



COLLEGE OF ENGINEERING

UNIVERSITY of HAWAII at MĀNOA

# 2025 YEAR-IN-REVIEW



# MESSAGE FROM THE DEAN

Aloha kākou,

In 2025, our College of Engineering continued building strong foundations while helping to lead university-wide efforts to grow new ecosystems in Advanced Manufacturing and Space Science and Engineering across our state. We also saw record fundraising progress in the first six months of the fiscal year—support that directly strengthens our students, faculty and facilities.

Just as important, we are seeing clear signs of success from our outreach into Hawai'i's elementary, middle and high schools through our K-to-Career initiative, part of the Chamber of Commerce of Hawai'i's Engineering Sector Partnership. These connections are expanding awareness of engineering and opening doors for local students to imagine themselves in these careers.

We have much to celebrate from 2025. We hope you enjoy this collection of highlights from the past year, and please stay tuned for more to come in 2026.

Mahalo,



Brennon Morioka, PhD, PE  
Dean, College of Engineering



COLLEGE OF ENGINEERING  
UNIVERSITY of HAWAII at MĀNOA

**10% increase in  
research awards**

15% increase in expenditures

**New student  
enrollment record**

1,700 students

**Renovations of  
Holmes Hall  
instructional labs**

**All programs  
ranked**

in US News & World Report

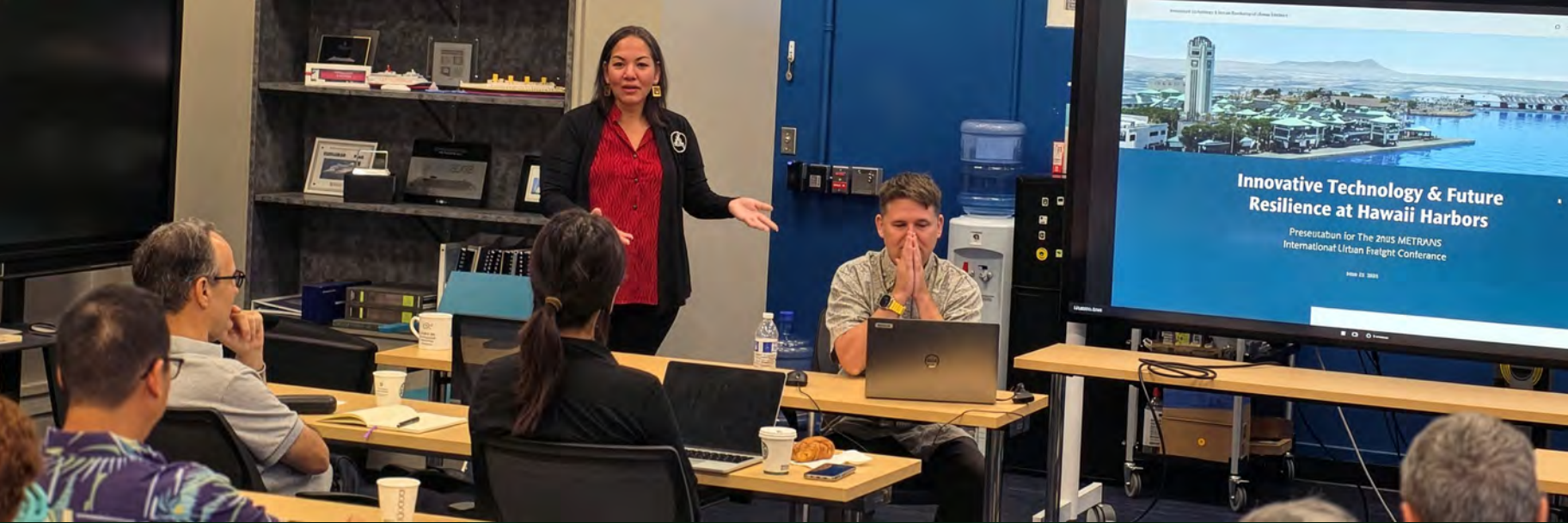
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## STUDENTS PROVIDE INTERNET ACCESS TO UNDERSERVED MOLOKA'I HOMESTEAD FAMILIES

Two students, Andrew Alling of UH Mānoa and Kainalu Seales of Kamehameha Schools Kapālana, installed Starlink satellite internet systems to provide connectivity to underserved homestead families on Moloka'i. Many residents previously lacked access to electricity and internet, limiting educational and economic opportunities. The students connected nearly 50 residents, focusing on expanding access for children's education. Seales, a Moloka'i native and former UH Junior Engineers Summer STEM Experience (JESSE) intern mentored by Alling, described the project as a way to give back to his community. Funded by a \$2,000 grant from the IEEE UH Mānoa chapter, the initiative is part of a broader micro-grid project to bring solar and wind energy to the island's homesteads. The project aims to unlock new opportunities by connecting families to online resources and educational tools. Both students plan additional visits to continue expanding infrastructure and improving quality of life on Moloka'i.



## UH ENGINEERING FACULTY COLLABORATE WITH HAWAI'I DOT TO BRAINSTORM SOLUTIONS

The Hawai'i Department of Transportation (HDOT) Harbors Division invited faculty from the University of Hawai'i at Mānoa College of Engineering to a brainstorming workshop to discuss challenges facing harbor facilities and operations. Nearly 30 faculty from Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical Engineering departments participated, offering diverse expertise to help identify potential solutions. The workshop was hosted by HDOT Harbors Division Deputy Director Dre Kalili, Harbors Administrator Davis Yogi, and their team, who shared key insights into the state's harbor infrastructure needs. This collaboration exemplifies UH Mānoa's ability to apply world-class engineering expertise to the essential industries that power Hawai'i's economy.



## **AI TRAFFIC SAFETY PROJECT WINS \$750K PRIZE FROM U.S. TRANSPORTATION DEPT.**

The University of Hawai'i at Mānoa received a \$750,000 award from the U.S. Department of Transportation for developing an advanced AI system to improve intersection safety. Led by Professor Guohui Zhang, the system uses sensor fusion—combining LiDAR, RGB and thermal cameras, and traffic signal data—to detect and predict potential crashes, protecting vulnerable road users. Zhang said, "This award highlights the University of Hawai'i's commitment to advancing transportation safety through cutting-edge innovation."

The technology runs efficiently on affordable hardware, making it scalable nationwide. The project builds on an earlier \$100,000 grant for the concept phase. The initiative is a collaboration between UH, Hawai'i DOT, Pacific International Center for High Technology Research, and NEC Corporation of America. The team plans to develop and test prototypes in real-world conditions to reduce traffic injuries and fatalities.



## UH MĀNOA PROGRAMS AND GLOBAL RANKINGS HIGHLIGHT COLLEGE OF ENGINEERING'S IMPACT

The University of Hawai'i at Mānoa continues to gain national and international recognition for academic excellence, with its College of Engineering playing a key role. In the 2025 *U.S. News & World Report* Best Graduate Schools rankings, UH Mānoa placed seven graduate programs in the top 50 nationally, including electrical engineering at No. 90 and civil engineering at No. 91. The College of Engineering ranked No. 163 among U.S. doctoral engineering schools. Globally, Times Higher Education ranked UH Mānoa's engineering programs in the top 501–600 out of over 25,000 institutions, placing it in the top 2–4% worldwide. Provost Michael Bruno said these rankings "reflect UH Mānoa's unwavering dedication to academic excellence and impactful research." The College's rise reflects its understanding of the evolving landscape and ability to navigate it successfully.



## A NEW WAY TO HELP SOME COLLEGE STUDENTS: ZERO PERCENT, NO-FEE LOANS

The UH College of Engineering launched the Hawai'i Renewable Learning Fund, a zero-interest loan program supporting low-income engineering students. Backed by a \$2.5 million revolving fund from the Harold KL Castle Foundation and other donors, this Social Finance–designed pay-it-forward initiative lets students defer repayment until earning \$50,000. If graduates are hired by participating engineering firms, those employers pay off the loans, easing financial burdens and encouraging local employment. Alex Harris, vice president at the Harold KL Castle Foundation, noted the program's connection to Hawai'i's cultural value of "kokua," saying, "There is a long tradition here that when one person succeeds, everyone is lifted up." This model alleviates financial barriers and supports critical industries in defense, construction, and tourism. As a proof of concept, the program helps the College in fulfilling its commitment to educational access, economic development, and community upliftment. Learn more at [socialfinance.org/work/hawaii-renewable-learning-fund](https://socialfinance.org/work/hawaii-renewable-learning-fund).



## UH STUDENT APPLIES SKILLS TO W. M. KECK OBSERVATORY

UH mechanical engineering student Ka'ala Deitch has been turning classroom skills into real-world impact at the W. M. Keck Observatory, where he helped redesign a critical platform on the Keck II telescope to improve safety and protect sensitive equipment. A graduate of Ke Kula 'O Nāwahīokalani'ōpu'u, Deitch brought a strong sense of place to the project after joining Keck through the Akamai Workforce Initiative in 2023, which connects local students to STEM internships across Hawai'i. With no existing models to rely on, he created a new platform that redirects weight away from fragile cabling beneath the telescope's rotating structure. Now in his final undergraduate semester conducting thermal systems research through UH Mānoa's Space Science and Engineering Initiative, Ka'ala plans to enter the College's mechanical engineering master's program, and continue to serve as a bridge between science and the community.



## **PINEAPPLE POWERHOUSE: STUDENTS' HIGH-FLYING FARM TECH WINS INTERNATIONAL AWARD**

UH undergraduate students from "Team 'Āina," made up of College of Engineering and College of Natural Sciences students, won the international Farm Robotics Challenge 2025's Excellence in Productivity (Air) award, earning a \$10,000 prize for their AI-powered robot and drone system designed to count and size pineapples at Dole Plantation. Competing against 34 teams worldwide, the team's innovative solution addresses Hawai'i's unique agricultural challenges and labor shortages by combining aerial drone surveys with ground-based robotic imaging. Lead organizer Rona Lei Duldulao emphasized the importance of supporting local farmers through technology. Faculty advisors from UH's College of Engineering, Natural Sciences, and Tropical Agriculture guided the project, highlighting its potential to scale for other crops. This achievement shows UH Engineering's ability to drive agricultural innovation that is both rooted in Hawai'i and globally significant.



## UH MICROELECTRONICS PROGRAM BUILDS PIPELINE OF HOMEGROWN TALENT

The University of Hawai'i is strengthening Hawai'i's technology workforce through its innovative microelectronics program, which builds a pipeline of homegrown talent equipped to meet the growing demands of the semiconductor industry. As part of the Northwest AI Hub, a national innovation initiative that includes partners such as Stanford University and the University of California, Berkeley, the program combines rigorous academic coursework with hands-on internships and research opportunities, giving students practical experience in semiconductor design, fabrication, and testing. By closely integrating workforce training with cutting-edge research and industry partnerships, UH is preparing students to excel in this critical and rapidly evolving field. This initiative addresses the national shortage of skilled microelectronics engineers and demonstrates UH's efforts to prepare for Hawai'i's economic and technological future.



## CRYSTALS TO CIRCUITS: HOW DR. BRENDA MCCAFFREY FOUND HER PATH THROUGH UH ENGINEERING

Dr. Brenda McCaffrey, a distinguished alumna of the College of Engineering, exemplifies the transformative power of UH's engineering education. Her journey began as a physics student, growing crystals for fusion reactor detectors, but mentorship from Professor Kazutoshi Najita ignited her passion for semiconductors. That foundation propelled her into a successful career in the semiconductor industry, including roles at Motorola and Brooktree Corporation, and culminated in her founding White Mountain Labs. Dr. McCaffrey's story highlights the role of UH Engineering in nurturing talent that drives innovation in high-tech industries. Now retired, she and her husband continue to support UH Engineering through estate planning, underscoring their commitment to the College's lasting impact on Hawai'i's technological future. Her advice to students—seek great mentors, be resilient, and stay curious—resonates as a guiding principle for future engineers.



## **AEROSPACE ENGINEERING STUDENT WINS NATIONAL SPACE SCIENCE AWARD**

In late 2024, UH Mānoa aerospace engineering graduate Sapphira Akins earned the 2024 Universities Space Research Association (USRA) Distinguished Undergraduate Award and the \$5,000 John R. Sevier Memorial Scholarship, which supported her completion of her bachelor's degree and transition into UH's BAM (bachelor's and master's) program. Named Outstanding Graduating Senior in mechanical engineering, Akins led work on a student-built satellite selected for NASA's CubeSat Launch Initiative and gained international research experience in Switzerland, all while pursuing her goal of becoming a pilot and astronaut. Akins emphasizes the importance of persistence and collaboration in her success, noting that every research project she worked on relied on strong teamwork to solve problems and generate solutions.



## BIO-INSPIRED BREAKTHROUGHS: ENGINEERING SOLUTIONS FROM NATURE

UH College of Engineering Assistant Professor Tianlu Wang is pioneering bio-inspired soft robotics that mimic the efficient, adaptable movements of aquatic animals such as fish, jellyfish, and octopuses. By studying the biomechanics and fluid dynamics of these creatures, Dr. Wang's research has led to the development of tiny, magnetic soft robots capable of navigating complex environments like delicate underwater ecosystems and the human body. These innovations hold promise for transformative applications in healthcare, sustainability, and industry. Dr. Wang's work not only advances robotic technology but also fosters collaboration between engineers and biologists to unlock nature's engineering secrets. By bridging multiple fields, UH Engineering is providing innovations that address critical challenges across the islands and beyond.



## FORGING THE FUTURE: UH'S ADVANCED MANUFACTURING INITIATIVE

Hawai'i's reliance on imports for over 90% of its goods leaves the state vulnerable to supply chain disruptions, a challenge the University of Hawai'i is addressing through a statewide Advanced Manufacturing Initiative. Led by the UH College of Engineering, this effort focuses on "point-of-need" manufacturing—using 3D printing, materials science, and precision design to produce critical parts locally for both civilian and military use. Professors Tyler Ray, Joseph Brown, Lloyd Hihara, and Zachary Trimble are spearheading these efforts, integrating cutting-edge research to build a resilient industrial base. This momentum further extends into the College of Engineering's new Space Sciences and Engineering Initiative, which aims to expand Hawai'i's high-tech sector with a new \$30–\$40 million instrument development center at UH Hilo by 2030.



## FROM PAGEANT QUEEN TO PROJECT ENGINEER: ALUMNA LEADS MCCARTHY MALL RENOVATION

UH alumna Kiana Yamat returned to her alma mater this year as a project engineer for Hensel Phelps, leading the construction transformation of McCarthy Mall under the Mānoa Mini Master Plan. A College of Engineering graduate and Miss Hawai'i USA 2022, Yamat played a key role in managing contracts, materials, and finances for the major campus upgrades, including the construction of a modern interdisciplinary learning facility that will serve as the new home for the College of Education. Her journey from president of the student chapter of the American Society of Civil Engineers to managing a multi-million dollar renovation at the heart of campus highlights the direct pipeline between the College's professional partnerships and Hawai'i's infrastructure projects. By overseeing the replacement of Snyder Hall and the revitalization of the mall, Yamat applied her UH engineering foundation to build a more modern, accessible campus for future generations of students.

