AEROSPACE ENGINEERING // COMPUTATIONAL ENGINEERING // ENGINEERING MECHANICS 2025

Longhorn

LIFTOFF

COUNTDOWN TO COMMERCIALIZATION

PAGE 10

WILDFIRE WARRIORS

PAGE 8

ENGAGING INDUSTRY

PAGE 19

The University of Texas at Austin
Aerospace Engineering and Engineering Mechanics
Cockrell School of Engineering

LONGHORN LIFTOFF

Longhorn Liftoff is published for alumni and friends of the Department of Aerospace Engineering and Engineering Mechanics in the Cockrell School of Engineering at The University of Texas at Austin.

—

EDITORIAL

KENDRA HARRIS
Communications Coordinator

WRITERS

Kendra Harris, Nat Levy, Andrea Tinning

DESIGN & PHOTO

Kendra Beasley, Jack Myer

SHARE NEWS & UPDATE YOUR CONTACT INFO

bit.ly/utaerospace-update

SUPPORT TEXAS ASE/EM

bit.ly/give-utaerospace

FROM THE CHAIR

Another year has passed, and we have many reasons to celebrate as the ASE/EM community continues to change the world through research breakthroughs, noteworthy achievements, new programs and much more. In this issue, I'm particularly excited to share impactful stories about our faculty and students who are changing the world by commercializing their ideas, based on work that originated in federally funded research labs.

Licensing precise navigation technologies to prominent aerospace companies, co-founding a humanoid robotics company, developing the patent to power hydrogen aircraft, and making engineering design more efficient are just a few ways our researchers have been transferring their technological breakthroughs into tangible products. I hope you enjoy learning about these innovative commercial endeavors as much as I have.

I also invite you to learn about the student experience and the changes we are making to enhance industry and alumni engagement. By offering multiple hands-on design experiences and research opportunities, as well as opportunities to network with alumni and members of industry, our students leave the Forty Acres well-equipped to enter the workforce. These experiences also help students find their engineering passion and can even spur new spinoffs.

We have enjoyed hosting several community events over the past year as well, including the annual picnic at the NASA Johnson Space Center. If you were unable to attend any of last year's events, stay tuned for details on future gatherings by checking your email regularly and following us on LinkedIn.

Finally, some of our readers might be surprised to learn that 2025 marks 25 years of Longhorn Liftoff! I am sad to say this will be the last issue for our communications coordinator, Kendra Harris, who created the very first issue in summer of 2001. A huge thank you to Kendra for her hard work over the years to establish this well-loved magazine for our alumni and friends. After 26 years of dedicated service to the department, Kendra will be retiring at the end of this year. We wish her all the best with her next adventures.

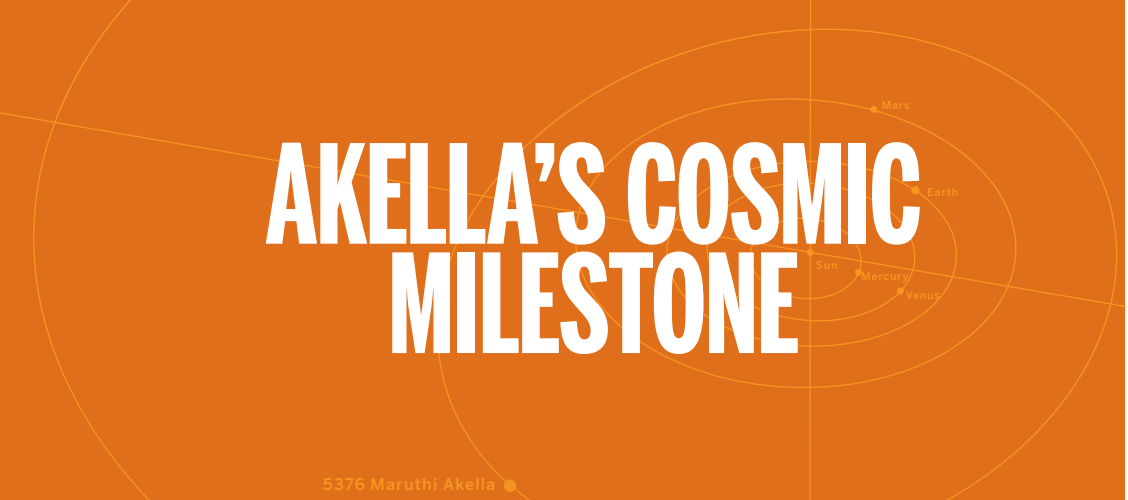
In closing, a reminder to please keep us informed of your alumni news and updates. And the next time you're near campus, I hope you'll swing by the Aerospace Engineering Building and say hello.

Hook 'em!

CLINT DAWSON

CHAIR, DEPARTMENT OF AEROSPACE ENGINEERING AND ENGINEERING MECHANICS
COCKRELL FAMILY REGENTS CHAIR IN ENGINEERING #2

AKELLA'S COSMIC MILESTONE



Maruthi Akella reached for the stars. Now his name is among them, on an asteroid named for him. It's a rare honor that includes a rigorous selection process led by an international organization. And for Akella, it came as a total surprise.

For as long as he can remember, aerospace was close to Akella's heart. Growing up in a modest household in a small town in India., he didn't have the opportunity to attend school until the eighth grade. Nonetheless, he has been fascinated with "all things space" from a young age.

The Indian space program was largely in its infancy stage during those days, so he followed U.S. and Soviet Union milestones from newspapers. He was deeply inspired by Rakesh Sharma, the first person from India to go to space in 1984.

Unsurprisingly in hindsight, Akella excelled academically. He entered eighth grade at just 11 years old, three years younger than his peers. He faced many challenges as a younger student. But every step of the way, the path to aerospace, his guiding light at the time, became clearer.

Decades later, Akella accomplished a few professional milestones, and much more.

HOW WOULD HIS YOUNGER SELF FEEL?

> "I THINK HIS JAW WOULD HIT THE FLOOR," AKELLA SAID. "WHEN I THINK OF THAT KID BACK THEN, AND WHERE I AM NOW, THE ONE WORD I CAN THINK OF IS HOW GRATEFUL I AM."

Akella is a world-renowned expert in learning and control for space systems. He has made numerous breakthroughs in his field, and his expertise was critical to Intuitive Machines' IM-1 lunar lander guidance, the first U.S. craft to land on the Moon in 50 years.

The asteroid, now named Maruthiakella, was discovered in 1990 and is 5.5 miles wide. It sits in the main asteroid belt between Jupiter and Mars. And it takes about three years, nine months to orbit around the Sun. Akella says the asteroid's orbit has a slight bit of eccentricity, which is fitting for his self-described eccentric personality – in a funny way.

Of the close to 1.4 million "small planets" cataloged in space to date, nearly 25,000 – or just shy of 2% – are named. At least two other former UT aerospace faculty members have named asteroids: Ivo Babuska and Raynor Duncombe.

The formal process for naming all asteroids and keeping their custody is governed by the International Astronomical Union (IAU) Working Group for Small Bodies Nomenclature. Eligibility begins with a nomination. In Akella's case, that nomination came from Ryan Park, a senior research scientist and principal engineer at NASA's Jet Propulsion Laboratory and member of the IAU working group.

"I have always admired his passion, leadership, and dedication to the field of astronautics," said Park. "He is both a true academic and an exceptional professor, making this recognition well-deserved." ■

TABLE OF CONTENTS

COURAGEOUS CODER

From Burnt Orange to Blue Origin: Shawn Lee's Journey in Computational Engineering

Hyeonseung "Shawn" Lee, B.S. computational engineering 2021, is helping shape the future of spaceflight as the integrated performance & architecture lead for the New Glenn Reusable Booster Mechanical Systems at Blue Origin in Seattle. From optimizing complex system architectures to supporting launch operations, Shawn brings a data-driven mindset and multidisciplinary expertise to one of the most ambitious space programs in the world.

WHY DID YOU DECIDE TO PURSUE A COMPUTATIONAL ENGINEERING DEGREE (COE) AT UT AUSTIN?

My decision to pursue COE at UT Austin was simple — I wanted a degree that would best equip me to utilize cutting edge computational tools to become an efficient, innovative engineer in the growing field of space and launch engineering.

TELL US ABOUT YOUR CURRENT ROLE AT BLUE ORIGIN.

I spearhead the architecture optimization and system configuration management of the Reusable First Stage Aft Module for Blue Origin's New Glenn heavy lift launch vehicle. My role is focused on data-driven and analytical initiatives aimed at refining the system architecture of the vehicle aft module, which encompasses the seven BE-4 booster engines, landing gear systems, thrust vector control actuators, and other mission-critical components. I also play a decisive role in representing the reusable booster mechanical systems within the mission operations engineering backroom, actively contributing to integrated test and launch campaigns for New Glenn. Through my efforts, I strive to enhance the launch vehicle performance, reliability, and operational success, aligning with Blue Origin's mission of building a road to space for the benefit of Earth.

WHAT DO YOU LIKE MOST ABOUT YOUR JOB?

My favorite part about this job is being able to wear multiple hats — system architect, performance analyst, data engineer, test responsible engineer… the list goes on. It lets me practice and grow in multiple facets of engineering — related to both hardware and software.

WHAT ARE YOUR CAREER GOALS?

In the short term, I would like to become a flight or mission director for a launch vehicle or space flight program. In the long term, I would like to become an astronaut or an educator — ideally both.

HOW DID YOUR INVOLVEMENT WITH STUDENT GROUPS/ ORGANIZATIONS HELP PREPARE YOU FOR YOUR CAREER?

I was in UAV Austin and TREL and held student leadership positions in both organizations. Being immersed in such teamwork-dependent environments during my time at UT made me realize early that being aligned and working with your peers is a requirement for success, especially in a multidisciplinary engineering field like aerospace.

DO YOU RECOMMEND ANY PARTICULAR FOCUS FOR STUDENTS OTHER THAN ACADEMICS TO IMPROVE THEMSELVES AS POTENTIAL CANDIDATES FOR JOBS?

Now more than ever, having both hands-on project experience as well as rock-solid knowledge of fundamentals of engineering is a requirement. And you need both in order to be successful as an early-career engineer. On top of this, showcasing your ability to set your ego aside and continue to be coachable will make you a standout candidate. Lastly, always remain curious and less judgmental.

WHAT IS YOUR FAVORITE MEMORY AS A STUDENT AT UT AEROSPACE?

Competing in the 2019 AUVSI SUAS Competition with UAV Austin representing UT Austin was my favorite memory as a student in the department. Our team had put in hundreds of hours to our new autonomous vehicle, Phoenix III, leading up to the competition, and it was a great experience to see our effort pay off. But ultimately what made it memorable was the amazing people that I got to share that experience with. ■

"Being immersed in such teamwork dependent environments during my time at UT made me realize early that being aligned and working with your peers is a requirement for success, especially in a multidisciplinary engineering field like aerospace."

MEET JESSE CHAN

Jesse Chan joined ASE/EM and the Oden Institute for Computational Engineering and Sciences as an associate professor this fall. He earned his Ph.D. in computational science, engineering and mathematics from UT Austin, served as a Pfieffer postdoctoral instructor at Rice University from 2013-2015 and served as a faculty member in the Department of Computational Applied Mathematics and Operations Research at Rice University. His recent research focuses on the accurate and efficient numerical solution of time-dependent hyperbolic partial differential equations, in particular the construction, analysis and efficient implementation of structure-preserving discretizations for fluid dynamics.

TELL US ABOUT YOUR RESEARCH AND WHY IT'S MEANINGFUL.

I work in simulations of high-speed fluid flows over complex geometries. These simulations are key steps in the evaluation and optimization of aerodynamic designs, such as aircraft and wind turbines. Similar computational models are used within computational weather and flood prediction models, as well as in the modeling and design of plasma and fusion. What ties all of these applications together is that their state-of-the-art computational models face issues of robustness and reliability — they can produce nonphysical results or crash unexpectedly. Several of these issues stem from the fact that computational simulations can become inconsistent with the second law of thermodynamics; my work identifies ways this can occur in order to design more robust "entropy stable" models which address these inconsistencies.

WHY DID YOU CHOOSE TO JOIN TEXAS ASE/EM?

I am very excited to join ASE/EM. The department is collegial and collaborative, and the expertise in computational engineering is top-notch. In fact, several faculty from ASE/EM developed tools and theory that ended up forming the foundation of some of my recent work, and I am excited to carry this torch further. Finally, Austin is near and dear to my heart — I love the city and culture, and my wife and I actually first met here!

WHAT DO YOU ENJOY MOST ABOUT YOUR RESEARCH?

What originally got me into research was the feeling of discovery when you make a breakthrough and different pieces of the research puzzle start to come together. I still love this feeling; however, the more time I've spent as a researcher, the more I appreciate the human side of research as well — the communities, collaborations, relationships and mentorships that form naturally among computational scientists, engineers and mathematicians working on solving similar problems.

HOW DO YOU LIKE TO SPEND YOUR FREE TIME?

I am fairly low-key nowadays — my wife and I enjoy traveling, hiking, going on walks with our dog Sunny and cooking together. I also enjoy playing guitar and banjo with friends when I have time. ■

MEET LUKE PETERSON

Luke Peterson joined ASE/EM as an assistant professor this fall. He earned a Ph.D. from the University of Colorado Boulder in aerospace engineering sciences, during which time he was awarded a Department of Defense National Defense Science and Engineering Graduate Fellowship. Peterson's research ranges from applied astrodynamics to celestial mechanics and computer-assisted proofs in dynamics. He is interested in tackling challenging dynamical systems problems arising from astrodynamics applications and realistic solar system models, as well as implementing theoretical and computational techniques from applied math into space mission design practice.

TELL US ABOUT YOUR RESEARCH AND WHY IT'S MEANINGFUL.

One of my current major research projects is the development of local orbital elements in cislunar space, the region between the Earth and the Moon. The motion of a satellite requires six pieces of information — three position and three velocity components. Near the Earth or Moon, we study the satellite's motion with a two-body problem — a solvable system. In this system, we can replace the position/velocity information with orbital elements that provide insight into the orbit's shape. In cislunar space, I developed local versions of orbital elements around the Lagrange points. I will continue applying this work to support future missions to the Lunar Gateway to enhance mission lifetimes, ultimately leading to more scientific discoveries to understand our place in the solar system and support life on Earth.

WHY DID YOU CHOOSE TO JOIN TEXAS ASE/EM?

UT Austin is home to one of the premiere programs in astrodynamics in the world. I will be joining a complementary core of faculty in orbital mechanics, continuing the tradition of celestial mechanics research within this department, especially the work of the late Victor Szebehely. It was a no-brainer!

WHAT DO YOU ENJOY MOST ABOUT YOUR RESEARCH?

My favorite part about my research is living in both the mathematics and engineering communities. On the one hand, I find gratification in identifying interesting celestial mechanics and dynamical systems questions based on engineering settings; on the other hand, applying the tools developed by applied mathematicians to solve present-day problems in astrodynamics pushes forward the capabilities of space mission designers. Ultimately, I just enjoy working on projects with friends and students from around the world.

HOW DO YOU LIKE TO SPEND YOUR FREE TIME?

I love to perform, compose and improvise music. I enjoy hosting friends for dinner (oftentimes homemade pizza). I like going to the movies as much as staying home to read. Though I regret not playing them as a kid, I play basketball and soccer as often as I can. ■

WILDFIRE WARRIORS

HOW UT DRONE SWARMS COULD REVOLUTIONIZE FIREFIGHTING

Wildfires are a growing global concern, endangering all forms of life on Earth through the physical threat of the fires themselves as well as their long-term impacts like air pollution and ecosystem devastation. These extreme wildfires have become more frequent, more intense and larger in recent years. In response, the scientific community has answered the call to develop new technologies to battle these blazes before they become destructive.

The University of Texas at Austin is leading one of the last teams standing in a global competition called XPRIZE Wildfire. Researchers from the Cockrell School of Engineering and the Jackson School of Geosciences are teaming up with colleagues from the University of Southampton, University of Edinburgh and Texas A&M Forest service to develop an autonomous fleet of drones that can rapidly detect and contain wildfires.

> "EVERY MINUTE COUNTS WHEN IT COMES TO STOPPING THE SPREAD OF A WILDFIRE. OUR DRONE FLEET WILL MAKE IT EASIER TO RAPIDLY LOCATE AND CONTAIN DANGEROUS WILDFIRES."

– Luis Sentis, professor in the Cockrell School's Department of Aerospace Engineering Mechanics (ASE/EM) who is leading the project

THE COMPETITION: This summer, team FLARE-X qualified as semifinalists to move on to the next stage of the XPRIZE Wildfire's $5 million Autonomous Wildfire Response Track competition, part of the larger four-year, $11 million competition XPRIZE Wildfire contest. The UT team is one of only 15 teams out of over 100 initial competitors that remains eligible for the prize. The finals will happen next July, with the FLARE-X semifinals demonstration taking place this October.

After several rounds of testing and validating their technology, teams will have just 10 minutes to detect and suppress a fire within a 1,000 km2 (386-square-mile) competition area somewhere in Alaska.

"A major issue that most current firefighters have is scale and accessibility. Our solution is to use many low-cost, unmanned, autonomous fixed-wing aircraft that drop fire retardant onto fires, both at a small/incipient stage and to create fire breaks for larger fires. Other aircraft are too expensive to have on standby, whereas this new technology is critical to catching and extinguishing fires early before they cause too much damage."

- Andrew Doty, Integrated Product Team Lead, FLARE-X

XPRIZE Wildfire is a four-year, $11 million competition incentivizing the innovation of firefighting technologies that will end destructive wildfires so that humanity and beneficial wildfire can safely co-exist. The prize aims to transform current wildfire management approaches through the development of new technologies that can rapidly and accurately detect, characterize and respond to wildfires before they become destructive.

STAY TUNED FOR FUTURE UPDATES ON TEAM FLARE-X:
jsg.utexas.edu/flare-x/

THE COMPETITION CHALLENGES TEAMS TO DEVELOP FULLY AUTONOMOUS, INTEGRATED SYSTEMS THAT CAN:

- Detect, assess and suppress an incipient-stage, high-risk wildfire
- Operate fully autonomously with no human intervention
- Do so in under 10 minutes, across a 1,000 km2 area
- Ignore low-risk fires — proving precision, not just speed

HOW IT WORKS:

The FLARE-X team will use several different types of UAVs to both detect and suppress fires. The team's solution involves three main stages: dynamic pre-fire risk mapping; active fire detection, monitoring and verification; and fire suppression.

Scout UAVs outfitted with sensors containing state-of-the-art motion planning and data processing algorithms can cover large areas quickly to spot the fires and coordinate suppression efforts. Then, a group of striker UAVs fly to the correct position before releasing a swarm of smaller terminator drones that deliver fire suppressant bombs on their targets.

THE TEAM:

The large team illustrates the complexity of the challenge. UT Austin's ASE/EM department is leading the project through a partnership with the Jackson School of Geosciences.

- The ASE/EM team, which includes faculty members Luis Sentis, Jayant Sirohi and Greg Zwernemann, are developing two types of UAVs, fire suppression payloads and machine learning software that provides system autonomy.
- The Jackson School is developing advanced infrared sensors for fire detection and geolocation.
- The University of Southampton is developing key system software and hardware solutions; mission management software that enables autonomous control of swarm of UAV swarms; and communications and datalink solutions.
- The University of Edinburgh is developing advanced fire suppression technology.
- The Texas A&M Forest Service is advising the team on fire detection and suppression techniques.

INITIAL TESTING:

This past spring, a team of aerospace engineering seniors conducted the first demonstration of the FLARE-X wildfire detection and suppression mission concept of operations (ConOps) at the Texas A&M RELLIS test facility. The aircraft designs and ConOps were developed as part of the senior capstone design course.

The demonstration featured a simulated wildfire over-flight search by the Tico prototype aircraft, equipped with a prototype of the UT-developed infrared sensor system, and delivery of a fire suppression drone by the Hugin concept development aircraft which served as a surrogate for the payload delivery aircraft.

"This test provided us with important information on how to refine our ConOps and improve the design of our aircraft, leading up to the semifinals demonstration in October," said Greg Zwernemann, professor of practice and instructor of the aerospace senior design course.

Even after graduating this spring, several of these former senior design students continued to refine their ConOps project over the summer months in preparation for the upcoming semifinals this fall.

WHAT'S NEXT:

In this next stage of the competition, teams move on to real-world field testing. Over the coming months, the XPRIZE Wildfire operations team will travel to each semifinalist team location for in-field testing. Teams will physically demonstrate their autonomous end-to-end wildfire response system, including smart detection, autonomous navigation and safety, and autonomous suppression, along with an overall technical readiness and scalability assessment of their system. These live trials will be captured by the testing partner, the Alaska Center for Unmanned Aircraft Systems Integration, and will be used for official judging, offering a unique behind-the-scenes look at wildfire technology in action. ■


9 8 7 6 5 4 3 2 1
COUNTDOWN TO
COMMERCIA

by Kendra Harris and Andrea Tinning

The precise navigation technology that could guide self-driving cars and self-flying planes — and has already become common in space technologies ranging from satellite constellations to the docking system for powerful booster rockets — started as a modest research project that aimed to better understand GPS signals.

Todd Humphreys was a Ph.D. student at Cornell University when he began writing the code for GRID, the first fully software-defined GPS receiver to operate in space. It has since been licensed by six prominent aerospace companies for use on their rockets and satellites.

> "AT THE BEGINNING, IT WAS JUST TO SERVE AN IMMEDIATE NEED OF, HEY, I WANT A BETTER RESEARCH TOOL TO CAREFULLY STUDY THESE SIGNALS. AND LET'S MAKE IT SMALL SO THAT WE CAN PUT IT ON DIFFERENT VEHICLES," HUMPHREYS SAID.

When he began using the receiver on satellite experiments, Humphreys realized GRID would lead to innovations in space. The results proved that the receiver could also be used to prevent jamming and spoofing — types of GPS interference that can confuse navigation systems. That's when companies came knocking.

Humphreys is a professor in The University of Texas at Austin's Department of Aerospace Engineering and Engineering Mechanics (ASE/EM) and director of the Radionavigation Lab. He conducts research funded by federal agencies including the National Science Foundation (NSF), Army Futures Command and the Department of Transportation. To date, his work has led to two spinoff companies and more than a dozen commercial licenses, with products ranging from precise vehicle positioning to cybersecurity technology that serves national security interests.

Humphreys is not the only faculty member in the department who has a track record of commercializing innovative technology that originated from a research lab. According to UT's Discovery to Impact Office, over the past decade our researchers have been responsible for at least six startups, 36 licenses with options, 64 filed patents and 13 issued patents. This commercialized technology is now being used in space tech applications, robotics, aviation, GPS security, biomedicine, retail and more.

These companies and licensing deals may never have come to fruition without federal research funding that gives researchers the opportunity to explore complex challenges and develop technology to solve them.

Right: Todd Humphreys also teaches a hands-on aerial robotics course that culminates in a battle of the drones at the end of each semester.

AL IZATION

ASE/EM Researchers over the last decade

6
STARTUPS

36
LICENSES WITH OPTIONS

13
ISSUED PATENTS

Left: Todd Humphreys, who created the GRID receiver, is a professor in the ASE/EM department and director of UT's Radionavigation Lab.

Top: Humphreys with his son Ramon in 2008 building an early prototype of the GRID receiver, which together with the RadioLion front end, make a powerful GNSS receiver.

Right: Hailey Nichols is the founder of Locus Lock, a spinoff out of UT's Radionavigation Lab that provides reliable and safe navigation for everyday users.

Spin Off or License?

The first fork on the path of entrepreneurship that innovators face involves deciding whether to form a company around their invention or license the intellectual property to someone else. Humphreys has explored both paths.

He and four students formed the company Radiosense in 2016 to commercialize GRID. The team (except Humphreys) was later acquired by Apple, but UT retained ownership of GRID and acquired ownership of PpEngine, a precise positioning module initially developed by Radiosense, both of which the University now licenses.

Humphreys also encourages highly motivated students to take the entrepreneurial leap. Aerospace engineering alumna Hailey Nichols took his advice and founded Locus Lock in 2021. The company offers an advanced Global Navigation Satellite System (GNSS) receiver that delivers centimeter-accurate real-time positioning, ensuring more reliable and safe navigation for everyday smartphone users to emergency crews who must make every second count.

Nichols was one of the first students to participate in UT's entrepreneurial aerospace graduate program, Launch Texas — a partnership between the Cockrell School of Engineering's ASE/EM department and the Texas Innovation Center that is producing a new class of space-tech entrepreneurs. She said she felt confident in her ability to lead a startup because of the guidance she received from Humphreys as well as the resources provided by the Texas Innovation Center.

"Having access to both deep technical support and a community that actively supports entrepreneurship was key," Nichols said.

Locus Lock now has several contracts with the U.S. Department of Defense and has attracted significant VC funding. She advises students or faculty considering a similar path to talk to as many potential customers as possible.

"Spend significant time understanding the problem you're trying to solve," Nichols said. "As your company grows and times evolve, continuously reassess your assumptions and stay agile enough to respond to changing market needs."

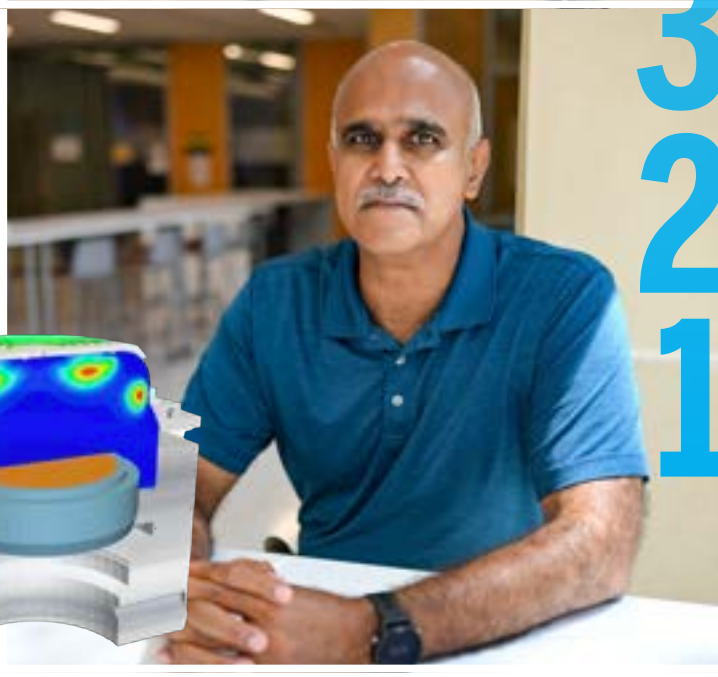
Apptronik, a company co-founded by Luis Sentis and spun out of the Human Centered Robotics Lab in 2016, further demonstrates the ability to turn research into impactful companies. Since its inception, the robotics company has developed 15 robotic systems, including the co-development of the NASA Valkyrie humanoid robot and their flagship product, the new Apollo humanoid robot — an AI-powered humanoid designed for industrial work.

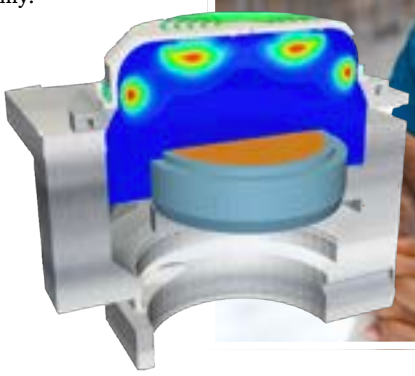
To scale the production of its humanoid robots to meet customer demand, Apptronik recently raised a more than $400 million Series A funding round, led by Google Deep Mind. The company now employs over 200 people. Research behind the spinoff was supported by the Office of Naval Research, NASA, NSF, Defense Advanced Research and Projects Agency and the U.S. Special Operations Command.

Sentis said he and his student Nick Paine decided to commercialize humanoid robots themselves after years of working on Honda's Asimo and NASA's Valkyrie humanoids. He offers a few simple pieces of advice for researchers who are thinking about starting their own company.

Left: Locus Lock's RadioLion receiver which the company is commercializing.

Right: Luis Sentis, a professor in the ASE/EM department and co-founder of Apptronik, is shown here in his Human Centered Robotics Lab.





> "WORK WITH DISCOVERY TO IMPACT TO LICENSE YOUR INVENTIONS. FOCUS ON YOUR PASSIONATE PRODUCT. DEVELOP AN EARLY COMMERCIAL STRATEGY AND SELL PROTOTYPES OR EARLY PRODUCTS QUICKLY, EVEN IN LOW VOLUME," SENTIS SAID.

Other faculty have made strides in entrepreneurship through industry connections outside of their work at the University. L.L Raja founded Esgee Technologies Inc. in 2003 after an industry connection approached him with a specific problem within the realm of semiconductors — the need for better simulation software for plasma reactors. These reactors are essential for the precision and intricacy that semiconductor manufacturing processes require.

Raja's company delivered a solution by developing VizGlow®, a plasma process modeling tool that is now used by nearly all major semiconductor equipment and chipmaking companies worldwide. Raja said having a customer at the ready made the company's focus clear and is what ultimately led to a successful business venture. Lam Research Corp., a fortune 500 NASDAQ listed company, acquired Esgee in 2022.

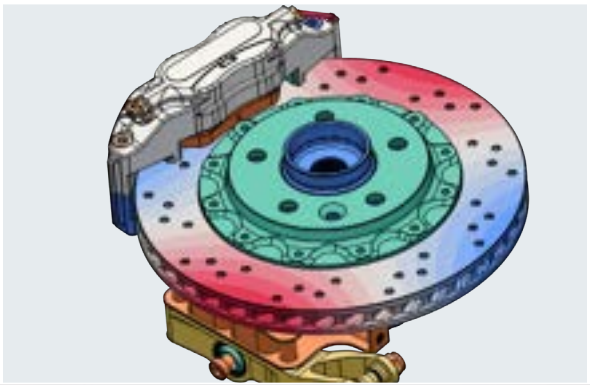
While Esgee Tech didn't receive any federal funding directly, Raja, whose research has been funded by the NSF and AFOSR, said it is important to understand the symbiotic relationship between academia and industry.

"Almost all deep-tech companies benefit from and leverage federal funding indirectly. That is why it is important that federal money supports basic research at universities on a large scale, and that the research is published in open literature," Raja said. "Commercial enterprise then leverages this open knowledge to create viable and successful products that grow the economy. A strong economy fills the federal coffers, which can then be used to fund basic science. That is the virtuous cycle."

Right: L.L. Raja, a professor in the ASE/EM department, founded Esgee Technologies when industry approached him to solve a problem for simulation software for plasma reactors.

COMMERCIALIZATION ON THE RISE

Faculty and students continue to work hard across the department, performing groundbreaking research and turning those ideas into tangible products, with more on the horizon.



John-Paul Clarke and his student created continuous descent arrival flight procedures now used worldwide, reducing noise, emissions, fuel burn and flight time for millions of flights. He developed the technology and patent for the hydrogen fuel cell-electric powertrain for Universal Hydrogen, which Beyond Aero will use to develop its aircraft. Clarke co-founded a startup now owned by Flyr, which uses his algorithms to modernize the retail experiences for airlines and hospitality businesses around the globe.

Federal funding for this research was provided by NASA and the FAA.

Thomas J.R. Hughes is world-renowned for inventing Isogeometric Analysis (IGA), a critical computational method that makes computer aided design (CAD) simulations much more accurate. His students are making waves too. A group of them founded Coreform, which provides precise simulations for complex engineering designs in applications ranging from aerospace and automotive to medicine and more. Ben Urick co-founded nVariate, which provides watertight modeling technology in a native CAD environment.

Federal funding for this research was provided by Office of Naval Research.

Moriba Jah, a self-proclaimed space environmentalist, teamed up with Apple co-founder Steve Wozniak and Ripcord founder Alex Fielding to start Privateer, which aims to be the world's leading geospatial intelligence machine learning operations platform. He is also a co-founder of GaiaVerse Ltd., which develops regenerative, restorative and socially just solutions for planetary scale problems from improving the lives of people in Gaza, to determining how and where to deploy e-mobility vehicles across Africa and achieving a circular space economy.

Federal funding for this research was provided by the U.S. Space Force. Funding for GaiaVerse came from the MacArthur Foundation.

Jeffrey Bennighof was recognized by UT Austin with its Commercialization Success of the Year Award in 2019 for his work that began in 1986. His curiosity about how to predict vibration in complex structures eventually led to the development of commercial software to analyze vehicle vibrations. Since the software first became commercially available in 2001, it has become the standard in the automobile industry for ensuring quality beginning at engineering design stages.

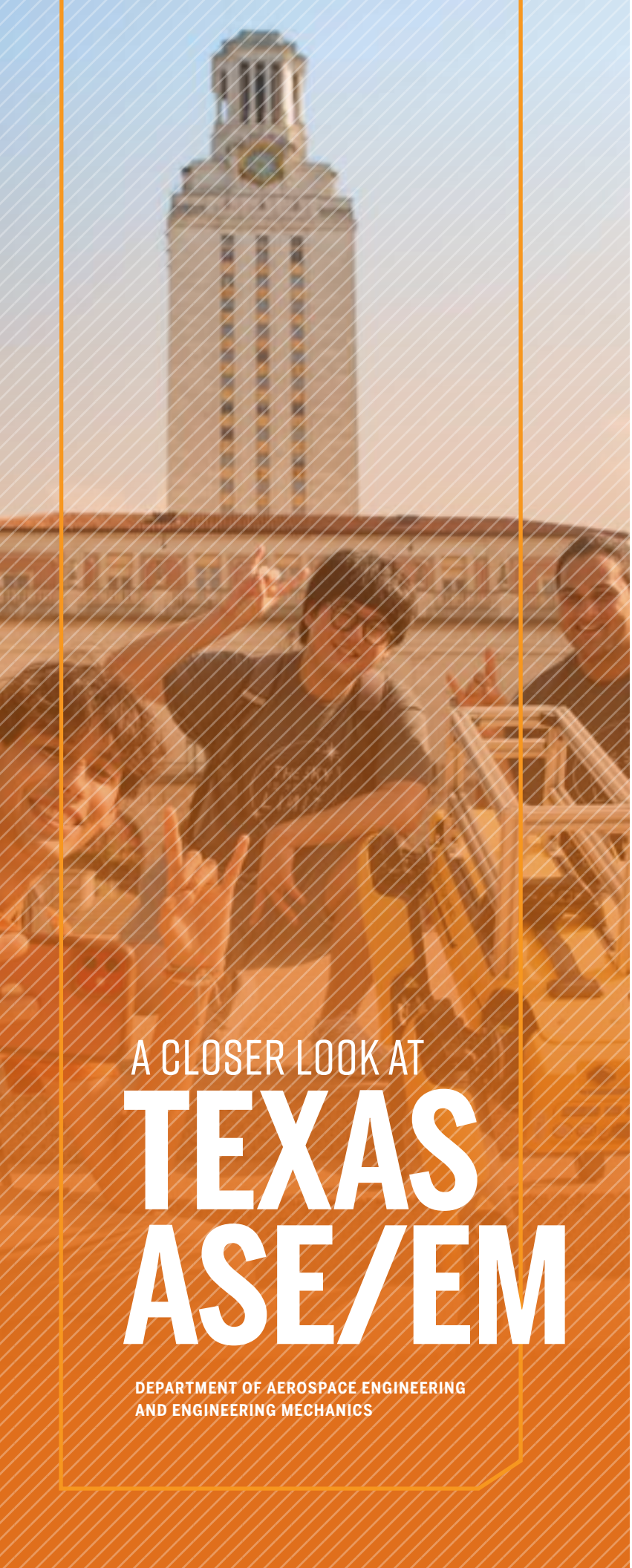
Federal funding for this research was provided by ONR. ■

ENTREPRENEURIAL RESOURCES

DISCOVERY TO IMPACT:
discoverytoimpact.utexas.edu

TEXAS INNOVATION CENTER:
texasinnovationcenter.utexas.edu

LAUNCH TEXAS:
cockrell.utexas.edu/launch-texas



A CLOSER LOOK AT

TEXAS ASE/EM

DEPARTMENT OF AEROSPACE ENGINEERING
AND ENGINEERING MECHANICS

RANKINGS

#9
Aerospace Engineering Graduate Program
U.S. News and World Report

&

#8
Aerospace Engineering Undergraduate Program
U.S. News and World Report

STUDENTS

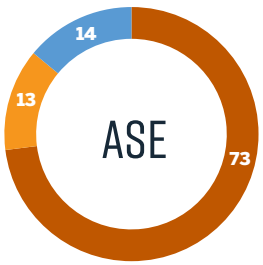
UNDERGRADUATE

ENROLLMENT	**630**
Aerospace Engineering (ASE)	527
Computational Engineering (COE)	103
UNDERREPRESENTED POPULATIONS	
Aerospace Engineering	32%
Computational Engineering	21%
WOMEN	
Aerospace Engineering	23%
Computational Engineering	33%
DEGREES AWARDED 2024-2025	
Aerospace Engineering bachelor's	99
Computational Engineering bachelor's	26

AFTER GRADUATION

ASE

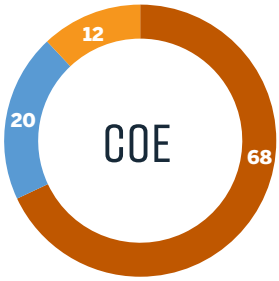
$81,000	**average starting salary**
73%	employed
13%	continuing education
14%	other



Employers: ARL , ATA Engineering, Axiom Space, Bell Flight, Blue Origin, Firefly Aerospace, KBR, Lockheed Martin, NASA, RTX, Relativity Space, SwRI, SpaceX, U.S. Air Force, U.S. Navy

COE

$85,000	**average starting salary**
68%	employed
20%	continuing education
12%	other



Employers: Amazon, AT&T, AVEVA, Capital One, Deloitte, ERCOT, FloQast, KungFu.AI, Magic Leap, Texnet, The Boeing Company

A CLOSER LOOK AT ASE/EM

STUDENTS CONT.

GRADUATE

ENROLLMENT	193
Aerospace Engineering	171
Engineering Mechanics	22
Average GPA of admitted students	3.66
Ph.D. students receive full funding	93%
Women	17.3%

DEGREES AWARDED 2024-2025
**ASE, EM & CSEM programs*

Master's	40
Doctoral	19

FEATURED AWARDS & RECOGNITION

Filipe Giraldo, an ASE Ph.D. student advised by Maruthi Akella, won the 2025 Breakwell Student Paper Award at the AAS/AIAA Space Flight Mechanics Meeting for the paper, "Optimal Grid Point Sampling for Point Mass Filtering."

Heeyong Huh, an ASE graduate student co-advised by Nanshu Lu and Luis Sentis, won the 2025 TechConnect World Student Abstract Award for the paper, "A Wireless Forehead E-tattoo for Mental Workload Estimation."

Sam Morgan, an ASE graduate student advised by Todd Humphreys, won the IEEE/ION PLANS Best Student Paper Award for satellite navigation innovation.

HOME TO

6 *Astronauts*

&

THE 1ST *Female Fighter Pilot*

Jinpai (Max) Zhao, a CSEM graduate student advised by Clint Dawson, was featured in SIAM News spotlights for his paper, "Data-driven Surrogate Model Improves Storm Surge Prediction."

Heavyn Porter, an ASE undergraduate student, won the Brooke Owens Fellowship and participated in a paid summer internship at SES Space and Defense in Washington D.C.

Krithik Vishwanath, a COE student, won the 2025 Graham F. Carey Computational Science Scholarship.

ALUMNI

6,385
alumni around the world

OUR GRADUATES ARE LEADERS IN:

84
members of the ASE/EM Academy of Distinguished Alumni

- **Research**
- **Government**
- **Industry**
- **Academia**
- **Military**

LEARN HOW OUR ALUMNI ARE CHANGING THE WORLD:

ae.utexas.edu/engage/alumni

FACULTY

FACULTY	45

HONORS & DISTINCTIONS

1	**Fellow, *MacArthur Foundation***
1	**Recipient, *Presidential Early Career Award for Scientists and Engineers***
1	**Member, *National Academy of Sciences***
4	**Members, *National Academy of Engineering***
6	**Fellows, *American Institute of Aeronautics and Astronautics***
12	**Recipients, *National Science Foundation CAREER Award***

6 Fellows, *American Society of Mechanical Engineers*
4 Recipients, *Air Force Office of Scientific Research Young Investigator Program Award*
3 Fellows, *Society for Industrial and Applied Mathematics*
3 Fellows, *American Academy of Mechanics*
4 Fellows, *American Astronautical Society*
2 Recipients, *Office of Naval Research Young Investigator Program Award*
1 Recipient, *American Heart Association Career Development Award*

FEATURED AWARDS & RECOGNITION

Srinivas Bettadpur received the 2024 American Geophysical Union Charles A. Whitten Medal for outstanding achievement in research on the form and dynamics of Earth and planets.

Clint Dawson won the 2025 SEC Faculty Achievement Award representing UT Austin, which recognizes faculty members who have excelled in teaching, research and service.

Thomas J.R. Hughes received an honorary doctorate from the National Institute of Applied Sciences of Lyon in France for advances in computational mechanics.

Todd Humphreys was honored with the Royal Institute of Navigation's Harold Spencer-Jones Gold Medal in recognition of his outstanding contributions to navigation.

Lori Magruder was appointed a board member of the Central Texas Spaceport Development Corporation.

Karen Willcox was first woman to receive the Japan Society for Computational Engineering and Science Grand Prize, which is awarded for outstanding global contributions to the field of computational engineering and science.

VIEW MORE FACULTY AWARDS:
bit.ly/awards-honors

$26.8M
in research expenditures

RESEARCH ON THE RISE

Research at Texas ASE/EM has no boundaries. From land and water on Earth to the stars and beyond, our research is not only changing the world and the lives of people who live here – it is transforming the future of air travel and space exploration, creating opportunities for future discoveries outside our world. At UT Aerospace, the sky is not the limit.

Jin Yang is the winner of a National Science Foundation CAREER award which he will use to investigate fracture propagation — the formation of cracks or fractures — in soft viscoelastic materials, such as polymers, hydrogels and biological tissues. These materials are used in a wide variety of engineering and biomedical applications including laser eye surgery, breaking up kidney stones, drug delivery and traumatic brain injury prevention, but the fracture behavior of these materials is still not fully understood, particularly under extreme loading rates and temperatures. Yang aims to bridge these gaps by developing integrated experimental and computational methods to provide a comprehensive, quantitative understanding of dynamic fracture behavior in soft, rate- and temperature-sensitive materials.

Thomas Underwood received a NASA Early Career Faculty award to demonstrate a fusion propulsion system based on z-pinch which is a method of compressing plasma by running electrical current through it. The z-pinch will compress and heat the plasma to produce fusion reactions, and the system will be paired with an electromagnetic

A CLOSER LOOK AT ASE/EM

RESEARCH ON THE RISE CONT.

accelerator to produce thrust from these reactions. The effort intends to design, build — and test a prototype device and use computational modeling to evaluate the potential performance of larger systems which would be suitable for powering deep-space missions.

Karen Willcox is leading research in the development of digital twins — virtual models that evolve alongside real world data — which originated in aerospace and were used to return the Apollo 13 astronauts home safely. This predictive technology is now used in a wide range of dynamic applications to help drive informed decision-making in real-time. Examples include flight systems for UAVs, satellites and spacecraft, automotive design, personalized cancer treatment, urban infrastructure, storm prediction, manufacturing and more. Federal funding has included AFOSR and DOE.

With support from the Army Futures Command, several **ASE/EM researchers** are leading robotics defense research and advancing autonomous robotics technology across land, air and space to help keep military personnel safe and minimize human risks in hazardous situations.

Srinivas Bettadpur and researchers from UT's Center for Space Research are leading a $2.5M grant from the National Geospatial Intelligence Agency that will be used to create excitement of discovery through spaceflight, improve the understanding of Earth and the Moon and advance national security and economic priorities.

LEARN MORE ABOUT OUR IMPACTFUL RESEARCH:

ae.utexas.edu/research

STAFF HIGHLIGHTS

Kendra Harris, the department's communications coordinator, received a 2025 Cockrell School of Engineering Staff Excellence Award for creative contributions and exemplary performance and a 25-Year University Staff Service Award.

A WARM WELCOME TO THE NEWEST MEMBERS OF OUR STAFF TEAM:

- **Devynn Alvarado**, administrative associate for receiving and inventory
- **Clifford Bibbs**, desktop support specialist
- **Brooks Ford**, events and travel coordinator
- **Tamara Ospina-Vega**, graduate program administrator
- **Kevin Sagis**, professor of practice; program director, Texas Rocket Engineering Lab
- **Karla Salamanca**, purchasing coordinator
- **Andrea Tinning**, senior alumni and industry engagement program coordinator

MEET ALL OUR INCREDIBLE STAFF MEMBERS:

ae.utexas.edu/people/staff-directory

ENGAGING INDUSTRY
ELEVATING TALENT

At UT Aerospace, we're not just preparing students to enter the workforce — we're preparing them to lead it.

Our alumni are innovators, entrepreneurs and changemakers across industries. Through our new industry engagement program, we invite partners who share our commitment to help shape the next generation of Texas Engineers — leaders who bring both technical excellence and people-centered values to their work. This year, we're launching an industry engagement initiative that deepens our department's connection with forward-thinking organizations.

Participating partners will have the opportunity to mentor and inspire students through experiential learning; connect at Industry Open House events; host additional tailored experiences; and sponsor a senior design project that tackles real-world challenges. Together, we can co-create an educational journey that equips students with skills, passion and purpose.

The senior capstone design sponsorship program was established in the fall of 2023 and brings the elements of academic education to fruition. Last year, Southwest Research Institute (SwRI) and Sandia National Labs were among the first industry partners to participate in the program.

Bryan Shrank, assistant director of research and development for spacecraft design at SwRI, worked with six seniors to create a new piece of hardware.

> "WORKING WITH THE STUDENTS ON THEIR CAPSTONE GAVE US THE OPPORTUNITY TO SHARE WHAT WE ARE PASSIONATE ABOUT, MENTOR OUR NEXT GENERATION OF ENGINEERS AND COLLABORATIVELY PURSUE THE RESEARCH AND DEVELOPMENT OF ENGINEERING BREAKTHROUGHS THAT CAN HAVE A REAL IMPACT IN OUR INDUSTRY."

— Bryan Shrank, assistant director of research and development for spacecraft design at SwRI

Aerospace engineering alumna Maritza Miranda worked on the project and said the experience inspired her to apply for a role at the institute, where she now works as a spacecraft systems engineer.

> "I TRULY ENJOYED MY SENIOR DESIGN EXPERIENCE BECAUSE IT PUSHED ME TO GROW AS BOTH AN ENGINEER AND A COLLABORATOR. THE MENTORS FOR MY TEAM'S PROJECT GAVE US A LOT OF INSIGHT ON WHAT IT IS LIKE TO WORK IN THE INDUSTRY FULL-TIME AND HOW ONE'S PERSONAL PATH TO THEIR DREAM ROLE IS FILLED WITH MANY UNEXPECTED TURNS, LEARNING MOMENTS AND OPPORTUNITIES FOR GROWTH."

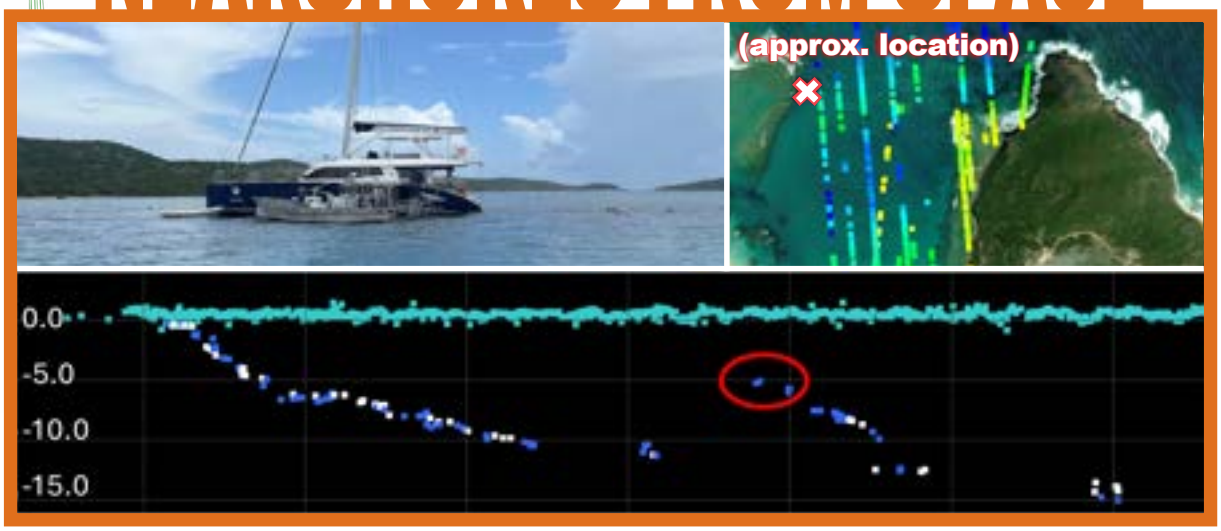
— Maritza Miranda

Senior design projects also give way to innovation. This spring, a group led by ASE/EM faculty members Greg Zwernemann and Luis Sentis was one of 15 teams that advanced to the semifinals of the XPRIZE Wildfire competition. Industry partners have the option to determine the scope of work for the project or support competitive initiatives like XPRIZE and other engineering contests.

"The senior design course at UT prepares students for entry into the aerospace profession," Zwernemann said. "As the culmination of their undergraduate learning experience, it provides an opportunity to apply previous engineering academic education to realistic development projects through hands-on experience using industry standard processes."

Learn more about industry involvement on our website.

MAPPING MYSTERIOUS NEARSHORES FROM SPACE



Above: This visualization shows a grounded sea vessel than might not have been grounded if the navigation maps used bathymetry detected by ICESat-2 (elevation is circled in red).

Despite all the technological evolution in navigation, waters just off coastal shores around the globe have remained a black box. That is, until researchers from The University of Texas at Austin, NASA and Oregon State University developed a new technology that uses satellites in space to map out these tricky areas.

Together, they developed ATL24, the first global, space-based bathymetry product that will assist broadly with improving navigation safety and maritime security. This technology will shed new light on the nearshore, areas between the shoreline and deeper water that can be dangerous to navigate because of limited topographical knowledge and uncharted hazards below the surface.

Bathymetric lidar uses spaceborne laser scanning to measure underwater terrain. The laser wavelength can penetrate the water column, providing both the water surface height and the sea floor depth.

"ATL" in ATL24 refers to the Advanced Topographic Laser Altimeter System (ATLAS), the lone instrument aboard the Ice, Cloud, and Land Elevation Satellite-2 (ICESat-2) satellite. The satellite is part of NASA's Earth Observing System, for measuring ice sheet elevation and sea ice thickness, as well as land topography, vegetation characteristics, and clouds. Lori Magruder, a professor of aerospace engineering and director of the Center for Space Research, has been instrumental in the success of ICESat-2, leading the science team that helps define and implement science goals for the program.

ATLAS's green wavelength, photon-counting lidar signal can reach depths of up to 40 meters in regions with adequate water clarity to provide shallow, near-shore bathymetric data for a range of applications, including coastal and marine science management, nearshore habitat research, marine navigation and engineering applications. Although ICESat-2 was designed primarily for cryospheric science, it didn't take long for researchers to recognize its value as a spaceborne bathymetric lidar.

The advantage of obtaining bathymetry data from space is the spatial and temporal coverage: ICESat-2 provides coastal bathymetry coverage from 88° North to 88° South latitude beginning in 2018, covering places that are very difficult to access, such as islands in the South Pacific.

In addition, ICESat-2's near-polar orbit and 91-day revisit time provides researchers with the opportunity to revisit areas where water clarity is seasonal, so if water is too opaque for its depth to be measured during one overpass, it might be more suitable on the next. Further, in places like the Florida Keys where the water is often clear, ICESat-2's orbit allows researchers to create a time series of observations and explore bathymetric change across significant weather events or as a result of anthropogenic influences. ■

E-TATTOO TRACKS
BURNOUT

In stressful jobs like air traffic control and medicine, a small miscalculation can have serious consequences. It's critical to make sure these essential personnel are in the position to perform their best, and new research may make a big impact in that pursuit.

A new study published in ***Device*** and co-authored by ASE/EM professors Nanshu Lu and Luis Sentis introduces a wireless forehead e-tattoo that decodes brainwaves to measure mental strain without bulky headgear, which could help track the mental workload of workers like air traffic controllers, physicians, truck drives and more.

Humans perform best in a cognitive Goldilocks zone, neither overwhelmed nor bored. Finding that balance is key to optimal performance. Current mental workload assessment relies on the NASA Task Load Index, a lengthy and subjective survey participants complete after performing tasks.

The e-tattoo offers an objective alternative by analyzing electrical activity from the brain and eye movement, also known as electroencephalography (EEG) and electrooculography (EOG). Unlike EEG caps that are bulky with dangling wires and lathered with squishy gel, the wireless e-tattoo consists of a lightweight battery pack and paper-thin sensors. These sensors feature wavy loops and coils, a design that allows them to stretch and conform seamlessly to the skin for comfort and clear signals.

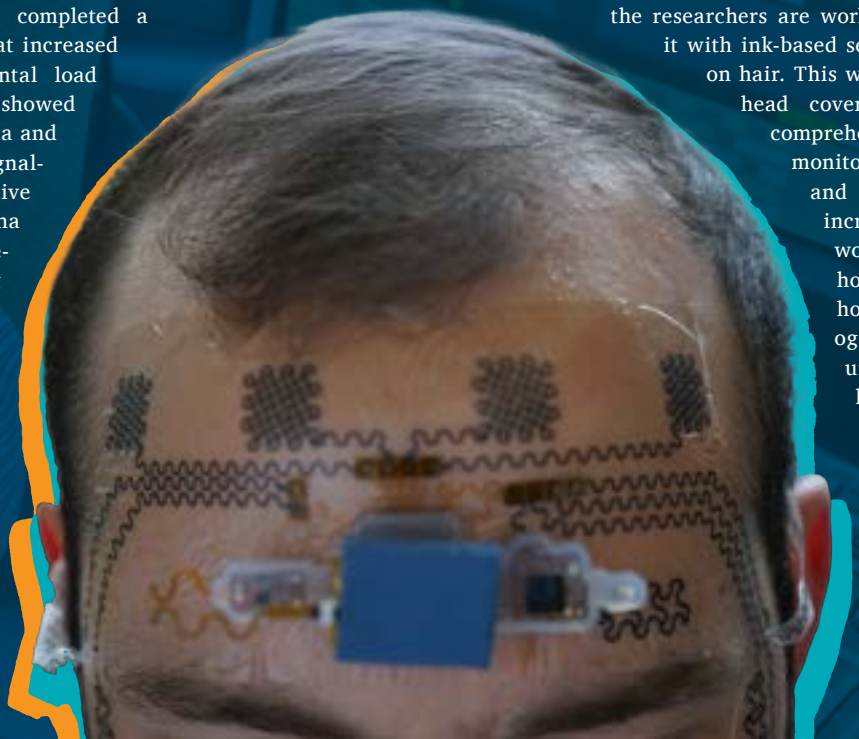
The researchers tested the e-tattoo on six participants who completed a memory challenge that increased in difficulty. As mental load rose, participants showed higher activity in theta and delta brainwaves, signaling increased cognitive demand, while alpha and beta activity decreased, indicating mental fatigue. The results suggest the device can detect when the brain is struggling.

> "TECHNOLOGY IS DEVELOPING FASTER THAN HUMAN EVOLUTION. OUR BRAIN CAPACITY CANNOT KEEP UP AND CAN EASILY GET OVERLOADED. THERE IS AN OPTIMAL MENTAL WORKLOAD FOR OPTIMAL PERFORMANCE, WHICH DIFFERS FROM PERSON TO PERSON."
>
> **— Nanshu Lu**

The device didn't stop at detection. It could also predict mental strain. The researchers trained a computer model to estimate mental workload based on signals from the e-tattoo, successfully distinguishing between different levels of mental workload. The results show that the device can potentially predict mental fatigue.

Cost is another advantage. Traditional EEG equipment can exceed $15,000, while the e-tattoo's chips and battery pack costs $200, and disposable sensors are about $20 each.

While the e-tattoo only works on hairless skin, the researchers are working to combine it with ink-based sensors that work on hair. This will allow for full head coverage and more comprehensive brain monitoring. As robots and new technology increasingly enter workplaces and homes, the team hopes this technology will enhance understanding of human-machine interaction. ■



Right: Demonstration of wireless forehead e-tattoo.

DESIGNED FOR SUCCESS

Project-based organizations and labs provide our students with valuable real-world engineering experiences, preparing them for the workforce when they head out to change the world. We look forward to seeing their progress in the years to come.

UT Team Places 2nd in FAA Data Challenge

A team of researchers took second place in the FAA 2024 Data Challenge for their project that aims to improve automatic speech recognition for better air traffic control communication.

"I am incredibly proud of the work that the team has done to address this critical issue in aviation. As evidenced by recent accidents and near misses at airports throughout the country, there is a critical need for a system to compute the risk associated with the combinatorial consequences of clearances that are issues by air traffic control and pilot action or inaction. The algorithms that the team has developed go a long way towards achieving such a system," said John-Paul Clarke, ASE/EM professor team leader.

Texas Aerial Robotics Takes 3rd in Autonomous Vehicle Competition

The Texas Aerial Robotics team landed third place in the 2025 Raytheon Autonomous Vehicle Challenge hosted by IEEE this spring. The team's two-drone system autonomously located and delivered medical supplies with impressive precision. Their lightweight scout drone first used computer vision to identify the target and relay its position, then the team's delivery drone dropped the payload within one foot of the mark. Team members say they are proud of the hard work they all put in to make this happen.

Texas Flight 6th in World

Texas Flight, the official The University of Texas at Austin Design, Build, Fly team, took first place in Texas, fourth in the U.S. and sixth in the world out of nearly 100 teams from around the globe at this year's AIAA Design/Build/Fly Competition. This year's flight objective was to design, build and test an airplane to execute an X-1 Supersonic Flight Test Program, including the launch of an X-1 test vehicle — an autonomous glider with flashing lights — and the ability to carry external fuel tanks. Teams also conducted a timed ground mission demonstration of the X-1 Flight Test Program. Texas

Flight designed and built Cassowary for the competition, one of the largest aircraft in the team's history, measuring approximately 7 feet in length with a 6-foot wingspan and weighing 46.2 pounds fully loaded — the heaviest at this year's competition. The team took 20 members to the competition held in Tucson, AZ this year and successfully completed all mission requirements.

> "BEYOND THE TECHNICAL CHALLENGE, THE COMPETITION PROVIDED AN INCREDIBLE OPPORTUNITY FOR MEMBERS TO CONNECT WITH TEAMS FROM ACROSS THE WORLD, EXCHANGE IDEAS, AND GAIN INSIGHT INTO REAL-WORLD ENGINEERING PROBLEM-SOLVING. IT ALSO SERVED AS A VALUABLE NETWORKING EXPERIENCE, WITH COMPANIES PRESENT TO ENGAGE WITH STUDENTS AND SCOUT FUTURE TALENT."
>
> **— Alia Riscado, B.S. ASE 2025 and president of Texas Flight**

NASA SUITS Challenge: Team AETHER-NET

A group of aerospace engineering senior design students was one of 10 teams selected to participate in the 2025 NASA SUITS Challenge, where college students from across the U.S. were invited to design concepts for an augmented reality display and controls method that could be integrated into future generations of spacesuits. Team AETHER-NET chose to develop and test a rugged, wrist-mounted system for astronauts to wear during spacewalks. The display delivers essential mission data — including real-time telemetry, astronaut vital signs, dynamic task tracking and navigation via a 2D map interface — directly to the astronaut. After finalizing their design, students were able to successfully test their technology in an analog setting at the NASA Johnson Space Center in May, where they also gained valuable feedback from NASA engineers, toured the historic Apollo 11 Mission Control and met with astronauts who provided feedback on their design.

Texas Rocket Engineering Lab Continues to Reach for the Stars

The Texas Rocket Engineering Lab (TREL) had an eventful year, which began with the rebuilding of its liquid-propelled rocket Halcyon using the existing engine and COPV propellant tanks. Four integrated vehicle static fires were performed within three weeks, making it the largest student-built rocket in the world ever to do so. Students successfully lifted the rocket upright using only simple hardware supplies, and attempted their first launch of Halycon in March at Spaceport America, with a second launch attempt in May. After five intense days of non-stop work during the May launch attempt, TREL made the difficult decision to step down due to time constraints and other issues. The team currently still holds the record for the world's largest student-built rocket to have ever made it to the launch pad. While disappointed with the outcome, members say it was an incredibly insightful learning experience, and their ambitions remain high as they continue to shoot for the stars.

We're also thrilled to announce that distinguished alumnus Kevin Sagis joined us as the new program director of TREL this fall. Sagis brings a wealth of experience in the aerospace industry, entrepreneurship and management to the department and TREL. He has also served as a member of our External Advisory Committee and has provided valuable mentorship to our students.

Stay up to date with TREL's future endeavors at *texasrocketlab.ae.utexas.edu*. ■

BLAST **FROM THE PAST**

JOSEPH R. CARPENTER JR., B.S. ASE 1990, was recently promoted to a senior staff engineer/associate technical fellow at Bell.

ART CRUM, B.S. ASE 1982, is a pilot for Delta Airlines.

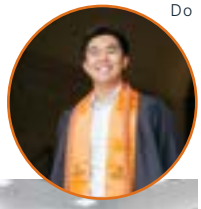

Davis

LANDON DAVIS, B.S. ASE 2025, is an aeronautical engineer at Lockheed Martin.

JEREMIAH DO, B.S. ASE 2025, is working at Lockheed Martin Aeronautics in Fort Worth, TX as a project engineer supporting the F-35 Program.

SAURUV KUMAR GARG, B.S. ASE 2025, is an aerospace engineer at Textron.

LYDIA GODDARD, B.S. ASE 2004, is a senior staff aeronautical engineer at Lockheed Martin.

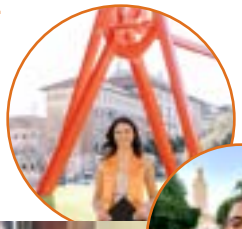

Do

ERIC HAMMER, M.S. ASE 1992, is the president and founder of Integrity Jets.

"My education and degree at UT provided the foundation for future success, starting with an 11-year career at NASA supporting the Space Shuttle Program as a flight dynamics officer. I then leveraged this background to transition to a career in the aircraft sales industry in 2002, starting my journey which most recently led to business ownership in 2024 leading my own aircraft sales and acquisition firm. None of this was possible without the foundation provided from the education I received at UT!"

WILLIAM HOEY, M.S. ASE 2014, PH.D. ASE 2017, received the NASA Early Career Achievement Medal for his work on the "development of analytical models and simulations of molecular contaminant transport, leading to improved flight system design solutions." During his graduate school years, Hoey was co-advised by David Goldstein and Philip Varghese.

CHLOE JOHNSON, M.S. ASE 2021, PH.D. ASE 2023, joined the University of Maryland's Department of Aerospace Engineering as an assistant professor.


Lavelle


Lee


Johnson

ANNA VICTORIA LAVELLE, B.S. COE 2025, is a software engineer for Visa Inc.

TAJ LEE, B.S. ASE 2025, is an integration and test engineer at SpaceX.

DAVID EARL MCALLISTER, B.S. ASE 1995, is a flight test engineer at NASA Armstrong Flight Research Center, Edwards Airforce Base, CA.

AMY MANNING, B.S. COE 2025, is an associate mechanical engineer at the Naval Nuclear Laboratory.

MARITZA MIRANDA, B.S. ASE 2025, is a spacecraft systems engineer at Southwest Research Institute.

ZACH MUCKLER, B.S. ASE 2024, is a raptor systems development engineer at SpaceX.

JOHN NOLAN, B.S. ASE 1982, M.S. ASE 1983, retired as a senior project engineer at the Aerospace Corporation in August 2024 after 40 years with the company.

ANSHU PALLE, B.S. ASE 2025, is a modeling and simulation engineer at Johns Hopkins University Applied Physics Lab.

AVI SINGH, B.S ASE 2025, is pursuing a master's degree at Stanford University.

RAY STALLINGS, B.S. ASE 1980, retired as an A350 captain after 43 years as a Naval aviator and over 35 years as a pilot for Delta Air Lines.

WILLIAM E. UNDERWOOD, B.S. ASE 1982, is an A350 captain at Delta Airlines.

SRESHA VENTRAPRAGADA, B.S COE 2025, is a software engineer at Amazon in Seattle.

CHRIS WILSON, B.S. ASE 2025, is an aircraft engineer at UPS Airlines.

UPDATE YOUR CONTACT INFO AND SEND US YOUR NEWS!

THE SKY IS NOT THE LIMIT WITH YOUR SUPPORT!

YOUR GIFT TO THE DEPARTMENT OF AEROSPACE ENGINEERING AND ENGINEERING MECHANICS:

- Enriches our students' educational experiences through hands-on learning outside the classroom.
- Provides opportunities for students to develop their research skills through undergraduate research opportunities that align with their coursework.
- Helps faculty pursue solutions to engineering challenges of tomorrow by leading efforts to address their impact on society and the environment.
- Ensures that our graduates have the analytical, computational and laboratory skills by incorporating more real-world engineering problems into our degree programs.
- Supports high-profile interdisciplinary research institutes and projects, paving the way for future technology developments in emerging areas.

With your generous and continued support, the sky is not the limit!

KATIE MULRY

LEADS STUDENT SPACE MISSION IN SWITZERLAND

When she began studying aerospace engineering as an undergraduate at UT Austin, alumna Katie Mulry B.S. ASE 2023 never expected to find herself simulating a mission to space from a fortress in Switzerland.

These days, in addition to her internship at Spartan Space in France, Mulry leads international teams of students who strive to learn more about conditions in outer space through Asclepios, the same program she attended in 2022 during an exchange semester.

Mulry credits UT Austin as the launch point for her blooming career in aerospace engineering, which already has spanned the United States and Europe. In high school, she took part in a NASA project that was hosted at UT. It was during that project that Mulry became interested in space expeditions.

A nonprofit organization founded in 2019, Asclepios offers "an analog mission that's by students, for students," according to Mulry. During the program, crews of students spend a year training together like astronauts before two weeks of living in isolation, housed in an underground bunker that simulates the extraterrestrial conditions of a mission to the Moon.

> "ENGAGING IN PROJECTS LIKE THIS – WHERE YOU GET TO MEET PEOPLE FROM VERY DIFFERENT BACKGROUNDS, WORK TOGETHER AND UNDERSTAND DIFFERENT WAYS OF DOING THINGS – IS VALUABLE ON A PROFESSIONAL LEVEL, BUT ESPECIALLY ON A PERSONAL LEVEL. YOU REALLY DO GET TO UNDERSTAND THE WORLD AND THE PEOPLE AROUND YOU BETTER."
>
> **— Katie Mulry, B.S. ASE 2023**

Read the full story published by Texas Global:
links.utexas.edu/vvhpym

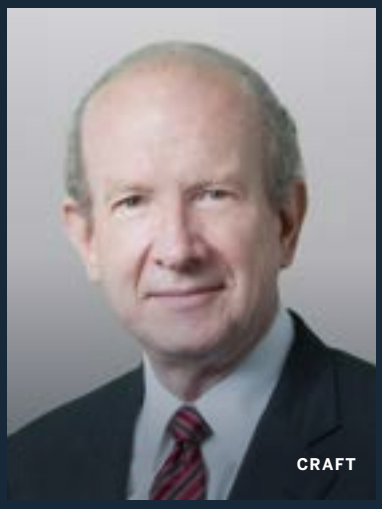
ASE/EM ACADEMY OF

CLASS OF
2025
INDUCTEES


ANTHONY


CARPENTER

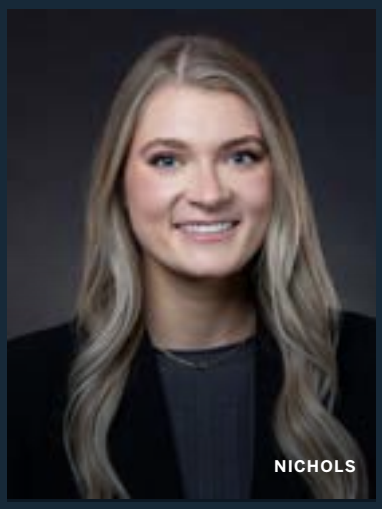

CORONA

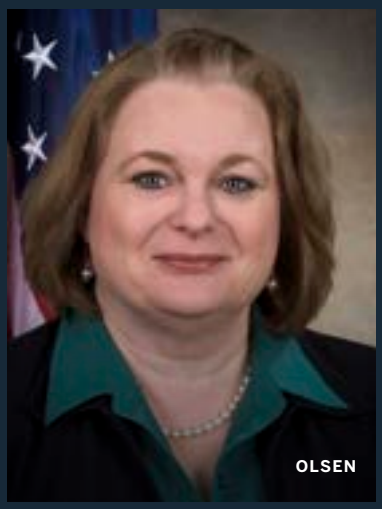

CRAFT


GIRARD


HIRSHORN


KERR


NICHOLS


OLSEN


WOODBURN

DISTINGUISHED ALUMNI

Horns up for 10 Texas Engineering alumni who were inducted into the 2025 class of the ASE/EM Academy of Distinguished Alumni on April 4 at The University of Texas at Austin.

Established in 2019, the academy's vision is to foster excellence within the aerospace engineering, engineering mechanics and computational engineering programs through recognition, participation, encouragement and support of the department.

Members are honored for leading distinguished careers that include outstanding technical contributions, excellence in leadership, and dedication to improving communities.

MEET THE CLASS OF 2025 MEMBERS:

TOBIN C. ANTHONY
CEO, Space Systems Integration, LLC

RUSSELL CARPENTER
Deputy Project Manager/Technical, Space Science Mission Operations, NASA GSFC

EDMUNDO CORONA
Principal Member of the Technical Staff, Sandia National Laboratories

RANDAL ROBERT CRAFT, JR.
Retired Partner, Head, National Aviation Industry Team and the New York Litigation Group, Holland & Knight LLP Law Firm

WILL GIRARD
Director of Engineering Talent, Bell Textron Inc.

STEVEN HIRSHORN
Chief Engineer for Aeronautics, NASA Headquarters

JUSTIN HAMILTON KERR
Chief Engineer, Mark 1 Lunar Lander, Blue Origin

HAILEY NICHOLS
Outstanding Young Alumna
Chief Executive Officer and Founder, Locus Lock

CARRIE DUMAS OLSEN
Program Manager, Next Gen STEM, NASA Headquarters, Office of STEM Engagement

JAMES WOODBURN
Chief Orbital Scientist and Ansys Fellow, Ansys Government Initiatives (AGI)

THE UNIVERSITY OF TEXAS AT AUSTIN
2617 WICHITA STREET, STOP 0600
AUSTIN, TX 78712-1221

NONPROFIT ORG.
U.S. POSTAGE PAID
AUSTIN, TX
PERMIT #391

RETURN SERVICE REQUESTED

RISING SUMMER STARS

Over the past several summers we have enjoyed hearing from our students who took the leap and gained valuable real-world experience working as interns at a variety of companies and agencies across the nation.

Follow us on LinkedIn to learn more about our students' experiences and tag us in your own posts for an opportunity to be featured!
linkedin.com/company/utaerospace

STAY CONNECTED @UTAEROSPACE