



DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

Spring 2025

TEXAS TECH

Whitacre College of Engineering

Newsletter



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The 2025 Texas Tech Electrical & Computer Engineering Spring Newsletter



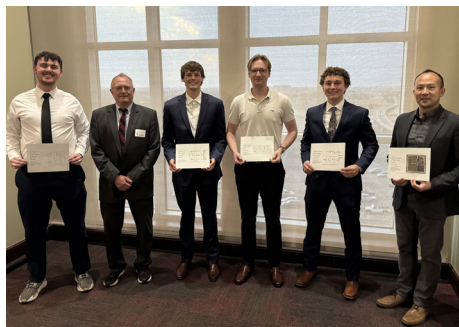
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Message from the Chair

Dear Alumni and Friends,

I am pleased to welcome you to the Department of Electrical & Computer Engineering (ECE) at Texas Tech University. Our department serves approximately 800 undergraduate and 150 graduate students, offering ABET-accredited bachelor's degrees in electrical and computer engineering, along with Master's and PhD programs. We also offer accelerated pathways for undergraduates to take graduate-level coursework. With more than \$8 million in endowments for scholarships, we ensure financial support for many of our students.

Currently our faculty consists of 25 full-time members, including 7 Fellows of major organizations like IEEE and the American Physical Society, 3 Paul Whitfield Horn Professors, and 7 endowed chair holders. In 2024, we attracted nearly \$10 million in research funding, with several renowned research centers supporting our mission.

I am delighted to share the ECE Department will get a large share of additional faculty positions from the Texas University (TUF) Fund. The Texas University Fund is a voter approved multi-billion-dollar endowment created from the state surplus, the National Research University Fund and charitable contributions. This initiative will provide one of the largest growth opportunities for the ECE Department since its founding. A total of 9 new faculty positions have been approved in the exciting research areas of:

- Human Molecular Aging - AI Bioinformatics*
- Critical Infrastructure Security*
- Pulsed Power / Electromagnetic Pulse Research*
- Telecommunications*

Research in the bioinformatics is poised to open new horizons in the field of personalized medicine. The faculty in Critical Infrastructure Security and Pulsed Power thrusts will significantly enhance our national security posture. All planned hires will have a home in existing centers of excellence and will be synergistically contributing to the research mission of the ECE Department, the Whitacre College of Engineering, and Texas Tech University. For example, the Telecommunications faculty will contribute to telecom infrastructure (cyber-defense/cyber-physical) - anti-jamming, encryption, 6G protocols and thereby enhance the research in the other focus areas.

*Dr. Michael Giesselmann
Interim Chairperson
Electrical and Computer Engineering*

FACULTY

SPOTLIGHT

Introducing Brenda Connor Professor of Practice

The Department of Electrical & Computer Engineering is thrilled to welcome Dr. Brenda Connor as our new Professor of Practice. With a distinguished career in critical infrastructure security and a passion for education, Dr. Connor brings a wealth of expertise to our faculty. Dr. Connor lead the Critical Infrastructure Security Institute (CISI) at Texas Tech, a research group dedicated to advancing the protection of essential systems such as power grids, water systems, and transportation networks. CISI's mission



is to deliver innovative solutions through multidisciplinary research, focusing on cybersecurity, resilience, and risk assessment. Her leadership in this domain ensures that Texas Tech remains at the forefront of addressing real-world security challenges.

At CISI, Dr. Connor fosters collaboration between academia, industry, and government to develop cutting-edge technologies and strategies. Her work emphasizes practical applications, aligning perfectly with her role as a Professor of Practice, where she will bridge theoretical knowledge with industry-relevant skills.

We are excited to see Dr. Connor's contributions to our department and the broader Texas Tech community. Join us in welcoming her to the Red Raider family.

Derek Johnston Awarded Electrical Engineering Ph.D.



Derek Johnston is the Lecturer in the Electrical & Computer Engineering Department, and is known for teaching several core courses within the undergraduate programs. We are proud to announce he successfully completed his Doctoral Dissertation in March, and was hooded in the Spring 2025 Graduate School Commencement ceremony. His dissertation committee included Dr. Tanja Karp (Committee Chair), Dr. Dimitri Pappas, Dr. Gordon Christopher, and Dr. Ranadip Pal.
Congratulations Dr. Johnston!



\$6 Million Semiconductor Power Device Grant

Ashlyn Grotegut

April 4, 2025



Texas Tech University's Edward E. Whitacre Jr. College of Engineering has secured a \$6 million U.S. Department of Defense grant to develop advanced semiconductor materials and devices, particularly for high-power electronics and optoelectronics.

The project aims to enhance the performance of wide and ultra-wide bandgap semiconductors, leading to more reliable, high-performance electronics for military applications. Led by Stephen Bayne, vice chancellor for Innovation & Collaboration, and ECE Associate Professor Hieu Nguyen, the three-year initiative brings together an interdisciplinary team from Electrical & Computer Engineering, Chemical Engineering, and the Global Laboratory for Energy Asset Management & Manufacturing (GLEAMM). The team will design and fabricate high-performance electronic devices such as light-emitters, transistors, and broadband amplifiers using III-nitride and gallium (III) oxide materials. The project also includes evaluating device performance in extreme conditions, with a focus on power, thermal management, and reliability for applications in defense, surveillance, and communications. "This equipment is crucial to expanding our research capabilities," said Nguyen. "Our goal is to develop robust, high-efficiency devices for the next generation of electronics."

\$3.75 Million 3DHI Program Grant

Ashlyn Grotegut
May 1, 2025



Texas Tech University's Whitacre College of Engineering has secured a \$3.75 million grant to establish a master's program focused on 3D Heterogeneous Integration (3DHI) — a critical semiconductor technology.

Funded by the Defense Advanced Research Projects Agency (DARPA) and the State of Texas, and administered by the University of Texas at Austin through the Texas Institute for Electronics (TIE), this program will train a new generation of engineers in vertically integrated chip design — where processors, memory, photonics, and sensors are stacked to form compact, high-performance systems. "By combining technical education, hands-on lab experience, and industry collaboration, we're preparing students to immediately impact the semiconductor field," said Tim Dallas, principal investigator and professor of Electrical & Computer Engineering. The program includes specialized coursework in fabrication, 3D integration, reliability testing, and emerging materials, along with access to new lab facilities, internships, and mentorship opportunities through Texas Tech's broader collaboration with TIE. Graduates will be uniquely positioned to advance U.S. leadership in semiconductor innovation as the nation addresses global supply chain challenges and increasing demand for advanced technologies.

TTU Research in Bio-Modeling Secures over \$1 Million in DOD Grants for Bio-Effects and Therapeutic Studies

Faculty in the Electrical & Computer Engineering Department have been awarded over \$1 million in grants from the Department of Defense, including funding from the Office of Naval Research (ONR), Army Research Laboratory (ARL), and DEFENSEWERX. The research focuses on numerical modeling to better understand bio-responses to electromagnetic fields, with potential applications in health and safety, including pain management, wound healing, and cancer treatments.

The interdisciplinary project, led by Ravi Joshi and Mary Baker from the Department of Electrical & Computer Engineering, collaborates with Alexander Idesman (Mechanical Engineering), Bijoy Ghosh (Mathematics), and John Lawrence from TTU Health Science Center. This research offers unique training opportunities for students in both engineering and health sciences.

Texas Tech Partnership Earns \$2.5 Million Grant for Cybersecurity Program

Ashlyn Grotegut
September 4, 2024

The U.S. Department of Defense aims to spur a research and training ecosystem at three Texas universities to tackle challenges in cybersecurity for defense applications.

Texas Tech University, along with the University of Texas at San Antonio and Angelo State University, are the recipients of a \$2.5 million grant from the U.S. Department of Defense (DOD) to develop a comprehensive research and workforce development program in cybersecurity that will address relevant defense problems.

The proposed program unites a multi-disciplinary team of Texas Tech researchers that includes Executive Director of the Institute for Critical Infrastructure Security, Stephen Bayne, and Ranadip Pal, with the Department of Electrical & Computer Engineering; associate professor Abdul Serwadda and assistant professor Tommy Dang with the Department of Computer Science; and Argenis Bilbao, senior director of the Global Laboratory for Energy Asset Management and Manufacturing (GLEAMM).

Butler Distinguished Educator Fellow Award



Congratulations to Dr. Brian Nutter on his receipt of the Butler Distinguished Educator Fellow, a three-year endowed fellowship through the Whitacre College of Engineering.

Dr. Nutter graduated from Texas Tech as an Electrical Engineer in 1987, and in 1990 with a PhD under the mentorship of Dr. Mitra. In 2002, Dr. Nutter came back to Texas Tech to help new generations of Red Raiders learn to design, debug, and entrepreneur. He has advised hundreds of students in developing the skills to succeed as engineering professionals.

Dr. Nutter has been the ECE Department's Faculty Member of the Year six times. He has won the Abell-Hanger Teaching Award, the TTU President's Excellence in Teaching Award, and is a member of the TTU Teaching Academy.

Faculty Member Of The Year Award

Congratulations to Dr. Changzhi Li for being selected as the 2025 ECE Faculty Member of the Year! Li is known as an impactful instructor and research mentor. He has successfully graduated over two dozen advisees and currently mentors ten students, including two master's thesis advisees, and six PhD advisees. In addition to his role as Associate Dean of Research & Graduate Programs, Li holds the Whitacre Endowed Chair in Electrical and Computer Engineering.



Distinguished Undergraduate Educator Awards

It is with immense pleasure we announce the recipients of the 2024–2025 Jerry S. Rawls Distinguished Undergraduate Educator Awards within the Edward E. Whitacre Jr. College of Engineering at Texas Tech University.

Dr. Brian Nutter, Dr. Derek Johnston, and Dr. Molly Dickens were nominated by the ECE Awards Committee, based on student feedback and evaluations for this distinction.

These educators exemplify our mission to ensure students leave Texas Tech with the critical thinking and problem-solving skills needed to shape the future.



Dr. Brian Nutter



Dr. Derek Johnston



Dr. Molly Dickens

Li Awarded A F Harvey Engineering Research Prize

Ashlyn Grotegut
January 10, 2025



Associate Dean of Research and Graduate Programs Changzhi Li earned the Institution of Engineering and Technology's (IET) prestigious £350,000 A F Harvey Engineering Research Prize.

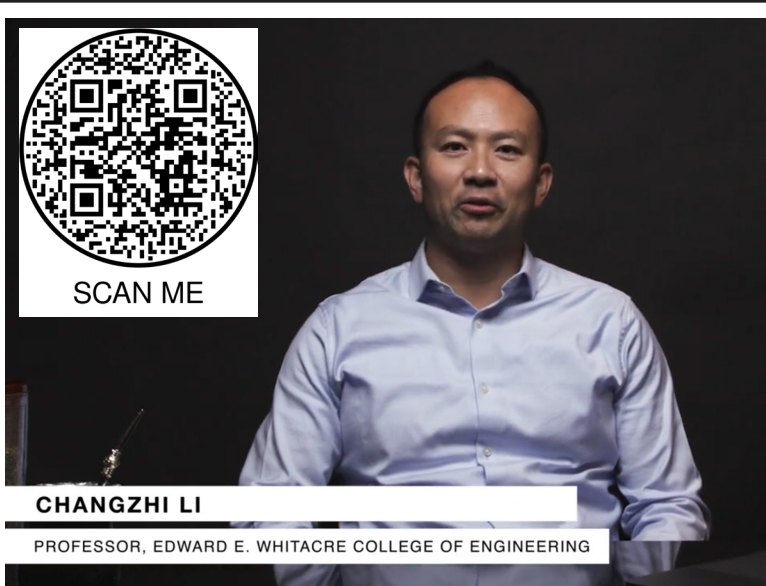
Changzhi Li was awarded the prestigious £350,000 (\$432,000) A F Harvey Engineering Research Prize by the United Kingdom-based Institution of Engineering and Technology (IET). The prize recognizes world-leading engineers whose work significantly advances their field. Li was selected for his groundbreaking research in low-cost smart radar sensors that enable non-

contact health monitoring, advanced human-computer interaction, and security surveillance. His radar systems can remotely detect minute body movements such as heartbeat and breathing, offering innovations in medical diagnosis (e.g., sleep apnea and SIDS), gesture-controlled electronics, and smart environmental monitoring. "I am deeply honored and thrilled about the work ahead," said Li, who plans to use the prize

to lead a five-year project developing compound-eye RF vision technology for next-generation biomedical radar. The goal: to enhance low-power, wearable-free monitoring for health and wellness. Li's award-winning work addresses challenges in body orientation and motion interference to improve signal clarity and reliability in radar-based biomedical sensing. He holds 14 U.S. patents (with 3 pending) and is a Fellow of the IEEE and the National Academy of Inventors.



SCAN ME



CHANGZHI LI

PROFESSOR, EDWARD E. WHITACRE COLLEGE OF ENGINEERING

Watch Here
Five Minutes with Changzhi Li

Pereira Receives Outstanding Faculty Mentor Award

Congratulations to ECE Assistant Professor, Dr. Emily Pereira, for being selected as a 2024-2025 Outstanding Faculty Mentor. This award recognizes her efforts in supporting Texas Tech undergraduate researchers. Recipients were recognized at the 2025 Undergraduate Research Awards Reception on April 17, at the Museum of Texas Tech.

Dr. Pereira joined the Electrical & Computer Engineering faculty in Fall 2024. Her research interests span across control systems, cyber-physical systems, dynamic network systems, and neurological disease. Prior to joining the faculty here at Texas Tech, she was a post-doctoral fellow at Johns Hopkins University, where she developed techniques to control for epilepsy in a clinical setting. Dr. Pereira completed her Ph.D. in Electrical Engineering at the University of Southern California, where she focused on developing control-theoretic properties for long-range memory dynamical networks.



President's Excellence in Teaching Award



Congratulations to ECE Associate Professor, Dr. Jacob Stephens, for being selected as one of the recipients of the President's Excellence in Teaching Awards for 2025. This award recognizes excellence in the teaching role, and can be offered to only one recipient per college. Recipients were recognized at the Faculty Honors Convocation on Wednesday, April 23, 2025.

Dr. Stephens is an alumnus of the TTU Electrical & Computer Engineering Department, and joined the faculty in 2019 following work at the Massachusetts Institute of Technology. He is an active researcher in the Center for Pulsed Power and Power Electronics (P3E), is a supervisor to Capstone / Advanced Capstone students, and has graduated ten MS Thesis students along with three PhD students.



STAFF

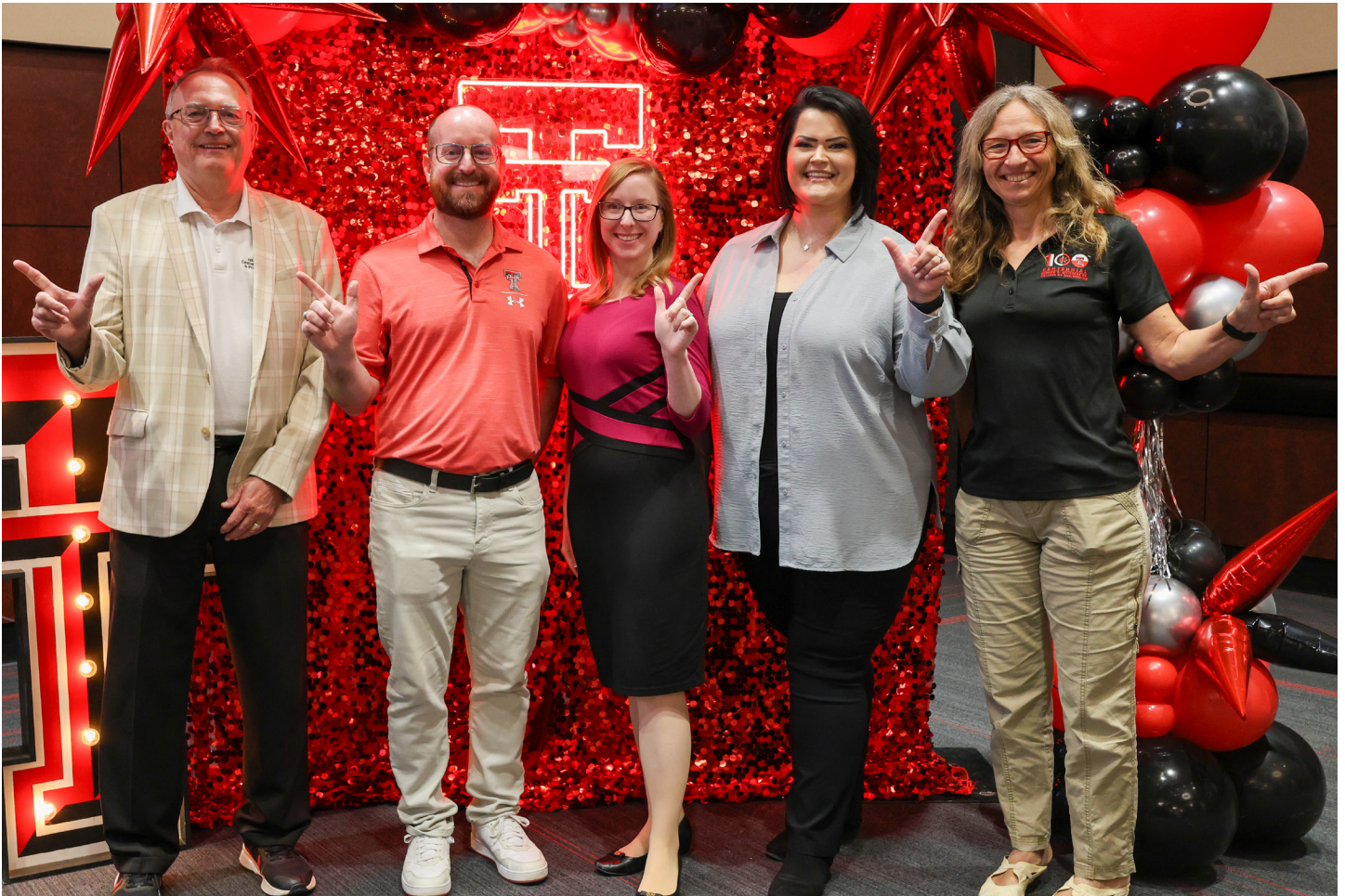
SPOTLIGHT

Richard Woodcock Receives WCOE SafeRaider Award

Department safety officer and building manager, Richard Woodcock (known as 'Woody'), is the recipient of this year's Whitacre College of Engineering SafeRaider Award. Woody graduated from Texas Tech as an Electrical Engineer with the class of '93 and enjoyed a career as an engineer at Texas Instruments before joining the Electrical & Computer Engineering Department in 2013. In his 12 years with ECE, Woody has impacted countless students and faculty with his hard work and dedication to the department.



President's Excellence in Academic Advising Award



Award Recipients: Andrew Vanderpool, Jenny Erdmann, Jennifer Maddox

The Department of Electrical & Computer Engineering advisors, nominated by the ECE Awards Committee and endorsed by the Whitacre College of Engineering, received the 2024-2025 Texas Tech University President's Excellence in Academic Advising Team Award.



STUDENT

SPOTLIGHT

ECE Scholarship Banquet 2025



Kevin Samways
MSEE Student of the Year



Austin Ladd
Senior of the Year

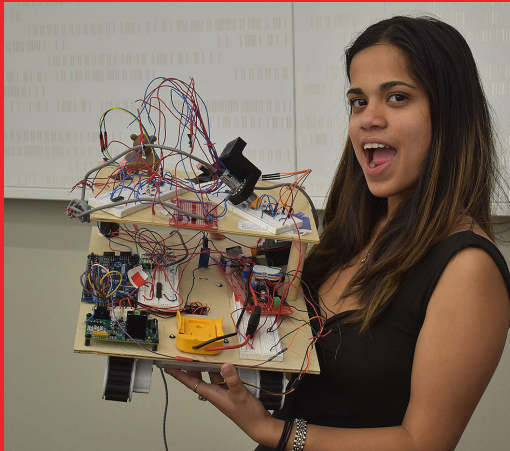


Jordie Bellar
Junior of the Year



Francisco Sisneros
Sophomore of the Year

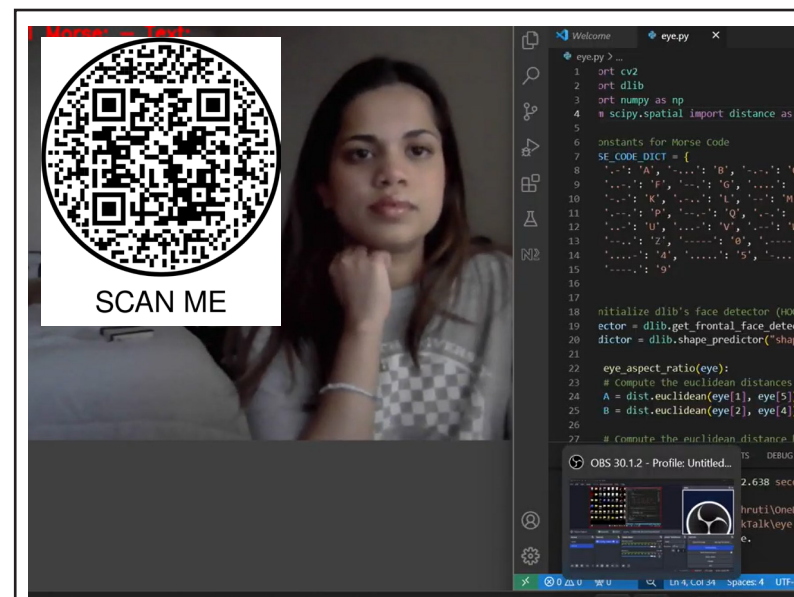
Shruti Nagawekar: 2025 Tech10 Recipient



"Texas Tech has played a major role in shaping both my personal and professional growth. I've had the chance to lead as Vice President of the Google Developer Student Club, represent the College of Engineering as an ambassador, and give back to younger students through resume workshops and mentoring. My work on BlinkTalk—an assistive communication app—was supported and recognized through opportunities like the Undergraduate Research Conference, where I won the Commercialization Award. Beyond accolades, TTU gave me a platform to turn ideas into impact, build lifelong connections, and develop the grit and resilience to pursue a future in tech innovation.

After graduation, I plan to continue working in software engineering, with a focus on accessible technologies that make a difference in people's lives. I also aim to grow my startup, BlinkTalk, and explore opportunities in entrepreneurship and AI."

Shruti Nagawekar, a senior in Computer Engineering at Texas Tech University, is making waves with her development of BlinkTalk—a software designed to help quadriplegic individuals communicate by translating eye blinks into English text using Morse code. Inspired by a poignant scene from "Grey's Anatomy" and the real-life story of a POW blinking "TORTURE" in Morse code, Shruti combined her passion for computer vision and artificial intelligence to create this assistive technology. During the summer of 2024, Shruti dedicated her time to researching and developing BlinkTalk. She trained the system to detect and differentiate



Watch Here
BlinkTalk

between short and long blinks, corresponding to Morse code's dots and dashes. A demonstration video showcasing the software's capability to spell "TIKTOK" garnered significant attention on LinkedIn, receiving over 100 likes and numerous supportive comments from peers, faculty, and industry professionals. While academic commitments have temporarily paused further development, Shruti remains committed to enhancing BlinkTalk. Her future plans include adapting the software into a smartphone application and collaborating with quadriplegic individuals to refine its functionality based on user feedback.

Graduate School Travel Award: Shahriar Mostufa

Shahriar Mostufa, a PhD student in Electrical Engineering, was recently awarded a Travel Grant from the Texas Tech University Graduate School to support his participation in a major international research event. This past January, Shahriar attended and presented at the 2025 Joint Conference on Magnetism and Magnetic Materials (MMM) and Intermag, held in New Orleans, Louisiana. At the conference, Shahriar delivered two peer-reviewed research presentations—one as an oral presentation and the other in the poster session, both of which were published in AIP Advances. Shahriar is a valued member of Dr. Kai Wu's Nanomagnetic Biosensors & Devices Group, where his research focuses on the innovative applications of magnetic nanomaterials in biomedical imaging and diagnostics. His recognition and participation in this high-profile conference highlight the impactful research being conducted by Texas Tech graduate students.



IEEE Events

Gear Robotics**Verilog Tutorial****Soldering Tutorial****Wheelock Elementary Outreach Event****Movie Night**

WIE Events

Grad Night



Decoding a Data sheet



Game Night

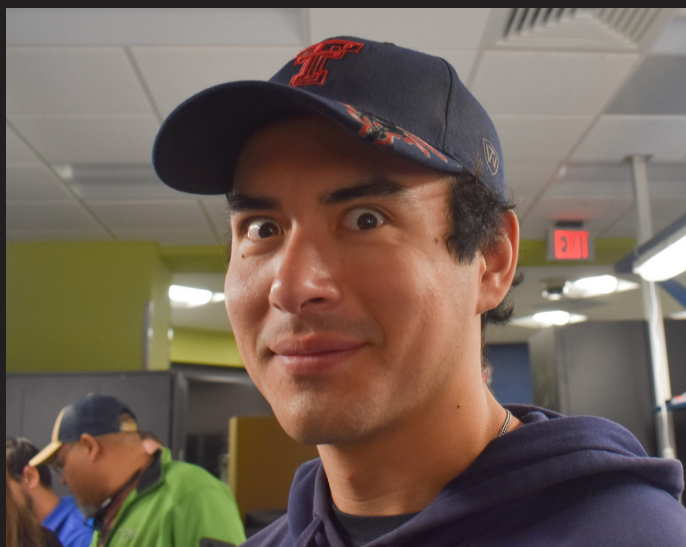
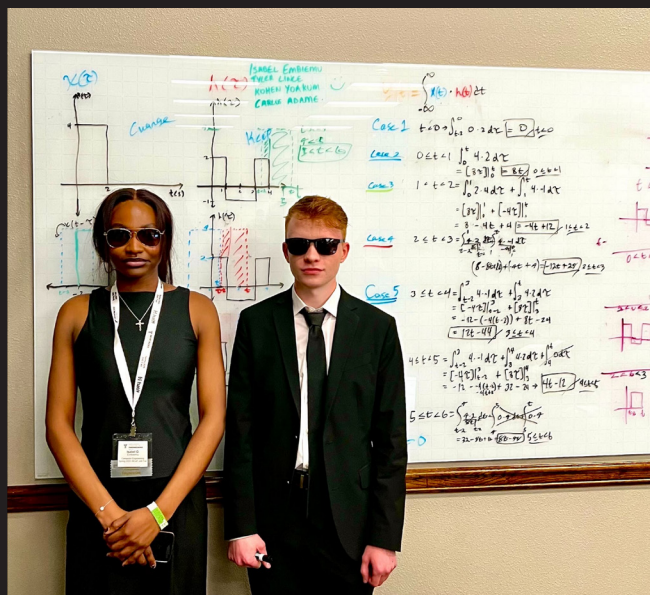


Bahama Bucks Social



Jeopardy night

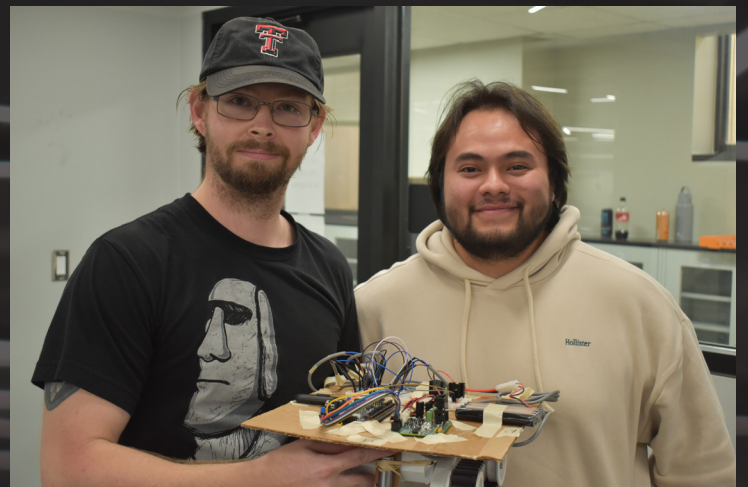
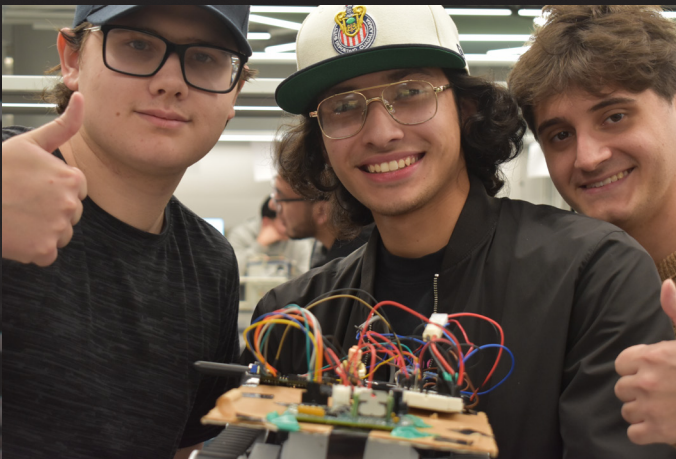
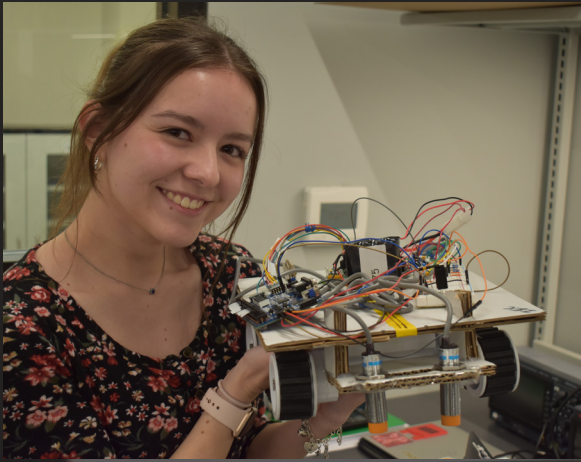




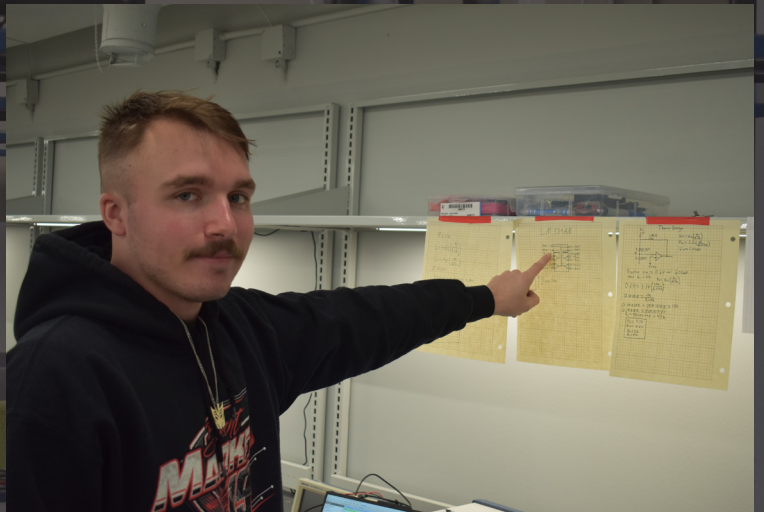
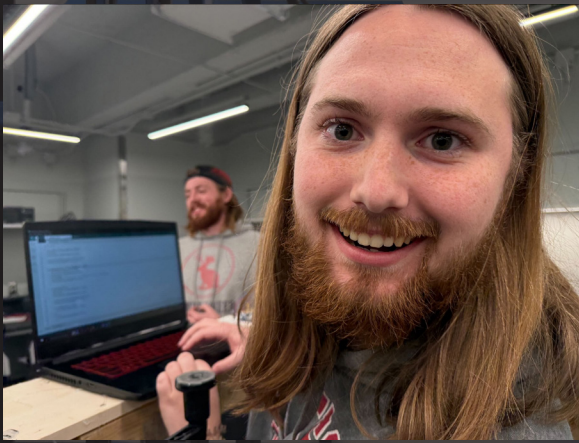
PROJECT

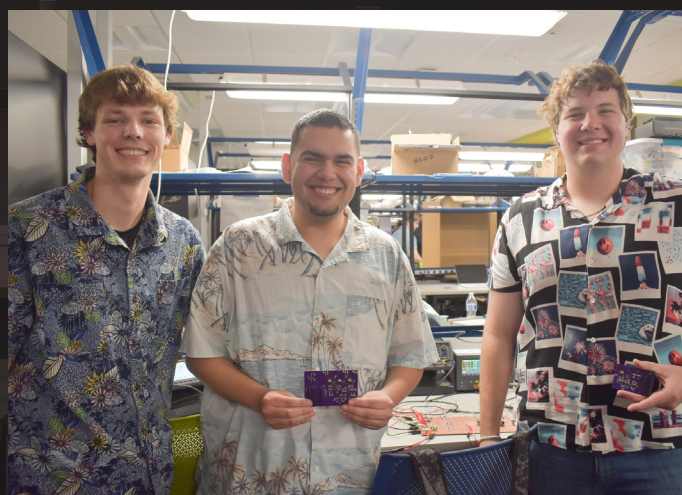
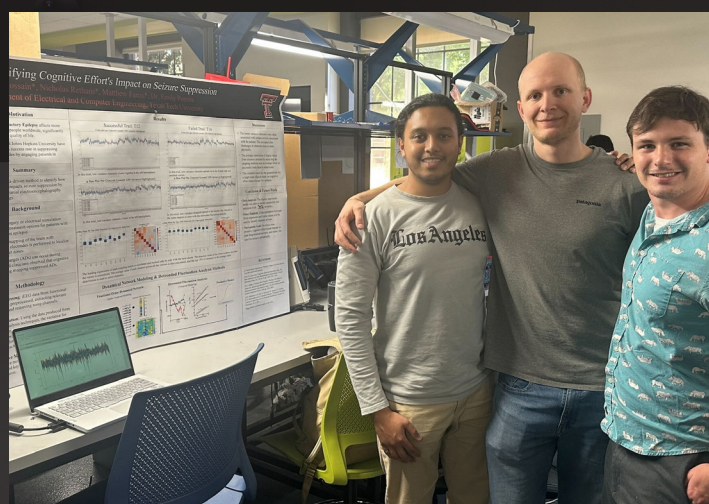
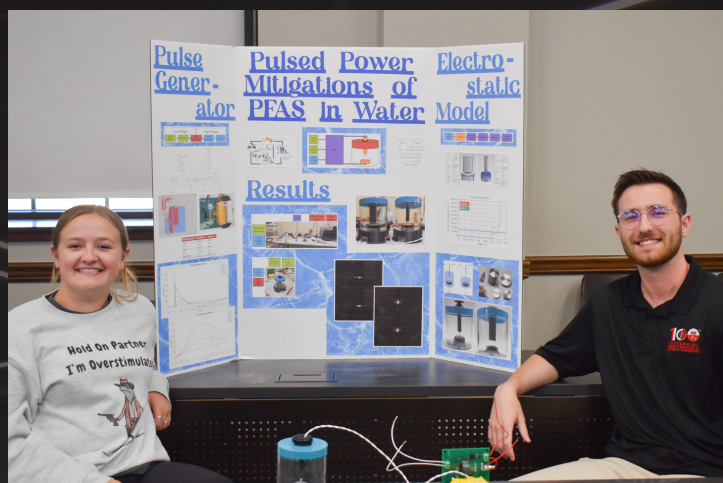
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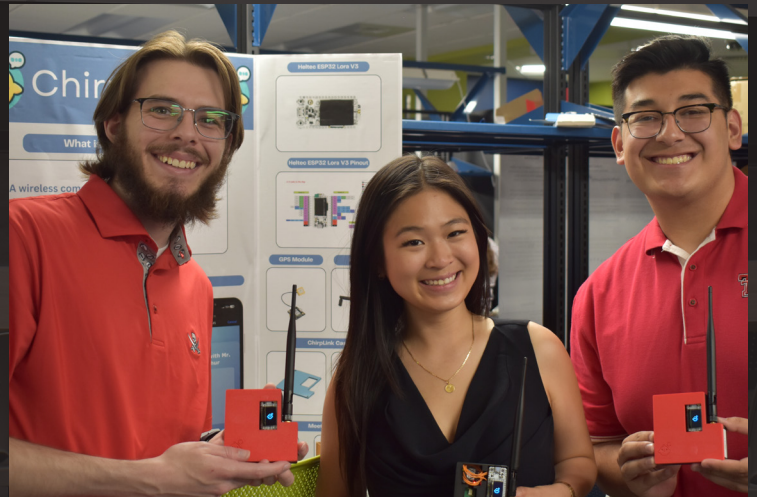
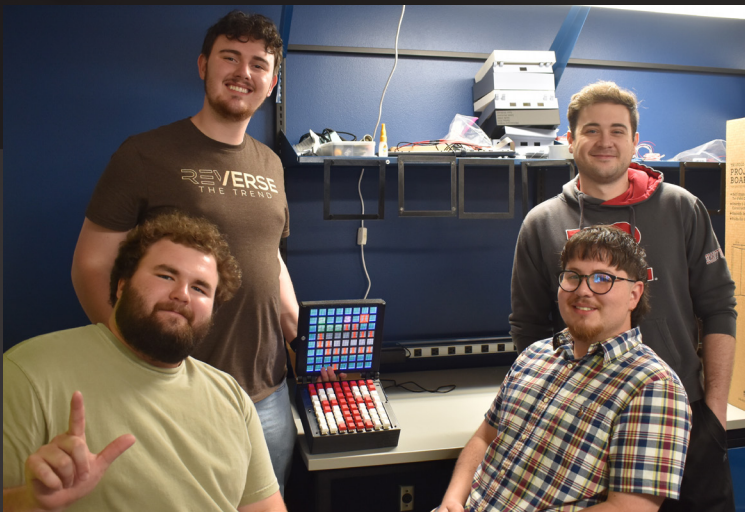
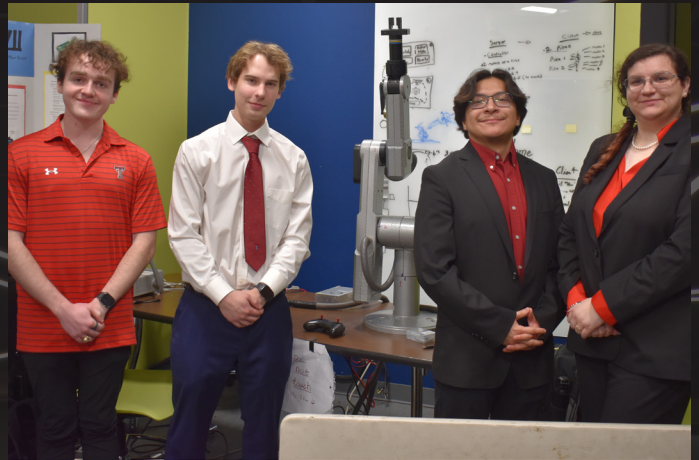
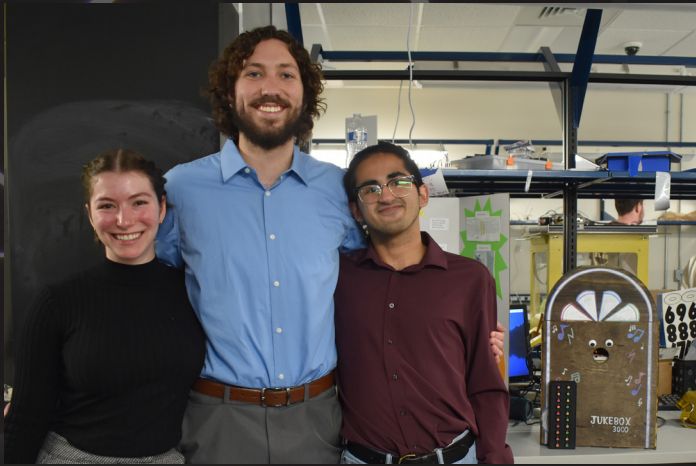


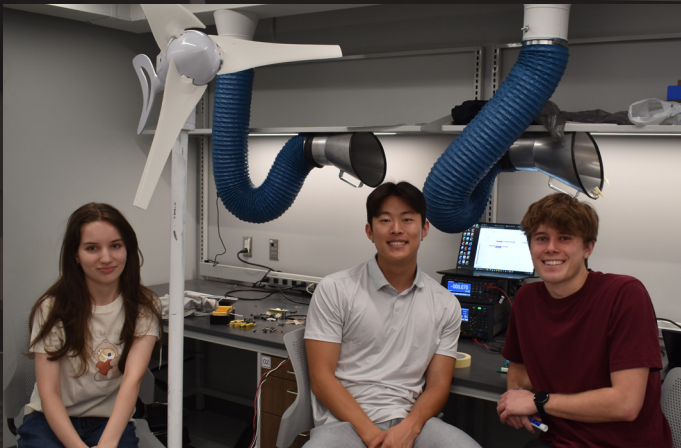
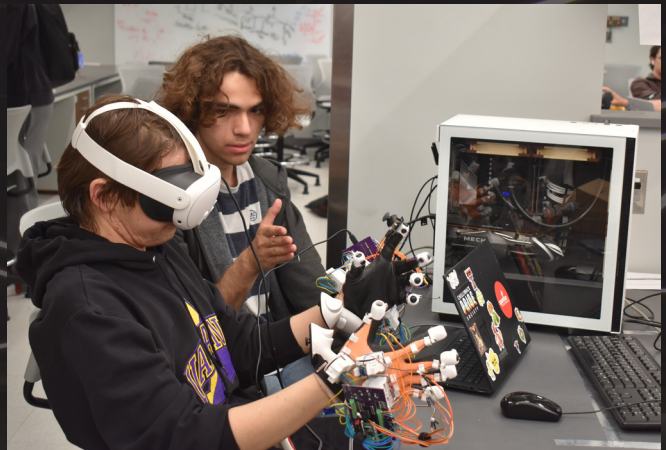


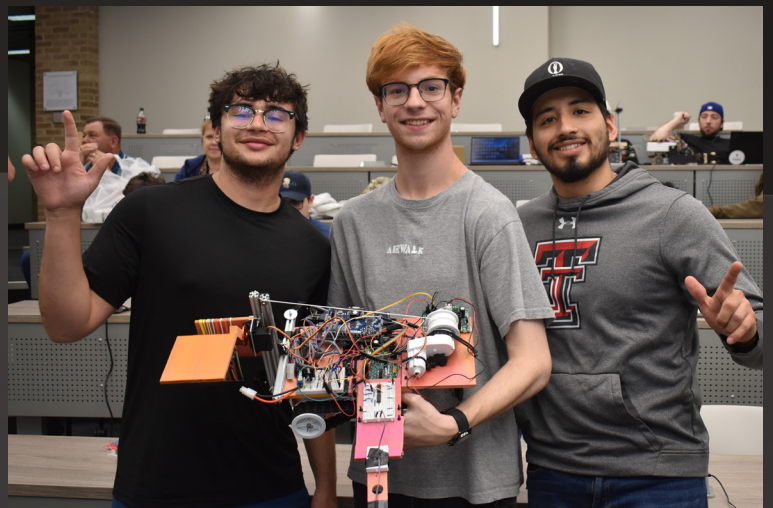
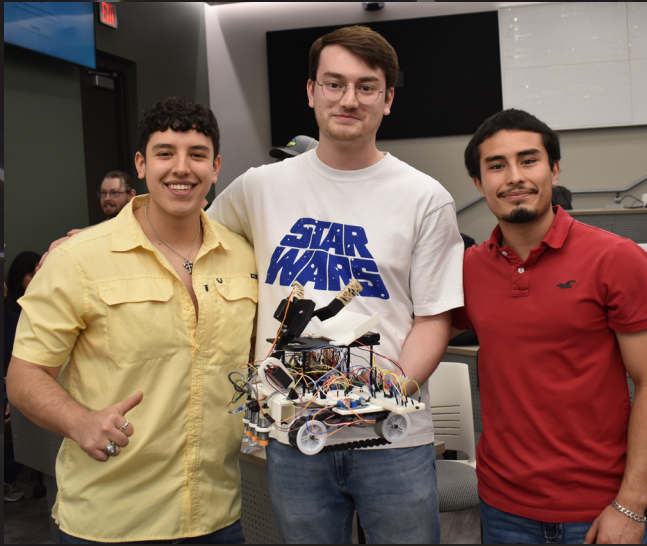
Lab Sweet
Lab ♥











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