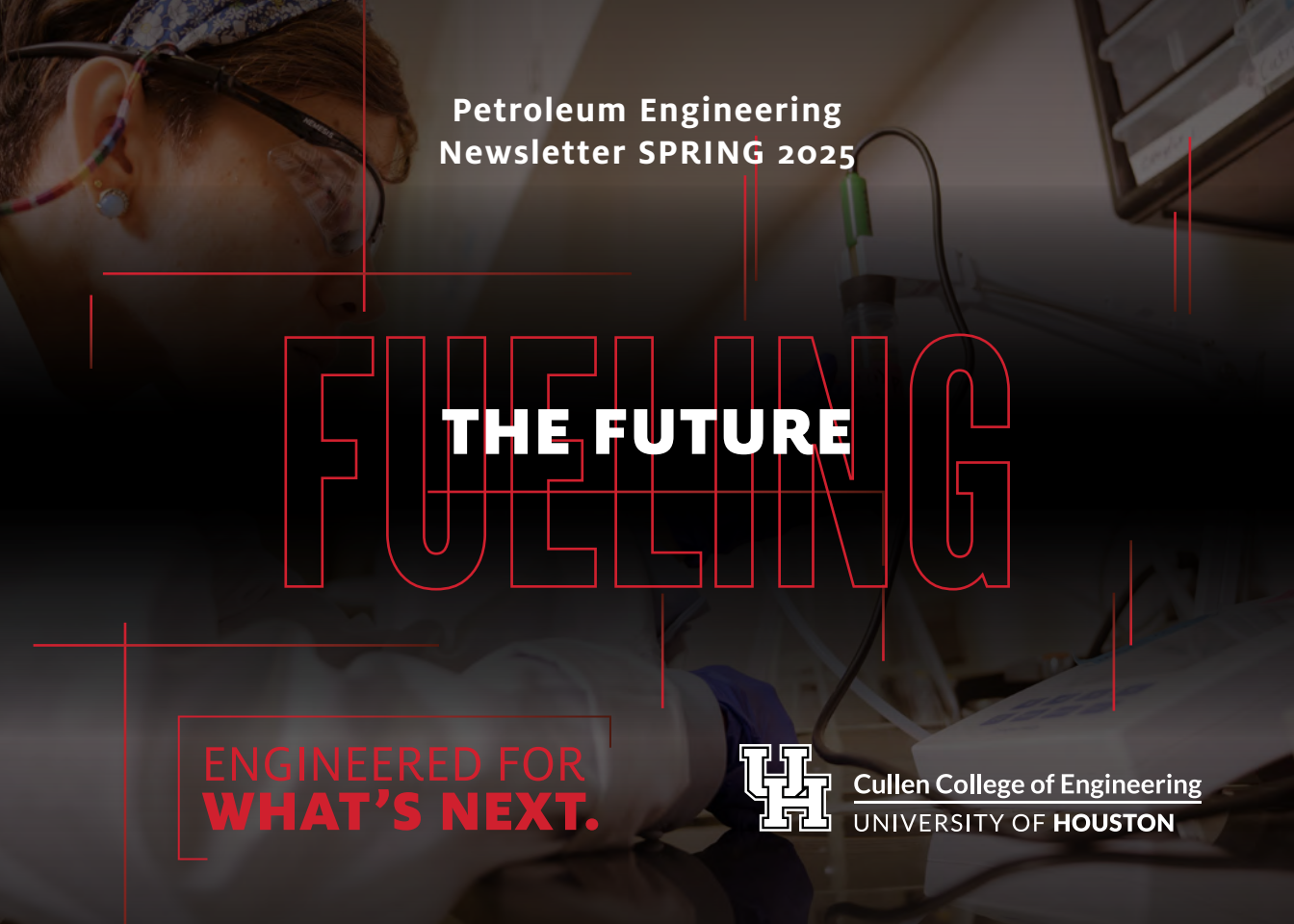

Petroleum Engineering
Newsletter SPRING 2025

FUELING THE FUTURE

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Cullen College of Engineering
UNIVERSITY OF **HOUSTON**

NSM'S EARTH & ATMOSPHERIC SCIENCES PART OF CO2 STORAGE RESEARCH

A multidiscipline group of professors at the University of Houston, including several from the Petroleum Engineering Department of the Cullen College of Engineering, is continuing its research work into CO2 sequestration into depleted gas fields in the Texas Permian Basin.

About $11.1 million in funding was approved by the Department of Energy's National Energy Technology Laboratory for the Permian Regional Carbon Sequestration Hub. Work on the project began in August 2024 and runs through August 2026.

The UH portion is about $1.25 million, and it is a collaborative faculty effort involving professors from multiple colleges.

- Petroleum Engineering: **Dimitrios G. Hatzignatiou**, Interim Department Chair and Professor (PI); **Birol Dindoruk**, American Association of Drilling Engineers Endowed Professor of Petroleum Engineering & Chemical and Biomolecular Engineering (co-PI); **Christine Ehlig-Economides**, Hugh Roy and Lillie Cranz Cullen Distinguished University Chair and Professor (co-PI); **Lori Hathon**, Instructional Assistant Professor (co-PI); **Michael T. Myers**, Ali Daneshy Endowed College Professor and Associate Professor (co-PI); and **Ganesh Thakur**, Distinguished Professor (co-PI).
- College of Natural Sciences and Mathematics' Earth & Atmospheric Sciences Department: **John Castagna**, Professor of Geophysics and Applied Seismology, and Margaret S. and **Robert E. Sheriff** Endowed Faculty Chair in Applied Seismology (co-PI); Robert Stewart, Director of the Allied Geophysical Labs and Hugh Roy and Lillie Cranz Cullen Distinguished University Chair in Exploration Geophysics (co-PI); and **Yingcai Zheng**, Robert and Margaret Sheriff Professor in Applied Geophysics (co-PI).

According to the project description, the Permian Regional Carbon Sequestration Hub Project is a feasibility study for the development of a carbon dioxide (CO_2) storage hub to serve the Southern Delaware Basin in Ward, Winkler, Reeves, and Loving Counties, Texas. The study is utilizing existing data to characterize targeted Ordovician-Devonian geologic formations for CO_2 storage that have an estimated storage resource of 75 million metric tons of CO_2.

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FACULTY ACCOLADES

CULLEN PROFESSORS HONORED AT UH PRESIDENT'S CIRCLE AWARDS

More than 60 professors from the Cullen College of Engineering were recognized for their accomplishments as scholars, researchers and academic innovators on March 31 as part of the President's Circle Awards, presented by the University of Houston. The awards spotlight professors for earning national recognition, contributions to high impact publications, obtaining patents, producing single author books and receiving major grant awards. More than 200 faculty members across the university were honored. The honorees from Cullen, sorted by department, then name:

BIOMEDICAL ENGINEERING
- Muayyad Al-Ubaidi
- Ran An
- Renita Horton
- Kirill Larin
- Chandra Mohan
- Muna Naash
- Manmohan Singh
- Lars Tebbe

CHEMICAL & BIOMOLECULAR ENGINEERING
- Vemuri Balakotaiah
- Praveen Bollini
- Vincent Donnelly
- Lars Grabow
- Jerrod Henderson
- Katerini Kourentzi
- Triantafillos Mountziaris
- Jeffrey Rimer
- Navin Varadarajan
- Peter Vekilov
- Binh Vu
- Richard Willson

CIVIL & ENVIRONMENTAL ENGINEERING
- Juan Carlos Fernandez Diaz
- Nima Ekhtari
- Craig Glennie
- Konrad Krakowiak
- Mohammad Rahimi
- Hanadi Rifai
- Devin Shaffer

ELECTRICAL & COMPUTER ENGINEERING
- Jiming Bao
- Long Chang
- Ji Chen
- Jinghong Chen
- Xin Fu
- Zhu Han
- Harish Krishnamoorthy
- Alae Lakraychi
- Xingpeng Li
- Yanliang Liang
- Dmitri Litvinov
- Kaushik Rajashekara
- Rohith Reddy
- Badrinath Roysam
- Xiaonan Shan
- Yan Yao
- Lihong Zhao
- Jianfeng Zheng

ENGINEERING TECHNOLOGY
- Zheng Fan
- Francisco Robles Hernandez
- Fatima Merchant
- Luca Pollonini
- Jian Shi
- Weihang Zhu

INDUSTRIAL & SYSTEMS ENGINEERING
- Suresh Khator
- Ying Lin
- George Tan

MECHANICAL & AEROSPACE ENGINEERING
- Marzia Cescon
- Zheng Chen
- Hadi Ghasemi
- Venkat Selvamanickam
- Pradeep Sharma
- Gangbing Song

PETROLEUM ENGINEERING
- Christine Ehlig-Economides
- Ganesh Thakur

STUDENT SUCCESS

SPE RECOGNIZED WITH PRESIDENTIAL AWARD FOR OUTSTANDING STUDENT CHAPTER

The University of Houston's student chapter of the Society of Petroleum Engineers (SPE) was recently awarded the 2024 Presidential Award for Outstanding Student Chapter (PAOSC) in the Technical Dissemination category. This category considers chapter participation in activities and experiences like field trips, research programs, symposiums, technical presentations and training courses.

The PAOSC recognizes "chapters whose programs, activities, and levels of participation distinguish them from other chapters" and is awarded to the top 10% of eligible student chapters in each scoring category. There are currently 412 total student chapters around the world, and the UH chapter was one of 23 chapters recognized with this award in 2024. Awardees will be recognized during the President's Luncheon at the SPE Annual Technical Conference and Exhibition this September in New Orleans, Louisiana.

Their current faculty advisor and distinguished professor of petroleum engineering **Ganesh Thakur**, Ph.D., NAE, NAI, emphasizes that this award is the result of much cooperative effort.

"I would like to thank previous faculty advisors **Dr. Christine Ehlig-Economides** and **Dr. Kyung Jae** Lee for advising the student chapter before I took this role," said Thakur.

The SPE mission "to connect a global community of engineers, scientists and related energy professionals to exchange knowledge, innovate and advance their technical and professional competence regarding the exploration, development and production of oil and gas and related energy sources to achieve a safe, secure and sustainable energy future" is well-served by participating students at the University of Houston.

Participants in a 2024 Society of Petroleum Engineers Regional Paper Contest, hosted at the University of Houston.

CULLEN REMAINS TOP 50 PUBLIC ENGINEERING COLLEGE, PER U.S. NEWS & WORLD REPORTS

The Cullen College of Engineering remains among the Top 50 public graduate engineering schools in the nation according to U.S. News & World Reports, coming in at #44 in the 2025 rankings released on April 8.

Cullen is ranked 72nd overall, tied with Rutgers University. Cullen is the 4th highest ranked in Texas and in the 67th percentile overall.

For individual programs, Materials Engineering improved eight spots to #83, Biomedical Engineering improved six spots to #84, Computer Engineering improved three spots to #79, and Mechanical Engineering improved two spots to #68. Petroleum Engineering remains a Top 10 program overall, staying at #7 year-over-year.

Each department, its ranking and its percentile for 2025:

- Biomedical Engineering: 84, 46th percentile
- Chemical Engineering: 31, 77th percentile
- Civil Engineering: 73, 52nd percentile
- Computer Engineering: 79, 47th percentile
- Electrical Engineering: 90, 52nd percentile
- Environmental Engineering: 72, 30th percentile
- Industrial / Systems Engineering: 44, 56th percentile
- Materials Engineering: 83, 30th percentile
- Mechanical Engineering: 68, 63rd percentile
- Petroleum Engineering: 7, 61st percentile

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SPE TEAM ADVANCES TO INTERNATIONAL PETROBOWL COMPETITION

The University of Houston's Society of Petroleum Engineers (SPE) student team has earned a coveted spot in the 2025 International PetroBowl Championship following a standout performance at the North American Regional PetroBowl Qualifier, held during the 2025 SPE North America Student Symposium.

The competition took place in February at the University of Southern California and brought together 22 teams from the United States, Canada and Mexico. The UH team advanced through four highly competitive rounds and took first place in the second bracket tournament, qualifying to compete on the global stage at the SPE Annual Technical Conference and Exhibition (ATCE) in Houston this October.

Team members **Abdulrahman Abdulwarith, Christina Castillo, Ahmed Kareb, Son Nguyen** and **Talha Khan** represented UH with determination, technical expertise, and strong collaboration throughout the event.

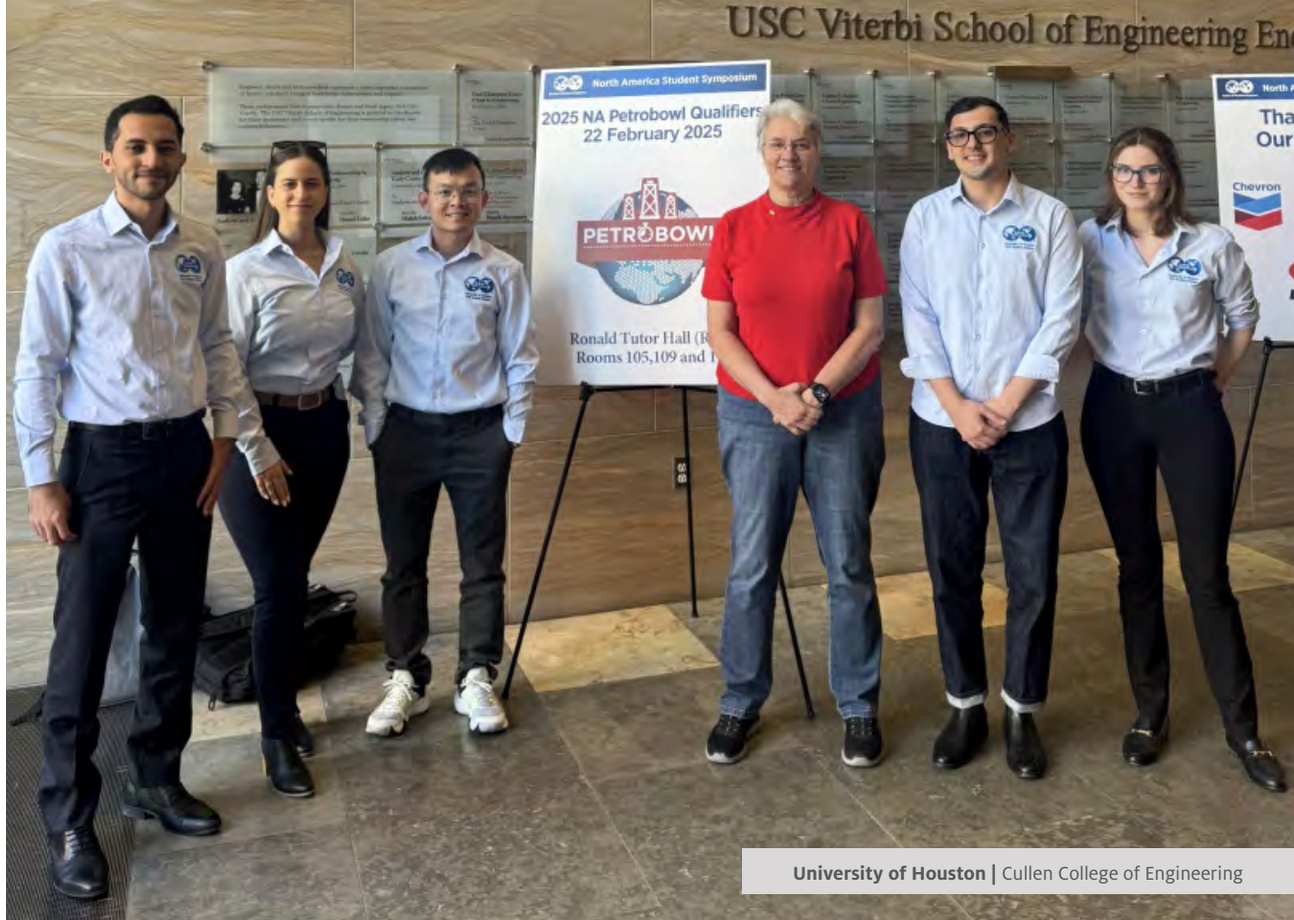
"This was such a rewarding experience," Castillo said. "We spent weeks preparing, and it was incredible to see our teamwork and effort pay off. I'm thrilled to continue this journey at the international level."

Khan emphasized the importance of strategy and perseverance.

"The questions were challenging, but staying calm under pressure and trusting each other's strengths helped us push through," she said. "I'm really proud of what we accomplished together."

Nguyen reflected on the team dynamic, adding, "We all brought different skills and perspectives, which made us stronger as a unit. The support from our peers and faculty played a big role in our success."

Kareb said, "Participating in the SPE PetroBowl competition has been an enriching experience. As the team leader, my main tasks involved selecting the team members and compiling relevant questions for our training sessions. These sessions fostered strong teamwork, mutual support, and open communication, helping us build confidence and effective collaboration.



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PH.D. STUDENT TALE TAKES 3RD AT REGIONAL SPE CONTEST

Fatemeh Tale, a Ph.D. candidate in the Petroleum Engineering Department, has added a poster contest competition placement to her already impressive resume.

Tale placed third in the Gulf Coast Regional Society of Petroleum Engineers Ph.D. Student Paper Contest. Her advisor is **Birol Dindoruk**, American Association of Drilling Engineers Endowed Professor of Petroleum Engineering & Chemical and Biomolecular Engineering.

"I felt proud and happy, especially because it gave me a chance to show others what we're doing at UH and in our research group," she said of receiving the award. "It's exciting to see our work being recognized and to represent the university and our team on a bigger stage. It gave me even more motivation to keep pushing forward."

Her poster presentation, "Numerical and Experimental Study of the Kinetics of Permeability Changes in CO2-Saturated Brine Injection Process for Enhanced CO2 Sequestration," and her overall research examines how to make carbon and other gas sequestration cleaner.

"I work with energy, specifically oil and gas, and how we can make it cleaner for the planet," she said. "Imagine the Earth is wearing a big blanket that's getting too warm. Some of that warmth comes from gases like CO_2. I study ways to catch and store those gases safely underground so we can keep using energy, but without hurting the planet as much."

Tale earned her B.S. and M.S. in Petroleum Engineering from Shiraz University in Iran. After internships at Halliburton and ExxonMobil, she landed at UH.

"UH was a perfect fit for me for several reasons," she said. "It offered one of the best programs in my field, and being in Houston gave me access to a global hub of energy research and industry partnerships. But more than that, I knew I had made the right decision once I experienced how supportive my supervisor, Dr. Dindoruk, and our department chair, Dr. Dimitrios G. Hatzignatiou, were. Their guidance and encouragement have made a big difference in my journey."

After completing her doctorate, Tale hopes to use the knowledge to secure a position in industry.

Fatemeh Tale
Ph.D. candidate

PETROLEUM STUDENT CAPTURES AWARD FOR RESEARCH TO REDUCE FRACKING EXPENSES

In the ever-evolving field of energy, one graduate student at UH — The Energy University ® — is making a name for himself through groundbreaking research in hydraulic fracturing.

At the 2025 SPE Hydraulic Fracturing Technology Conference and Exhibition, the SPE Hydraulic Fracturing Technical Section awarded **Mohamed Adel Gabry**, a Ph.D. student in the Petroleum Engineering Department, an Outstanding Graduate Student Award. The award recognizes exceptional research in hydraulic fracturing.

"My research is about finding practical applications for the industry. We submitted for three patents and published ten papers from my dissertation," he explained. "It has wide applications in the oil industry. So that's why I submitted my profile and my research background. And they selected me."

Mohamed's path to the University of Houston began with 14 years in industry with ten of those years in Egypt as a subsurface engineer.

"This is a practical industry, so I don't want to produce solutions just for books," he says. "I need to introduce innovation with practice. So, the main advantage of my research is we are building an app that we can give to Exxon, Hess, Oxy or any operator or service company to use in their operations."

Mohamed's award-winning research focuses on developing one method to minimize expenses in fracking. He is creating a machine learning technique that introduces practical generic solutions that can even enable AI.

"The main thing is to find a technique that doesn't rely on physical assumptions," he explained. "For example, if I have a complex physical problem like subsurface formations, typically scientists set assumptions and then they solve based on these assumptions. However, there are a lot of schools in interpretations of this technique as each one has its own assumptions. In fracture closure interpretation for example: since 1978, there's a lot of these different methods. But each method has this limitation."

Mohamed Adel Gabry
Ph.D. student

EAA HONORS STUDENTS AT 2025 INDUSTRY AWARD NIGHT

A total of 25 students from different organizations received more than $13,000 in scholarships and awards at the 2025 Industry Awards Night, hosted by the University of Houston's Engineering Alumni Association at the Athletic/Alumni Center.

The keynote address was given by Kelvin King, a graduate of the Electrical and Computer Engineering Department and the chief delivery officer of Gaine Technology, LLC.

The following awards were given out:

Biomedical Engineering Award
- Be-Once Marsh

Brown & Gay Engineers' Ronald L. Mullinax Endowed Scholarship (Civil Engineering)
- Sofia Diaz
- Zeus Gallo
- Pichpiseth Long
- Deena Mir
- Diego Ramirez

WSB Inspiration Award (Civil or Environmental Engineering)
- Christian White

Conoco Phillips' Engineering With SPIRIT (Petroleum, Chemical, Mechanical or Electrical)
- Hanna Vu
- Omotolase Osisanlu

The Huerta Scholarship (Civil Engineering)
- Liliana Perez Villarreal
- Brenda Roman

Petroleum Engineering Advisory Board's (PEAB) Dr. John Lee Engineering Legacy Award
- Alexandra Montana

PEAB Petroleum Engineering Minds Awards
- Aarati Kumari Agri
- Steven Garrett
- Azamat Sabyrov
- Francisco J. Santibanez

PEAB Dr. Thomas Holley Engineering Professionalism Award
- Christina Renee Castillo

Draco Spring Mfg. Co.'s Spring Forward Award (Any Major)
- Alexis Castillo

Blackline Engineering Innovative Award (Any Major)
- Melody Nguyen

Nathan and Carol Schmidt Engineering Scholarship (Chemical or Mechanical)
- Angel Rosa

American Society of Indian Engineers and Architects' Indian Engineers Engineering the Future (Any Major)
- Rajvi Patel

EAA's Excel in Engineering Award (Any Major)
- Jay Lim

EAA's Emerging Engineering Leader Award (Any Major)
- Kathryn Kalchik

UH EWeek Sponsorships (Any Major)
- Jonathan Gaucin
- Katlinh Nguyen

CULLEN NAMES OUTSTANDING STUDENTS FOR 2024–25 ACADEMIC YEAR

The Cullen College of Engineering is proud to announce that the following students have been named Outstanding Juniors and Seniors for their respective departments for the 2024–25 academic year.

Students are nominated by professors and the faculty chair for their department, based on a combination of GPA, courseload and extracurricular activities. In addition, an Outstanding Junior and Senior for the whole college is picked. This year, those students were junior **Jonathan Gaucin** and senior **Parsa Tari**.

The outstanding students by department are:

Biomedical Engineering
- Que Huong Ngoc Nguyen (junior)
- Swetha Sarvanan (senior)

Chemical and Biomolecular Engineering
- Mikas Dunn (junior)
- Dana Khalil (senior)

Civil and Environmental Engineering
- Nick Di Giovanni (junior)
- Chetan Gadapa (senior)

Computer Engineering
- Delfino Tzul (junior)
- Adriana Lopez Cajigas (senior)

Electrical Engineering
- Jonathan Gaucin (junior)
- Joshua Ixcolin (senior)

Industrial Engineering
- Trinh Nguyen (junior)
- Mona Almufti (senior)

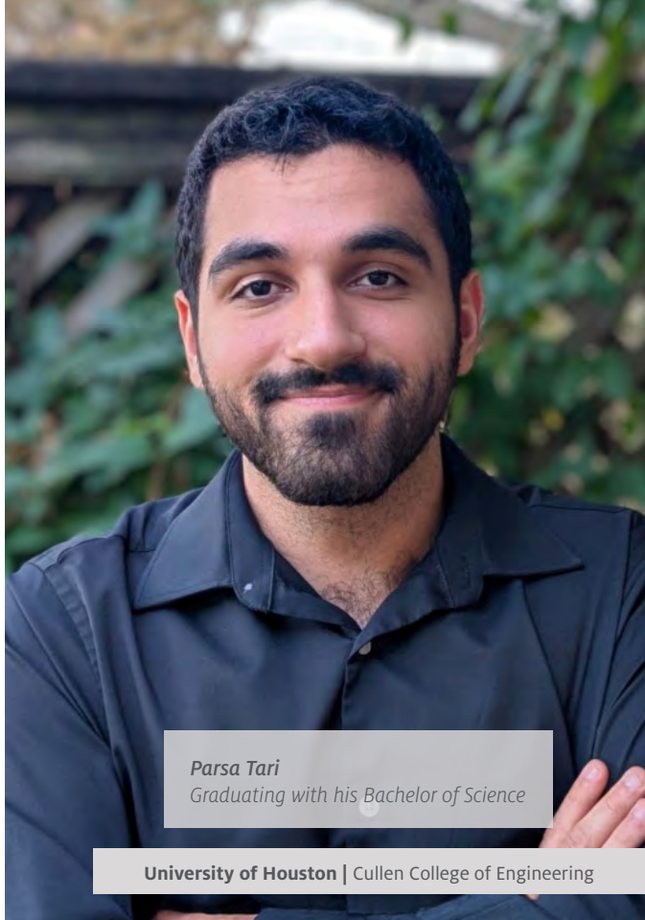
Mechanical and Aerospace Engineering
- Urvi Bhatia (junior)
- Parsa Tari (senior)

Petroleum Engineering
- Christina Castillo (junior)
- Richard Montes (senior)

Systems Engineering
- Alexia Robert (junior)
- Jordyn Sibert (senior)

Congratulations to all of the outstanding students!

Jonathan Gaucin
Pursuing his Bachelor of Science



Parsa Tari
Graduating with his Bachelor of Science

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.

Cullen College of Engineering
UNIVERSITY OF HOUSTON

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