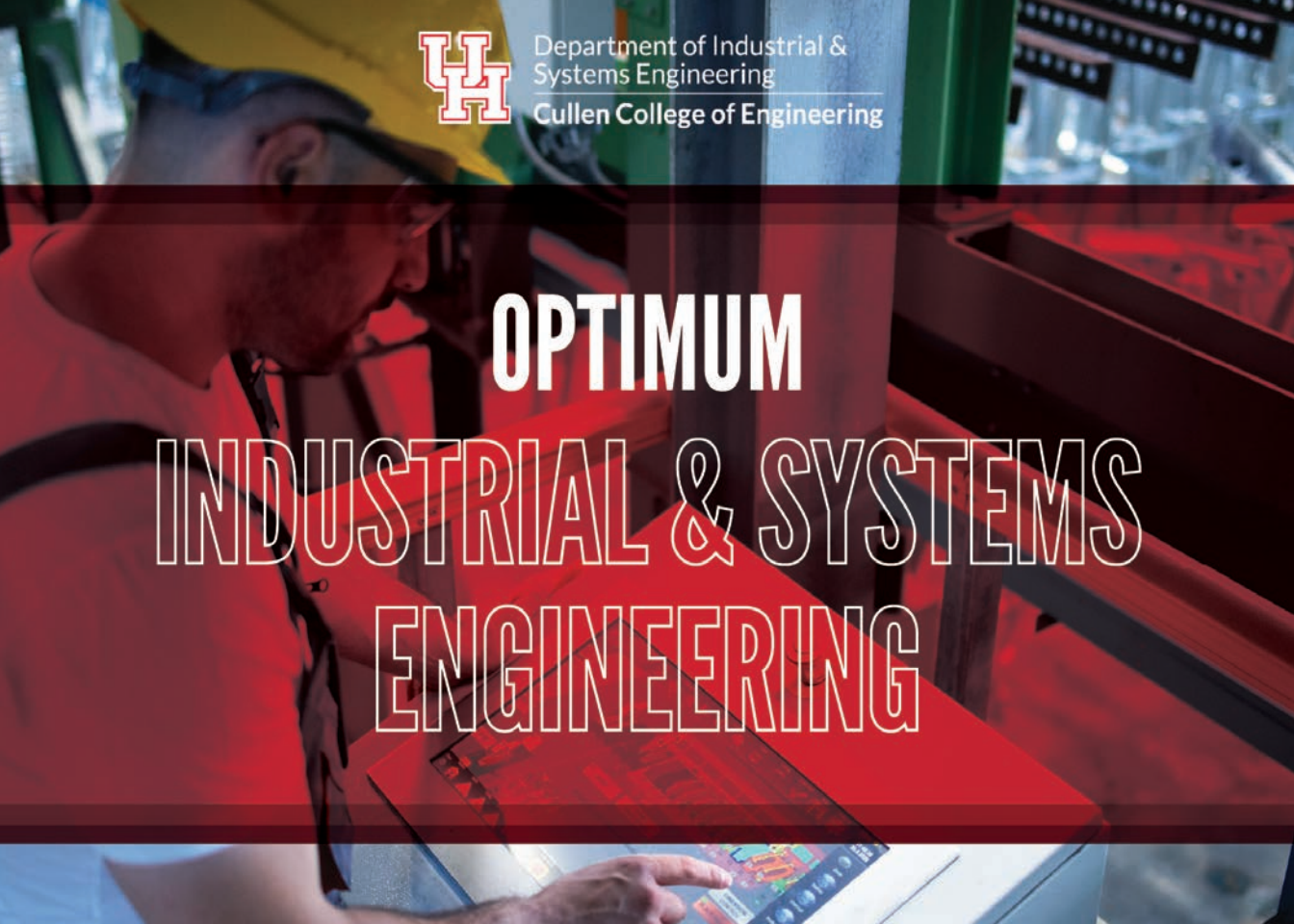


Department of Industrial & Systems Engineering
Cullen College of Engineering

OPTIMUM

INDUSTRIAL & SYSTEMS ENGINEERING

Letter from the Chair

Greetings:

It has been a year of growth for the Industrial & Systems Engineering (ISE) Department at the Cullen College of Engineering, as new program offerings and research opportunities have driven a sharp increase in student enrollment. This progress reflects the dedication of faculty, students, and staff.

Our department's growth is not just about numbers — it's about impact. We are building programs and research that address some of the most pressing challenges in engineering, healthcare, and technology, while preparing our students to lead in these areas.

The Department of Industrial & Systems Engineering has expanded to 24 full-time faculty members and more than 900 enrolled students, with plans to hire more in the coming years. Much of the surge stems from our program expansions into high-demand areas such as Supply Chain Logistics and Project Management.

Beyond enrollment, ISE's growth is marked by national recognition in competitive research. Over the past 12 months, our faculty members have secured multiple six-figure grants, including:

•**Kailai Wang** – $400,000 to assess cybersecurity at transportation agencies.

•**Yisha Xiang** – NSF grant to develop more resilient U.S. Urban Socio-Technical Systems.

•**Na Zou** – NSF grant to improve healthcare wearables with deep learning.

Faculty achievements also shined this year:

•**George Z. Tan**, Associate Professor with a joint appointment in ISE and the Fertitta Family College of Medicine, received the 2025 Manufacturing & Design Outstanding Teaching Award from IISE.

•**Lawrence Schulze**, Associate Professor, named Fellow of the American Society of Safety Professionals after more than 20 years of service.

•More than a dozen faculty, alumni, and students were recognized at the 2025 ISE Awards Banquet.

•The systems engineering program celebrated its first graduating class, including Sana Aljandali (MD Anderson Cancer Center) and Jordyn Sibert (Department of Defense SMART Scholar).

However, recruiting accomplished researchers remains a priority. In the past five years, ISE has welcomed George Z. Tan, Na Zou, and Yisha Xiang — all recipients of the prestigious NSF CAREER Award — and strengthening the department's reputation for research excellence. When we bring in faculty with proven research excellence, it accelerates everything, from our ability to secure competitive grants to providing students with unique learning opportunities. Our recent hires are already shaping the department's future.

While our department has grown significantly, the work is far from done. We will continue seeking opportunities to expand our research, strengthen our academic programs and raise our national profile. Our momentum is strong, and our commitment to excellence is even stronger.

Sincerely,

Gino Lim

Professor & Chair

R. Larry and Gerlene (Gerri) R. Snider Endowed Chair

ISE'S XIANG SERVING AS CO-PI ON $1.5M COLLABORATION WITH GEORGIA TECH

Associate Professor of Industrial and Systems Engineering **Yisha Xiang** is participating in a multi-university research team led by Xiao Liu, the David M. McKenney Family Associate Professor in the H. Milton Stewart School of Industrial and Systems Engineering at the Georgia Institute of Technology, which has been awarded a $1.5 million grant from the National Science Foundation (NSF).

The project, "AccelNet Implementation Phase 1: International Networks Towards Future Resilience of U.S. Urban Socio-Technical Systems," brings together experts across the country and around the world to tackle one of society's most pressing challenges: building resilient cities for the future.

"I'm excited to contribute my expertise in decision making under uncertainty to this project, which tackles the urgent challenges of urban resilience by accelerating the collaboration across domestic and international research networks focused on socio-technical systems. My research group at UH has developed novel decision intelligence tools that enable robust, adaptive decisions hedging against various uncertainties and vulnerabilities," said Xiang.

Principal investigator Liu is joined by co-PIs from five universities: Hiba Baroud (Vanderbilt University), Linyin Cheng and Song Yang (University of Arkansas), Jennifer Pazour (Rensselaer Polytechnic Institute), Yisha Xiang (University of Houston), and Xiang Zhou (Harvard University). Together, they are launching **Resilient-NET**, a collaborative research team and network designed to connect U.S. and international research communities focused on the resilience of urban socio-technical systems.

Yisha Xiang
Associate Professor

ISE'S WANG AND TEAM AWARDED $400K TCRP GRANT TO ADVANCE CYBERSECURITY IN PUBLIC TRANSPORTATION

Kailai Wang, assistant professor in the Department of Industrial and Systems Engineering at the University of Houston's Cullen College of Engineering, has been awarded a $400,000 grant from the Federal Transit Administration's Transit Cooperative Research Program (TCRP) to lead a transformative project, "An Assessment of Cybersecurity at Public Transportation Agencies."

Spanning 27 months through 2027, the project aims to develop a comprehensive cybersecurity assessment and response toolkit for public transit agencies. This practical resource will help agencies prevent cyberattacks, respond swiftly to incidents, and strengthen their overall system resilience.

The research will focus on two critical fronts: (1) the cybersecurity vulnerabilities of connected vehicles (CVs) and (2) the categorization of cybersecurity incidents and events affecting these systems.

"The increasing adoption of advanced technologies, such as onboard Wi-Fi, fare collection systems, and traffic signal preemption, has greatly enhanced transit operations. But it has also introduced complex cybersecurity vulnerabilities within operational systems," Wang said. "Our work will address these vulnerabilities and provide scalable, evidence-based solutions to safeguard transit systems of all types, from buses and light rail to paratransit and vanpool services."

The TCRP Program, administered by the Transportation Research Board (TRB), is an applied contract research program that develops practical solutions to problems facing public transportation agencies. In partnership with the American Public Transportation Association (APTA), TCRP aims to enhance the operational effectiveness and efficiency of the public transit industry.

The project's Co-PI **Zia Ud Din**, assistant professor in the Department of Civil and Environmental Engineering, added, "This project will benefit transit agencies operating in urban, rural, and Tribal regions. By prioritizing operational technology risks, we aim to advance adaptive cybersecurity strategies that strengthen transit system reliability, safety, and public trust nationwide."

Right to left: *Kailai Wang, Zia U Din and Yuhao Wang*

ISE'S TAN WINS IISE M&D OUTSTANDING TEACHING AWARD

George Z. Tan, an associate professor with a joint appointment in the Industrial and Systems Engineering Department at the Cullen College of Engineering and the Tilman J. Fertitta Family College of Medicine, has earned a major teaching award from an international organization.

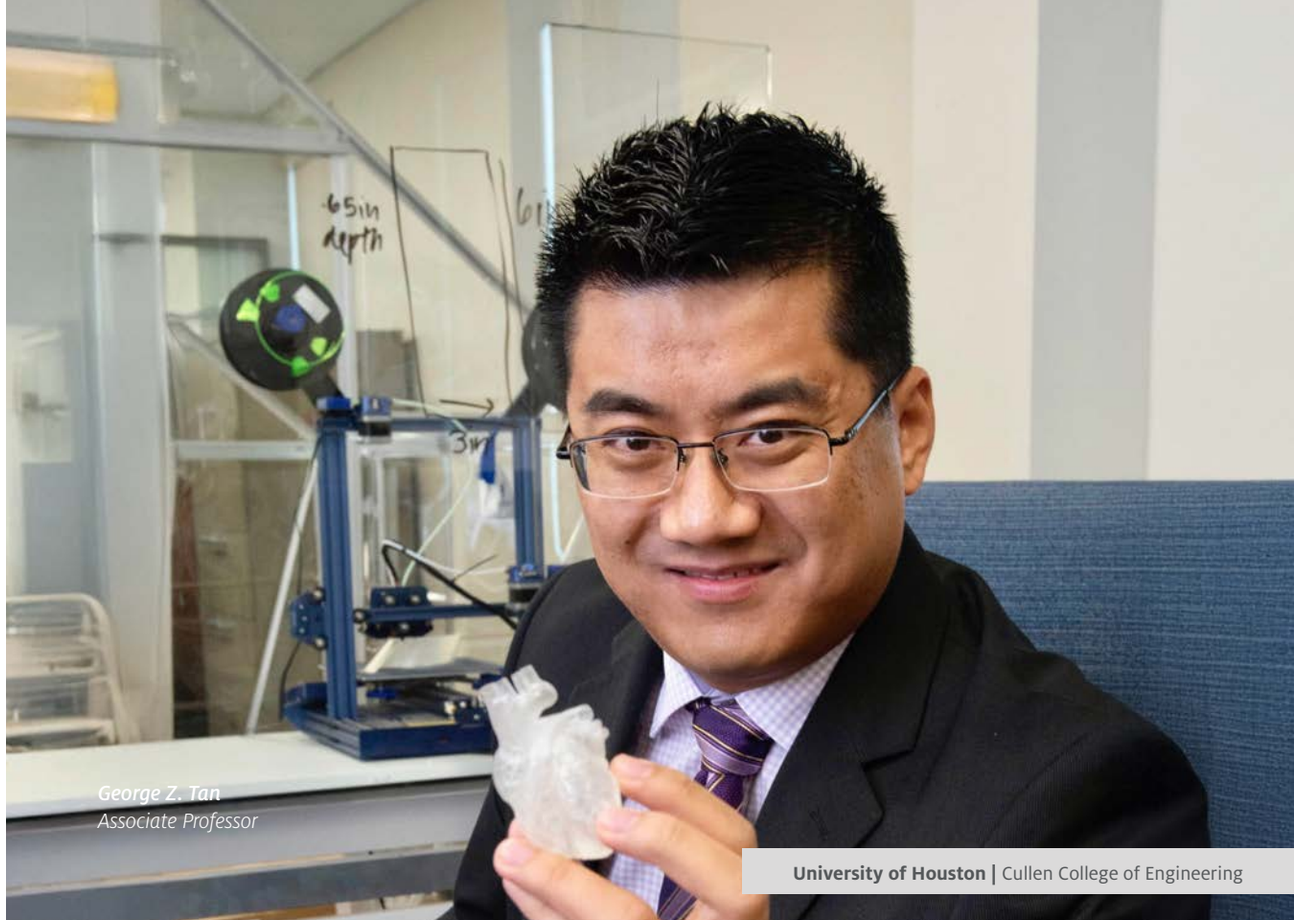
Tan is the First Prize Winner of the 2025 Manufacturing & Design (M&D) Outstanding Teaching Award (OTA) from the Institute of Industrial & Systems Engineers (IISE). The award recognizes members for excellence in manufacturing or design education and training, which includes curriculum development and the dissemination of courses.

Tan received the award in June during the IISE Annual Conference & Expo in Atlanta. The IISE is the preeminent international organization for industrial and systems engineers, with more than 45,000 members worldwide. He is the fifth winner of the award since its inception in 2021, and the first from the University of Houston.

"I'm truly honored to receive this recognition from IISE," Tan said. "I would especially like to thank Dr. **Gino Lim** for his kind nomination and steadfast support. This award reflects the collaborative spirit of my students and colleagues in the ISE department who have supported me along the way."

This award highlights Tan's impactful work in interdisciplinary project-based learning in biomedical design and manufacturing, which allows engineering students to collaborate with medical students in developing real-world solutions. The approach bridges the gap between classroom learning and the practical challenges of modern medicine.

Tan is the principal investigator for the Bioinspired Hybrid Manufacturing Laboratory. It focuses on novel manufacturing processes for human tissue scaffolds, organoids, and lab-on-a-chip for tissue engineering and drug development. Technologies tackled by the lab include tomographic bioprinting, electrospinning and multi-material 3D printing techniques.



George Z. Tan
Associate Professor

IE ALUMNUS MCDONALD ENGINEERING WS FOR COOGS' BASKETBALL

As the Houston Cougars men's basketball team made their run to the national championship game in 2025, a Cullen College of Engineering graduate was on the sidelines and in the locker room as part of the coaching staff.

Matthew McDonald graduated from the Industrial Engineering program in 2019. With the Cougars, he served as student manager from 2017 to 2019, before earning a promotion to assistant video coordinator (2019 to 2021). After serving as Lamar University's video coordinator for a year, he took that role on Houston's staff starting with the 2022–23 season.

McDonald said it was a combination of an academic scholarship offered by UH and the results of an engineering survey he took in an AP Physics course at Friendswood High School that made him enroll.

"I wanted to pick a major that was versatile and could provide different opportunities after college, so I decided Industrial Engineering would be the best fit," he said.

Basketball was always a passion for McDonald though — He grew up playing the game, and his first two years at UH, he was a constant presence at the campus rec center.

"I had a passion, I just didn't know how to use it yet. I had been praying that God would lead me into something I truly loved and towards the end of my sophomore year, a student manager position was open with UH," he said.

"I had a friend, Daniel Hixon, who was a manager at the time, and I knew the assistant video coordinator Charles Allen [now on the New York Knicks coaching staff] from playing at the rec center. So, those two helped get me connected to my eventual coaching mentor in K.C. Beard. Within the first two weeks I knew God had answered my prayer and that coaching basketball would be the route He wanted for me in life."

When it came to balancing academics and the pursuit of his coaching career, McDonald identified Randal Sitton as someone who provided him with support and encouragement, pointing out that NFL Hall of Fame coach Tom Landry had an Industrial Engineering degree.

Matthew McDonalds
Industrial and Systems Engineering Graduate

ISE'S GOVINDU AWARDED $10,000 TIP GRANT FOR INNOVATIVE LAB SPACE AT KATY

Instructional Assistant Professor of Industrial and Systems Engineering **Nirathi Keerthi Govindu** has received a $10,000 Teaching Innovation Program (TIP) grant to fund her undergraduate research lab proposal at the University of Houston at Katy.

The project will leverage existing lab space at the Katy campus to enhance student learning and engagement through hands-on, project-based learning across all systems engineering (SYSE) courses and serve as a resource for senior capstone design projects by providing mentorship, research tools, and infrastructure to support SYSE students.

"This initiative aims to deepen student understanding, support diverse learning styles, and improve academic outcomes — ultimately preparing students for successful careers in systems engineering," said Govindu. "With the support of the TIP grant for my proposal, Enhancing Classroom Learning in Systems Engineering via an Undergraduate Research Lab, this vision is now becoming a reality, and we can move forward with building a collaborative and applied learning environment that bridges theory with practice."

"Since systems engineering offers a rewarding and versatile career path that deserves greater visibility among future engineers, this lab could also serve as an outreach platform to introduce high school students to the field through hands-on activities, demonstrations, and interactive sessions," she added.

In the lab, students will have access to shared space with high-performance hardware equipped with the software used in SYSE courses and mentors to guide them through practice and implementation.

"Dr. Oumaima Larif, incoming systems engineering faculty, provided valuable feedback on the computer equipment and software that would be needed to support the proposed undergraduate research lab," said Govindu.

"It's like a dream come true," she added. "We have a lab space out at Katy, where the Systems Engineering program is located, but now with this opportunity we are at last getting to do something I've always wanted to try."

Nirathi Keerthi Govindu
Instructional Assistant Professor

MAIN CAMPUS NAE GRAND CHALLENGES SUMMIT & CREATE@UH SHOWCASE

More than 150 people gathered on the second floor of Student Center South on April 28 to celebrate student success, as students participating in the Spring 2025 NAE Grand Challenges Summit and Create@UH Showcase presented their work.

The event featured a keynote address from Joseph B. Powell, Aspire Shell Endowed Chair and Executive Director for Energy Transition and a Professor in the William A. Brookshire Department of Chemical and Biomolecular Engineering. **Seth Smith**, a junior Biomedical Engineering student, was the student speaker for the event.

The showcase featured groups of students presenting research posters to their peers, faculty members and staff for an "open house" hour. This group voted for an exemplary poster to take home the Audience Choice Award.

Aliza Mirza described their work as examining carbon sequestration, which is capturing excess carbon dioxide from the air and storing it to help combat global warming. Their group focused specifically on Carbon Capture and Storage (CCS) methods and carbon footprint awareness.

"To tackle this, we designed an app that helps users understand how CCS works, calculate their own carbon footprint (how much CO_2 they personally produce), and learn simple, actionable steps to reduce it," she said.

The app has six buttons that users can delve into — What is CCS; CO_2 Emissions and Need for CCS; CCS Projects; Carbon Footprint Calculator; EcoTravel; and Energy and Local Emissions. It shows the users the effect of various decisions they make, and how they can make them.

Left to right: *Aliza Mirza, Uriel Pulido, Noah Soto, Jamison Kovach, Marice Mattamana, Helena Guzman, Vi Ho and Matthew Zelisko*

ISE'S XIANG TENURED AS ASSOCIATE PROFESSOR, APPOINTED SCOTT T. POAGE FELLOW

The Cullen College of Engineering's **Yisha Xiang** has been granted tenure as Associate Professor of Industrial & Systems Engineering and appointed as a Scott T. Poage Faculty Fellow, both effective September 1, 2025.

The Scott T. Poage Faculty Fellowship in the Department of Industrial & Systems Engineering "recognizes [Xiang's] outstanding contributions to the success of [the] department," according to ISE Professor and R. Larry and Gerlene (Gerri) R. Snider Endowed Chair **Gino Lim**.

"UH and the city of Houston have provided a great platform for me to expand my research network and start new, exciting research initiatives," she said. "I also deeply appreciate the tremendous support I have received from my department chair, Dr. Gino Lim, the Dean of College of Engineering, Dr. **Pradeep Sharma**, and my colleagues. The supportive and collegial environment I am in has greatly contributed to my professional growth."

Her research focuses on data-driven decision-making under uncertainty, particularly reinforcement learning, with a variety of applications including manufacturing, infrastructure and energy systems.

"In practical terms, this appointment and tenure provide me with the stability and freedom to fully dedicate myself to advancing my research and mentoring students. It means I can take on high-risk, high-impact projects that I might be hesitating about in the past and continue to contribute meaningfully to my field and to the academic community," she added.

In the short term, Xiang hopes to build on the momentum of her recent work by advancing ongoing projects and strengthening her collaborations with colleagues and students; Longer term, she hopes to pursue ambitious projects that address complex challenges in her field while also contributing to shaping the direction of the discipline through leadership and mentorship.

Yisha Xiang
Associate Professor

University of Houston | Cullen College of Engineering

ISE'S SCHULZE NAMED ASSP FELLOW

Associate Professor of Industrial and Systems Engineering **Lawrence Schulze** has been named a fellow of the American Society of Safety Professionals (ASSP) after over twenty years of continuous service and involvement in the organization. Previously, Schulze has held roles including Gulf Coast Chapter VP of Membership Services, Treasurer, and President, as well as Region III Vice President and multiple practice specialty chairs. He is ASSP's representative and voting board member in the National Institute for Engineering Ethics.

The ASSP is a global association for occupational safety and health professionals and has supported them in their efforts to prevent workplace injuries, illnesses and fatalities for more than 100 years.

"Fellow" is ASSP's most prestigious honor, recognizing significant commitment, achievement and leadership in the occupational safety and health (OSH) profession. Recipients are honored with a medallion and plaque, and retain lifetime access to conferences and events to help them stay connected with other highly-accomplished safety professionals. Only 152 Fellows have been selected in ASSP's 113-year history.

When past ASSP President Pamela Walaski contacted him in April to inform him of his selection, Schulze was "shocked."

"There are so many great ASSP members who have served in more society positions than I have and have been more visible. It is such a great and humbling honor to be recognized for making a positive contribution to people, property and the environment," he said.

"I am an applied researcher. I like investigating and problem solving to make recommendations that are practical, feasible, implementable and cost-effective. This is what the Safety Professional needs and wants. … While theory is good on paper, it is the application that makes the difference in the lives of workers, the protection of property and the protection of the environment."

Lawrence Schulze
Associate Professor

HOUSTON-AREA STUDENTS GLIMPSE THE FUTURE AT RCS'S MIDDLE-GRADE CODING CAMP

DesignYOU!, a Texas Workforce Commission-sponsored academic day camp for Houston-area students entering grades six through eight, is designed to provide hands-on computer coding and programming experience through innovative learning and problem-solving activities while fostering an interest in coding and its connection to the fashion and retailing industries.

They just had their biggest year yet, serving more than 150 students from Third Ward to the Woodlands over the course of three weeks.

Funded by a TWC grant, DesignYOU! is offered to participating students completely free of charge and is run through the Retailing and Consumer Sciences (RCS) program at the Cullen College of Engineering. Led by RCS faculty and student counselors, campers learn not only coding skills, but principles of design, digital creation, and the many ways that computing technology and merchandizing intersect in today's world.

The greatest benefit, however, may not be the analytical skills these campers develop.

"Our goal is to get them really excited not just about the possibility of pursuing STEM as a career, but hopefully to experience college one day," said full-time RCS lecturer and Camp Director Blake Mudd. "We want to give them that positive experience so that when they're 17 and they're thinking about college, they think back on how much they enjoyed this experience.

"For some of them, they're learning Python for the first time, or they're learning about branding and graphic design. Our mission is to increase interest in STEM, and I think we do that really well, but what I also hope that we inspire them to do is to pursue whatever it is that they truly want to do."

Mudd believes in the mission of the University of Houston beyond academics and education.

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