testamentary charitable gift annuity supporting the future success of the UH Cullen College of Engineering. Their latest gift enables the University to invest the funds to produce interest income while leaving the endowment's principal untouched, thus ensuring sustainable financial support. Larry served as the UH Alumni Association President from 1991-1992, received the UH Engineering Alumni Association's Distinguished Engineering Alumni Award in 1991 and the Lifetime Achievement Award in 2013. He and Gerri are also members of the Cullen College Bridgebuilder Society.

University of Houston | Cullen College of Engineering

DEPARTMENT WELCOMES WIGGINS AS **SENIOR LECTURER**

The Industrial Engineering Department at the University of Houston's Cullen College of Engineering is happy to announce that **Nathanial Wiggins**, Ph.D., has been hired as a senior lecturer.

For the past 12 years, Wiggins has been a distinguished professor of Engineering and Mathematics at San Jacinto College. He completed his doctorate in Systems and Engineering Management at Texas Tech in December 2020, after earning his M.S. in Mathematical Science from UH Clear Lake in 2009.

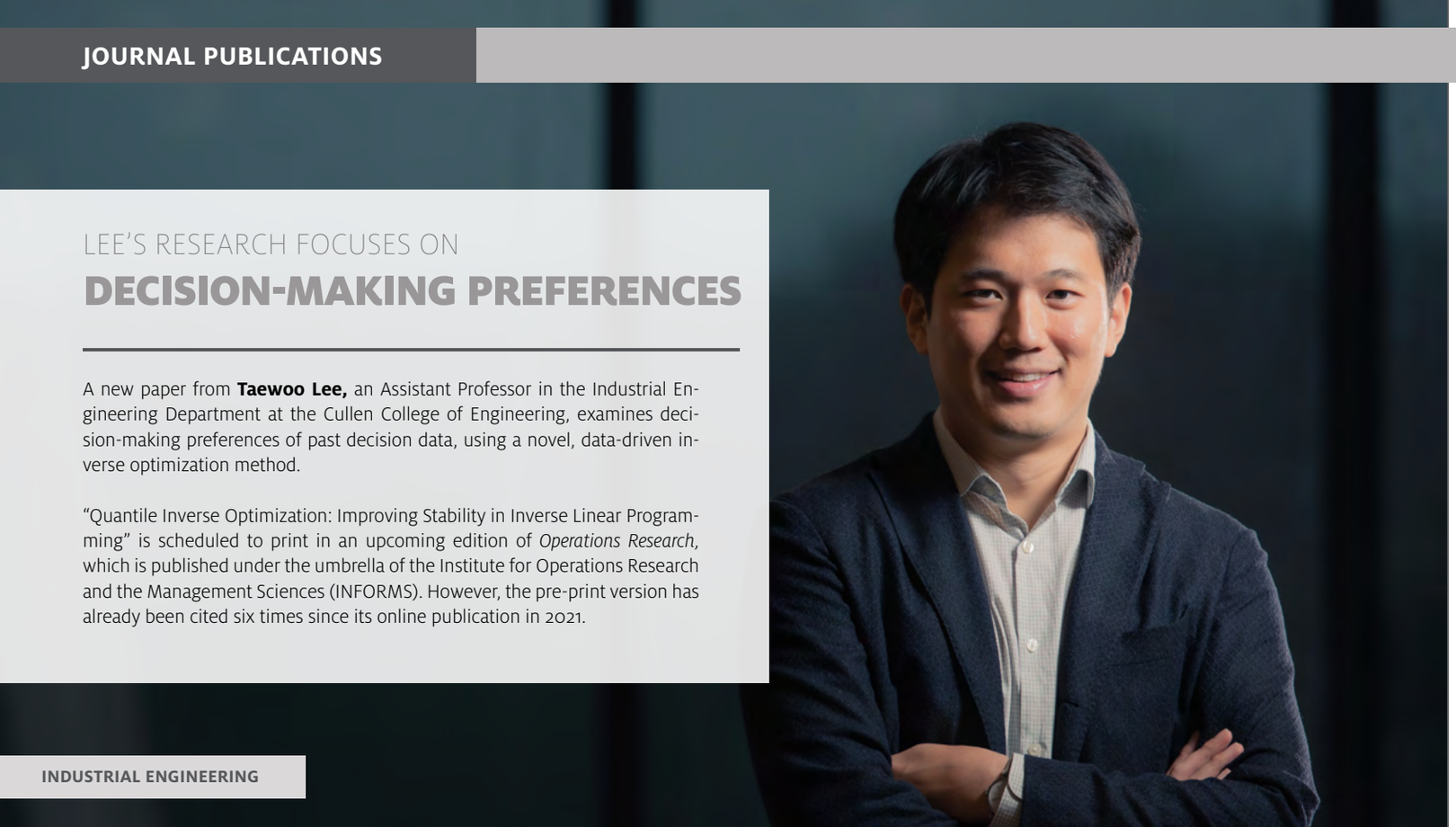
Since earning that degree, Wiggins said his goal has been to teach for UH.

"I got my M.S. from UHCL, and there was no doubt that

I would be applying for UH when I finished my Ph.D.," he said. "The Cullen College of Engineering is a top school in the region and the Industrial Engineering Department is amazing. I had actually been bugging Gino for a few years to let me teach a class."

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."



LEE'S RESEARCH FOCUSES ON

DECISION-MAKING PREFERENCES

A new paper from **Taewoo Lee,** an Assistant Professor in the Industrial Engineering Department at the Cullen College of Engineering, examines decision-making preferences of past decision data, using a novel, data-driven inverse optimization method.

"Quantile Inverse Optimization: Improving Stability in Inverse Linear Programming" is scheduled to print in an upcoming edition of *Operations Research,* which is published under the umbrella of the Institute for Operations Research and the Management Sciences (INFORMS). However, the pre-print version has already been cited six times since its online publication in 2021.

According to Lee, the paper is built on his previous research on inverse optimization and machine learning, using human decision data to infer decision models. His co-author for the paper is Zahed Shahmoradi, a recent UH doctoral graduate in Industrial Engineering, who is joining the University of Texas Health Science Center at Houston as a post-doctoral researcher.

Lee noted that with the recent advances in machine learning and artificial intelligence, and growing availability of information, there is more of an opportunity to execute decision-making via data. However, this still usually relies on a human setting parameters and deciding what criteria are and aren't important.

Lee said the challenge here is that human decisions are inherently noisy and inconsistent, which undermines the reliability of the preference-learning process. This new preference-learning method via inverse optimization accommodates any type of decision data and attempts to prune out outliers and errors. Further, this method can adapt to changes in the decision-maker's preferences over time.

TWO IE PROFESSORS HONORED AT ANNUAL

FACULTY AND STUDENT EXCELLENCE AWARDS

Two professors in the Industrial Engineering Department at the Cullen College of Engineering were honored for their performance during the 2020-21 academic year.

Yaping Wang, Ph.D., an Instructional Assistant Professor and the director of the Industrial Engineering Undergraduate Program, was honored with a Teaching Excellence Award. The award, given to seven professors at the College this year, recognizes outstanding teaching and service to students.

Wang joined the Cullen College of Engineering in 2016. She became an undergraduate advisor in 2018, and was appointed director of the IE Undergraduate Program in 2020. As director, Wang led the effort to establish a BS degree in Systems Engineering at the UH at Katy instructional site. Wang earned her doctorate in Industrial Engineering from Texas A&M. She is also a member of the Institute of Operations Research and the Management Sciences (INFORMS), and the Institute of Industrial & Systems Engineers (IISE).

Taewoo Lee, an Assistant Professor of the Industrial Engineering Department at the Cullen College of Engineering, received a Research Excellence Award. The award recognizes faculty for their outstanding research contributions. Typically, four college research awards are granted, two to non-tenured, junior faculty members, and two to senior faculty members for excellence in research.

Lee joined the Cullen College of Engineering in 2017. He earned his doctorate in Operations Research from the University of Toronto in 2015, and worked as a postdoctoral fellow at Rice University in 2015 and 2016. As of 2021, he has ten journal publications, with another five in progress or under review.

IE STUDENTS' CAPSTONE PROJECT IMPROVES EFFICIENCY AT

NASDAQ-100 COMPANY

Five students from the Industrial Engineering Department at the Cullen College of Engineering helped to improve operations by analyzing washer and dryer performance at Cintas, a NASDAQ-100 and S&P 500 company, as part of their capstone project this year.

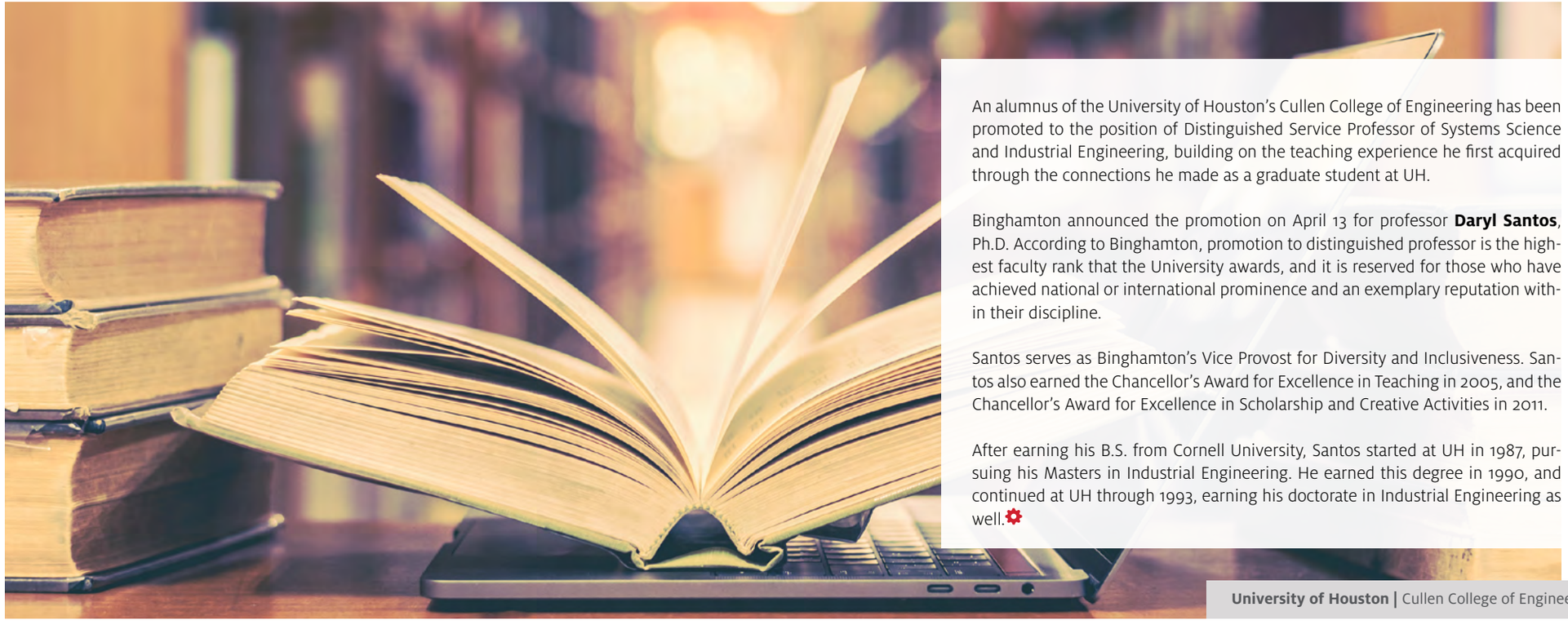
Cullen College of Engineering students – and now graduates – **Eduardo Alba von Buren**, **Kenny Kiser**, **Jobin Mathew**, **Athul Johnson** and **Loc Ngo** presented "Data Analysis of Equipment Maintenance and Dashboard Improvement" to Cintas as part of the group's capstone project. The goal of their research was to look at the workload, maintenance logs and downtime for three brands of washers and dryers used at Cintas facilities, as well as the data collection methods.

The work by the students found real performance differences between the three brands of industrial washers and dryers – as much as $170,000 in labor costs during the last 5 years, based on nine datasets of washer and dryer performance, three for each brand. The students also highlighted the need for more robust and consistent data collection.

Alba noted that the feedback they received from the professionals at Cintas that they presented to was very positive. Since then, he has also been hired into their trainee program.

ALUM SANTOS PROMOTED

TO DISTINGUISHED SERVICE PROFESSOR AT BINGHAMTON



An alumnus of the University of Houston's Cullen College of Engineering has been promoted to the position of Distinguished Service Professor of Systems Science and Industrial Engineering, building on the teaching experience he first acquired through the connections he made as a graduate student at UH.

Binghamton announced the promotion on April 13 for professor **Daryl Santos**, Ph.D. According to Binghamton, promotion to distinguished professor is the highest faculty rank that the University awards, and it is reserved for those who have achieved national or international prominence and an exemplary reputation within their discipline.

Santos serves as Binghamton's Vice Provost for Diversity and Inclusiveness. Santos also earned the Chancellor's Award for Excellence in Teaching in 2005, and the Chancellor's Award for Excellence in Scholarship and Creative Activities in 2011.

After earning his B.S. from Cornell University, Santos started at UH in 1987, pursuing his Masters in Industrial Engineering. He earned this degree in 1990, and continued at UH through 1993, earning his doctorate in Industrial Engineering as well.

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 $35 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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Research MILESTONES