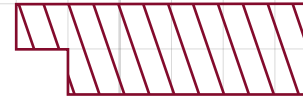
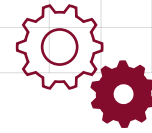
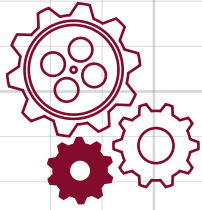


# The Conduit

NEWS FROM THE COLLEGE OF ENGINEERING AND SCIENCE



## SPRING 2026

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### A Season of Momentum: New Leadership, Expanding Innovation and Lasting Connections

Welcome to the spring 2026 issue of *The Conduit: News from the College of Engineering and Science* at Florida Tech!

In our last edition, I noted that we were about to conduct a national-level search for a new dean. I am happy to report that the search has concluded successfully, and we have hired Dr. Sambandamurthy (“Murthy”) Ganapathy.

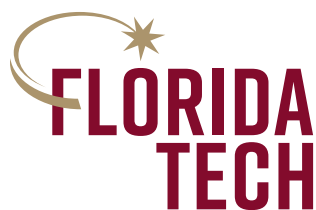


Dr. Ganapathy comes to Florida Tech from the University at Buffalo, where he serves as associate dean for research in the College of Arts and Sciences and as interim director of the Quantum Institute. There, he oversees a multidisciplinary research enterprise and supports several externally funded projects. An internationally recognized scientist working at the intersection of material science, quantum physics and interdisciplinary research, Dr. Ganapathy will join us in July, and we look forward to what is sure to be an era of continued growth and success for the college under his leadership.

In terms of academics, the college continues to make great progress on several fronts, most notably in artificial intelligence (AI). The college now offers over 20 courses in AI. We also offer an undergraduate AI Certificate, which is available to all Florida Tech students, and two AI specializations in the computer science B.S. and M.S. programs. Regarding research, it’s difficult to find a project that doesn’t involve AI in one way or another, and we expect that trend to continue for the foreseeable future.

Finally, one of the things that I have appreciated over the years is when former students reach out just to say “hi” and let me know what they are up to. It happens far less than you might expect, but we really do appreciate it. If you haven’t reached out in a while, consider sending an email to one of your favorite professors. I am sure they will enjoy hearing what you are up to.

Respectfully,  
[Phil Bernhard](#), Ph.D.  
Interim Dean, College of Engineering and Science



FLORIDA'S STEM UNIVERSITY



# Panthers on the Rise

## 1 KELLE WENDLING '93, '97 MBA

Kelle Wendling '93, '97 MBA, has been appointed to Sidus Space's board of directors.

To the board, Wendling brings more than 30 years of executive leadership and government contracting experience spanning the space systems, Intelligence, Surveillance and Reconnaissance (ISR), and Federal Aviation Administration (FAA) markets.

Also a member of Florida Tech's [board of trustees](#), Wendling previously served as president of the space systems sector at L3Harris Technologies Inc., where she led strategic growth initiatives, innovation programs and mission-critical efforts supporting U.S. and international government customers.

## 2 CORA RICHARDSON-HODGE '95

Cora Richardson-Hodge '95 has been elected Anguilla's first female premier following the 2025 general election.

Richardson-Hodge, a veteran lawyer with more than 20 years of legal and political experience, leads the Anguilla United Front, which secured a decisive victory over the incumbent Anguilla Progressive Movement, marking a significant shift in the island's political leadership.

As premier of Anguilla, Richardson-Hodge is expected to prioritize rebuilding economic resilience, strengthening opportunities for youth and advancing sustainable development initiatives across the island.

## 3 MARTHA K. WILLIAMS '03 PH.D.

Martha K. Williams '03 Ph.D. has been featured in the NASA Technology Transfer Program's "Meet the Inventor" series.

Williams earned three degrees across multiple disciplines, including a bachelor's degree in chemistry and biology, a master's degree in chemistry and a [doctorate in polymer chemistry](#). During her career at NASA, she received the Silver Snoopy Award in recognition of her significant contributions to the human spaceflight program.

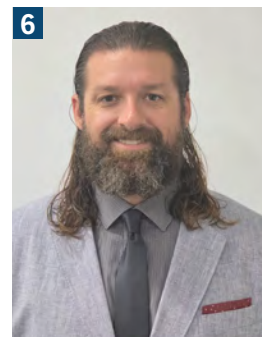
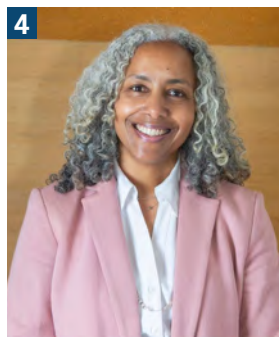
Her work resulted in numerous patents spanning hydrogen sensing materials, aerogel composites, cryogenic thermal insulation materials, thermal management systems and flame-retardant additives. Williams was later inducted into the NASA Inventors Hall of Fame, becoming one of only five women to receive the distinction.

After retiring from NASA in 2018, Williams became senior technology advisor at GenH2 Corp.

## 4 DEIRDRE GONSALVES-JACKSON '04 PH.D.

Deirdre Gonsalves-Jackson '04 Ph.D. has been appointed provost and vice president at Virginia Wesleyan University (VWU).

Gonsalves-Jackson previously served as vice president of VWU Global Campus. Under her



leadership, the division experienced significant growth, expanding to approximately 3,500 learners during the 2023–2024 academic year.

Her career includes multiple honors recognizing her leadership and contributions to STEM outreach and higher education, including Florida Tech's [WISE Alumna Legacy Award](#).

## 5 MELISSA MEISENBERG '05 M.S.

Melissa Meisenburg '05 M.S., a senior environmental specialist in Indian River County's Natural Resources–Lagoon Division, has received the Lagoon Champion Award from the Clean Water Coalition of Indian River County.

The award recognizes individuals for contributions to conservation, advocacy and education supporting the health of the Indian River Lagoon.

Meisenburg has led initiatives that combine scientific research with community engagement and was recognized for her role in advancing the county's Lagoon Management Plan. The plan addresses 17 factors affecting lagoon health and has generated strong public support

Recent efforts under the plan include a Living Docks program, developed in partnership with Florida Tech and community volunteers to create oyster habitats; removal of abandoned vessels to reduce pollution and improve navigation; and a seagrass restoration project spanning 22.8 acres, one of the largest of its kind in the lagoon.

## 6 JOSHUA REVORD '08

Joshua Revord '08 has been elected chair of the Florida Seaport Transportation and Economic Development (FSTED) Council for the 2025–2027 term.

Revord serves as port director for the St. Lucie County Department of Port, Inlet and Beaches, where he leads port operations and works with the St. Lucie

County board of county commissioners on port development and coastal management initiatives.

The FSTED Council is responsible for advancing Florida's economic development goals through the implementation of seaport capital improvement projects at the local level.

## 7 RYAN MONTES '13

MicroPure Genomics, led by Ryan Montes '13, has received a \$1.25 million Small Business Innovation Research grant from the National Science Foundation to support research and development aimed at improving front-end sample preparation for genomic analysis in research and health care.

The funding will support efforts to address a key bottleneck in genetic testing workflows. MicroPure is developing µPrep, a fully automated, end-to-end sample preparation system designed to operate without magnetic beads or specialized technical training.

The platform is intended to make genetic testing more accessible, scalable and cost-effective by supporting DNA, RNA and protein analysis.

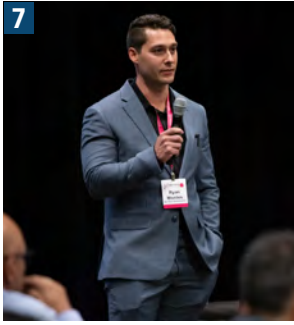
## 8 OZ WASSERMAN '16

Oz Wasserman '16 has announced a \$7 million seed funding round for his company, Opsin Security.

Led by institutional investors, the round will support the company's mission to help enterprises securely adopt generative artificial intelligence.

As generative AI tools rapidly expand across corporate environments, Opsin enables organizations to connect sensitive data to AI models while meeting strict security and governance requirements.

Wasserman founded Opsin after several years working in cybersecurity, including leadership roles at early-stage startups and large software-as-a-service companies. His work now focuses on securing generative AI systems, an increasingly urgent priority for security and IT teams worldwide.



### 9 KRISTIN KOPPERUD '17 PH.D.

Kristin Kopperud '17 Ph.D. received the [2025 College of Engineering and Science Outstanding Alumni Award](#).

Kopperud is an aerospace industry veteran with experience in operations project management and a background in tissue engineering and regenerative medicine experiments conducted in microgravity. She previously served as science program director for biological sciences in the research and innovation department at the Center for the Advancement of Science in Space, which manages the International Space Station National Laboratory.

After earning her [doctorate in biological sciences](#) from Florida Tech, Kopperud had planned to pursue a career in marine biology. She ultimately transitioned into the space sector, drawn by the Space Coast's aerospace environment.

During graduate school, Kopperud taught undergraduate laboratory sections in mammalian physiology and biology and was recruited as a research support scientist for several ISS National Lab-sponsored Rodent Research missions, serving as a ground-based surrogate for crew members aboard the International Space Station.

### 10 ASHLEY E. O'BRIEN '21

Ashley E. O'Brien '21 has been named one of *Marine Log* magazine's Top Women in Maritime.

O'Brien is an engineering project manager at Port Tampa Bay, where she oversees engineering and construction contracts supporting the port's marine and upland infrastructure.

"I am proud to represent both of my alma maters, the State University of New York Maritime College and Florida Institute of Technology, in receiving this award on behalf of the maritime and engineering industries," O'Brien said in a LinkedIn post shared by the Women in Maritime Operations Association. "I am also honored to represent my workplace, Port Tampa Bay."

She was recognized Dec. 2, 2025, alongside other honorees at the Top Women in Maritime Celebration in New Orleans.

### 11 CAROL CRAIG

Carol Craig has been appointed to the Canaveral Port Authority board of commissioners by Florida Gov. Ron DeSantis.

As a commissioner with the Canaveral Port Authority, Craig will help set policy and provide oversight for port operations, development and long-term planning.

Craig is the founder and CEO of Sidus Space and Craig Technologies and is a U.S. Navy veteran who served as a naval flight officer. She also serves on Florida Tech's [College of Engineering and Science advisory board](#) and is a member of the National Defense Industrial Association.

She is pursuing a [Master of Business Administration in Finance](#) and a Ph.D. in systems engineering at Florida Tech.

### 12 ANESTI VEGA

Anesti Vega is a combat veteran, researcher, scuba diving instructor and [interdisciplinary science](#) student at Florida Tech who has sought relief from his post-traumatic stress disorder for years. After finding it in the meditative nature of diving, he's on a mission to protect that sacred marine environment.

Vega shared his passion and his story in a 2024 [episode](#) of the Everglades Foundation's video series, "Everglades Stories from Across the Watershed." His episode helped propel the series to an Emmy Award in the Public Affairs Program category at the 48th Annual Suncoast Regional Emmy Awards last winter.

Vega was invited to participate in the video series after speaking at the Everglades Foundation's annual conference. His experience as a scuba instructor and a scientist gave him a unique perspective on the connections between local waterways, oceans and the Everglades.

This experience was just one of many educational opportunities Vega expects to take on. He founded Florida Tech's [Scuba Club](#) and regularly teaches divers about conservation. He believes he's found his true calling as a science educator, and he's thrilled at the opportunity to teach others how they can help protect the ocean.

## A+ Accolades

### NATIONAL CENTER OF ACADEMIC EXCELLENCE IN CYBER RESEARCH

#### National Security Agency

Florida Tech has earned the renewal of its designation as a National Center of Academic Excellence in Cyber Research (CAE-R), an important distinction granted to just 99 universities nationwide who are making key contributions to reducing the vulnerabilities of our national information infrastructure.

### GREEN COLLEGE

#### The Princeton Review

Florida Tech has been named to *The Princeton Review's* Guide to Green Colleges for its ninth consecutive year. Every year, the guide highlights universities that prioritize a healthy and sustainable quality of life for their students, prepare them for employment in the clean-energy economy and implement environmentally conscious school policies.

### TOP SCIENTISTS

#### Updated science-wide author databases of standardized citation indicators

An annual list ranking scientists around the world by standardized academic citations includes 18 current and former Florida Tech faculty members. The Stanford University-maintained database lists 236,000 scientists across 22 scientific fields and 174 subfields, measuring careerlong or single-year impact using citations from the 2024 calendar year.

Scan for a full list of [Florida Tech faculty recognized](#):



DUANE DE FREESE

# Florida Waters Champion Receives Keuper Distinguished Alumni Award

Duane E. De Freese '81 M.S., '88 Ph.D., has been recognized a lot for his dedication to preserving Florida's shores and waterways throughout the years.

He has received the Clean Water Coalition of Indian River County's Lagoon Champion Award, the Environmental Advocacy "Eagle" Award presented by former U.S. Rep. Bill Posey, the Lead Brevard Rodney S. Ketcham Leadership Icon Award and the Economic Development Commission of Florida's Space Coast Volunteer of the Year Award. He was also named a Junior Achievement of the Space Coast Business Hall of Fame Laureate.

But his most recent accolade, De Freese says, is particularly significant.

"When President Nicklow called me, I was both surprised and, to be honest, a little shocked, as well as humbled," he says.

At the [Alumni Awards Gala](#) Oct. 17, 2025, De Freese received Florida Tech's highest honor, the [Jerome P. Keuper Distinguished Alumni Award](#), recognizing an alumnus whose career accomplishments reflect the university's legacy of excellence.

"I'm aware of the significance of the award because I was president of the [Florida Tech Alumni Association board](#) when it was first created," he says. "It's one of those recognitions that I've had so far during my career that's going to stick with me for the rest of my life."

De Freese is executive director of the Indian River Lagoon (IRL) Council,

an independent special district of Florida created in 2015 to serve as the governing body for the Indian River Lagoon National Estuary Program (IRLNEP), one of just 28 such programs designated by the U.S. Congress in North America and Puerto Rico.

"As executive director, my primary responsibility is to lead our program and staff in fulfilling the mission of a comprehensive conservation management plan, a vision for lagoon restoration that we established back in 2019," De Freese says.

“Success isn't as much about what you know, but the relationships you've built along the way.”

De Freese has led the IRLNEP's reorganization, including convening and expanding the IRLNEP Management Conference to over 100 volunteer scientists, resource managers, community leaders, industry representatives and citizens.

The group's mission, "One lagoon. One community. One voice," encourages federal, state and local partners to work together to restore and protect the IRL system, one of the nation's most treasured and threatened estuaries.

With rapid population growth and constant change, educating the

public about the many stressors affecting Florida's coastal systems and how they impact both quality of life and local economies is an ongoing and vital challenge for De Freese and his team, he says.

"In Brevard, we deeply understand the value of space and aerospace; it's part of our identity and a cornerstone of Florida Tech," he says. "But ocean and coastal awareness hasn't reached that same level of recognition."

Before joining the IRL Council, De Freese served in several leadership positions,

including senior vice president of science and business development at AquaFiber Technologies Corp., University of Central Florida (UCF) College of Sciences dean-appointed faculty in conjunction with the UCF coastal and sea turtle research center, the first vice president of Florida research for Hubbs-SeaWorld Research Institute and the first program director for the Brevard County Environmentally Endangered Lands Program.

"Success isn't as much about what you know, but the relationships you've built along the way," he says.





**FLORIDA TECH CONNECTION:**

'81 M.S. [biological sciences](#), [marine](#); '88 Ph.D. [biological sciences](#)

**LAST BOOK READ:** *Forces of Nature. A History of Florida Land Conservation* by Clay Henderson

**ANIMAL YOU WOULD BE:**  
Leatherback sea turtle

**FAVORITE HOBBY:**  
Surfing

**FAVORITE QUOTE:**  
"Florida's water is Florida's soul." — Chris Peterson, president, Hells Bay Boatworks in Titusville, Florida, and St. Johns River Water Management District governing board member

CLUB SPOTLIGHT

# GIRLS WHO CODE



From left: Val Unzueta, Kayla Conklin and Allison Otero

Allison Otero is a [biomedical engineering](#) and [biomedical science](#) junior who serves as president of Florida Tech's [Girls Who Code](#) (GWC) club, an organization she has been a member of since 2025. She joined to strengthen her programming skills while being part of a community that actively supports and empowers women in technology. We spoke with Otero about all things GWC and the impact it has had on her college experience and those of other members.

**WHAT IS GWC ALL ABOUT? WHAT DOES BEING A MEMBER ENTAIL?**

Girls Who Code is a student organization dedicated to closing the gender gap in technology and creating opportunities for women in STEM fields. Our chapter focuses on skill-building workshops, collaborative projects, professional development opportunities and community outreach. Membership involves participating in meetings, technical activities, leadership opportunities and networking events.

Members gain hands-on coding experience, exposure to new technologies, leadership development, résumé-building opportunities and a supportive peer network. We also encourage members to take on technical challenges, collaborate across majors and grow both personally and professionally.

**HOW HAS YOUR INVOLVEMENT IN GIRLS WHO CODE, INCLUDING YOUR ROLE AS PRESIDENT, IMPACTED YOUR COLLEGE EXPERIENCE?**

Serving as president has strengthened my leadership, organization and communication skills. It has also allowed me to help create an environment where students feel confident exploring coding, even if they are just beginning. Leading the organization has made my college experience more purposeful because I get to contribute to something that empowers others.

**WHAT IS YOUR FAVORITE PART OF BEING A MEMBER OF GWC?**

My favorite part is watching members gain confidence in their technical abilities. Seeing someone go from "I'm not sure I can do this" to successfully completing a project or explaining a concept to others is incredibly rewarding.

**ANYTHING YOU WOULD LIKE TO ADD?**

Girls Who Code is open to students of all experience levels and majors. Whether someone is brand new to programming or already experienced, there is a place for them in our community.

## Happenings

### FLORIDA TECH JOINS UNIVERSITY SPACE RESEARCH CONSORTIUM

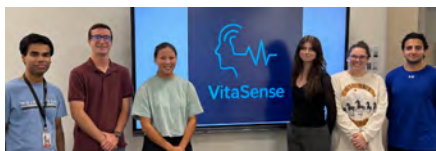
Florida Tech has accepted an invitation into the Florida University Space Research Consortium.

Formed in November 2024, the growing consortium is a multi-university organization dedicated to bringing space research communities together both within the universities and the state.

Consisting of the University of Florida (UF), the University of Central Florida, Embry-Riddle Aeronautical University, the University of South Florida, Florida State University, Florida International University and Florida Tech, the consortium seeks to leverage the synergy of multiple universities and partners, including NASA-Kennedy Space Center, Space Florida and commercial companies, to accelerate research and workforce development related to space exploration, space security and the space economy, said David Norton, consortium board of directors chair and vice president of research at UF.

The group will achieve this primarily by fostering interdisciplinary and cross-university research in spaceflight, space engineering, human spaceflight, [astrobiology](#), [astronomy](#) and the wide range of associated sciences, Norton said in his letter inviting Florida Tech to join.

"With our expertise and cutting-edge research in several key areas, including spaceflight, space engineering, astrobiology and astronomy, we believe Florida Tech is a powerful and welcome addition to the consortium," said [John Z. Kiss](#), Florida Tech provost, professor and senior vice president for academic affairs. "We look forward to many fruitful interactions and collaborations with all of the partners."



### FROM CLASSROOM TO CLINIC: SENIOR DESIGN AND MEDTECH INNOVATIONS

The [Department of Biomedical Engineering and Science](#) offers project-driven courses—Senior Design and MedTech Innovations—that bridge engineering and medicine through direct clinician-student collaboration. Students work alongside physicians to design and prototype real-world medical technologies.

One team, mentored by [Sujoy Ghosh Hajra](#) and Mohamad Ahmed, is developing a contactless vital sign monitoring system that uses skin-reflected light to measure heart rate, heart rate variability, blood pressure and peripheral oxygen saturation (SpO<sub>2</sub>).

Another project, guided by Tyler Sexton of Brevard Regional Hyperbaric Center and Southern AeroMedical Institute, created a noninvasive hypoxia-monitoring system for clinical and aviation applications.

These courses equip students with both technical and clinical insight, preparing them to become the next generation of medical technology innovators.



### FLORIDA TECH TAKES PART IN SPACEU SYMPOSIUM

In October, Florida Tech participated in the SpaceU Symposium at the University of Central Florida. Former Florida Tech chief research officer [Hamid Rassoul](#) served as a featured speaker, offering a presentation that underscored Florida Tech's legacy of leadership in space and defense research.

The event brought together space leaders, researchers and students from across Florida, presenting the latest innovations and research and building in-state collaborations and partnerships.

A team of 15 faculty members and students organized by assistant professor [Luis Quiroga-Nuñez](#) attended the event and presented seven research papers showcasing the university's ongoing scholarship in space-related research and technology.

In his talk, Rassoul highlighted a dynamic portfolio of ongoing space-related projects and showcased the world-class facilities and infrastructure that empower Florida Tech researchers to innovate at the highest levels. He emphasized how curiosity, collaboration and discovery underpin the university's research mission and invited fellow innovators at universities across the nation to join us in advancing the frontiers of science, technology and human understanding.



### HIGH SCHOOL ASTRONAUTICS AND FLIGHT EXPLORATION CTE PROGRAM LAUNCHES

Florida Tech has partnered with Brevard Public Schools (BPS) to develop the Astronautics and Flight Exploration career and technical education (CTE) program at Merritt Island High School (MIHS). The curriculum offers students a hands-on introduction to space exploration and utilization, aerospace design, modeling and simulation, and foundational concepts in AI and robotics.

In addition to the university's Applications of AI and Undergraduate Research courses, MIHS students have access to two new courses Florida Tech developed to enhance the CTE program. Florida Tech and BPS are also working to establish a dual enrollment agreement, which would allow participating students to earn up to 12 college credits for courses offered through the CTE program.

"Stellar partnerships like this highlight how we can work together to offer focused educational opportunities that will produce the skilled workers needed to power tomorrow's economies," said Florida Tech President John Nicklow.



## NEW PARTNERSHIP BRINGS HIGH-TECH BOOST TO WEATHER RESEARCH, EDUCATION

Florida Tech students and researchers now have new data and tools to study extreme weather and more through a new partnership with weather technology firm Climavision.

Climavision provides highly detailed, AI-driven weather modeling from global to neighborhood levels. It also operates a national network of weather radars, which fills in gaps between government-operated NEXRAD radar sites. Under the new partnership, the company provides Florida Tech students, researchers and faculty access to these cutting-edge resources, as well as Climavision workshops and expertise from its own team of scientists.

These new capabilities and resources better equip [meteorology](#) students and faculty to study and understand embedded circulations and tornadoes within tropical storms and hurricanes in Florida and the development of hurricanes and other weather phenomena that may impact the coastal southeastern United States.

The partnership not only provides real-world weather data, but also deepens students' exposure to machine learning, numerical weather prediction and AI-driven forecasting—all of which serve Florida Tech in its focus on preparing students for the modern workplace.

"Climavision operates in the areas of meteorology that are advancing quickly, providing our students a unique opportunity to conduct impactful research powered by the technology they will likely encounter in the real world," said [Steven Lazarus](#), professor of meteorology in the [Department of Ocean Engineering and Marine Sciences](#).

## FEDERAL GRANT, VOLUNTEERS POWER NEW GARDEN PROJECT AT STONE MAGNET MIDDLE SCHOOL

A \$900,000 federal grant [awarded](#) to a multidisciplinary Florida Tech faculty team is enhancing the resilience of the underserved community around nearby Stone Magnet Middle School in responding to climate challenges, including heat stress, extreme weather and local flooding.

The university has partnered with the U.S. Department of Energy's Argonne National Laboratory and the Melbourne-based urban agriculture nonprofit Little Growers to carry out Space Coast RESCUE (Resilience Solutions for Climate, Urbanization and Environment).

Led by principal investigator [Steven Lazarus](#), the project's co-principal investigators are faculty members [Emily Ralston](#), [Pallav Ray](#), [Hamid Najafi](#) and [Troy Nguyen](#).

As part of the project, 33 volunteers from Florida Tech and Little Growers spent three hours in the early August sun creating Stone Middle's "native prairie" filled with 200 plants that will help reduce flooding and attract critical pollinators, such as bees, moths and butterflies.

Additionally, Stone Middle students and Little Growers gardeners will participate in garden-related science and art projects, such as creating steppingstones and signage for the garden, Ralston said.

## FTRI AT 1: POWERFUL FACULTY RESOURCE NOW FULLY OPERATIONAL, ATTRACTING RESEARCH

Having closed out its first full year of operations, the [Florida Tech Research Institute](#) (FTRI) is proceeding strongly, building critical strategic partnerships, attracting externally funded research and earning high marks from government inspectors for standards and compliance at its secure operations on campus.

FTRI is a specialized university research institute and faculty resource that substantially enhances Florida Tech's capacity to conduct applied research for the Department of Defense and the defense industrial base sector. It is a separate legal entity wholly owned by the university and chartered with supporting and advancing Florida Tech's applied controlled research for defense, national and industrial security.

Since the institute became fully operational in fall 2024, it has secured over \$500,000 in externally funded research contracts. Additionally, it has established

several Cooperative Research and Development Agreements, or CRADAs, with different government organizations and local companies.

"Things are moving very well," said [Marco Carvalho](#), executive director of the [L3Harris Institute for Assured Information](#) whom Florida Tech President [John Nicklow](#) appointed to lead FTRI. "We are establishing ourselves and getting very good responses from industry and government."

The institute has been designated by Nicklow as the Florida Tech organization responsible for managing, operating and safeguarding key types of information for the university. That includes Controlled Unclassified Information (CUI), which is the federal designation for sensitive information that is not classified but still requires safeguarding from public release due to legal, privacy or national security reasons, and information under export control, including International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR).

## PALMER JOINS NASA-FUNDED INITIATIVE EXPLORING NOVEL SPACE AGRICULTURE TECHNIQUE

[Andrew Palmer](#), associate professor of biological science, is collaborating with researchers at Winston-Salem State University (WSSU) in a NASA-funded initiative to test a novel method for growing crops in space.

The agency awarded \$300,000 to the project, "LICH – Assessing the Efficacy of Bioleached Nutrients from Lunar Regolith in Hydroponic Systems for Fruit-Bearing and Leafy Green Crop," which is led by WSSU associate professor Rafael Loureiro.

Palmer will work with both Loureiro and Anna Simpson, a researcher from Blue Marble Space Institute of Science, to explore how microorganisms, such as bacteria and fungi, can promote extraterrestrial crop growth by dissolving nutrients that are otherwise trapped in compact lunar soil (regolith) for plants to absorb—a process called bioleaching.

Palmer's lab is primarily responsible for providing the various species of bacteria that will be used for bioleaching. He and his students will help train undergraduates at both WSSU and Florida Tech to implement and observe the bacteria at work.

The planted microbes will absorb the nutrients embedded in the regolith through a hydroponic system—one where plants are grown in water instead of soil. This system transports the nutrients to the plants' roots more efficiently.

According to Palmer, hydroponic plant growth and regolith-based agriculture are often thought of as separate strategies for space agriculture. However, he believes that the techniques they will use to mine and utilize nutrients stored in regolith could be beneficial to improving space crop growth from any substrate—not just lunar soil.

## WHIRL DEVELOPS TECH TO RECORD WIND'S IMPACT DURING HURRICANES

Florida has experienced 120 hurricanes between 1851 and 2018. Yet detailed, real-time data on how storms impact homes, buildings and the environment has been scarce—until now.

Florida Tech students Diego Robles Cortes, Jian Zhang '18, '20 M.S., and the [Wind and Hurricane Impact Research Laboratory](#) (WHIRL) team are gathering real-time wind data to help build stronger homes and guide insurance assessments.

WHIRL studies hurricanes' effects on both natural and man-made structures. The team designs and installs wireless sensors on roofs, doors and windows to measure wind speed, wind pressure and temperature during storms. These battery-powered nodes operate in clusters, transmitting data remotely, so researchers can track the force of winds on structures as storms unfold.

"So, imagine a garage door. We want to know how much force that goes on the garage door," professor [Chelakara Subramanian](#) told Spectrum News 13. "We typically deploy 30 to 35 sensors on the roof, walls, windows—even on fascia and soffits."

WHIRL's goal is to provide science-based estimates of hurricane damage, explained [Jean-Paul Pinelli](#), professor and WHIRL director. The data is shared with state regulators and insurance companies to ensure homeowners and businesses are charged fair rates for potential storm losses, while also guiding the construction of more resilient buildings.

Past storms, like Hurricane Andrew, caused billions in damage when projections estimated only millions. WHIRL's research aims to prevent such miscalculations by giving insurers and policymakers reliable, real-time information on how structures withstand extreme wind events.



## 14 UNIVERSITIES LAUNCH QUANTUM TECHNOLOGY COALITION

Florida Tech and 13 other leading Florida universities have formalized efforts to launch the Florida Alliance for Quantum Technology (FAQT), making the Sunshine State a national hub for quantum innovation.

The FAQT will coordinate statewide expertise in quantum engineering and science and align the activities of member universities with state agencies, private-sector innovators and investors to accelerate research, commercialization and workforce development.

The alliance will focus on building a quantum-ready workforce, fostering entrepreneurial growth, attracting new industry and securing new federal research funding for Florida through joint grant initiatives and public-private partnerships.

"FAQT will position our state as a national leader in quantum innovation," said former Florida Tech chief research officer [Hamid Rassoul](#), who along with Rob Salonen, assistant vice president for government

affairs and strategic partnerships, represented the university and President [John Nicklow](#) at Quantum Beach 2025 in West Palm Beach. "This initiative will coordinate efforts across academia, industry and government to advance research, drive commercialization and develop a quantum-ready workforce."

Three Florida Tech faculty members are key contributors to Florida Tech's part in the FAQT initiative: [Robert Usselman](#) (lead faculty), [Souvik Das](#) and [Naveed Mahmud](#).

In addition to Florida Tech, the new coalition includes Embry-Riddle Aeronautical University, Florida A&M University, Florida Atlantic University, Florida Gulf Coast University, Florida International University, Florida Polytechnic University, Florida State University, the University of Central Florida, the University of Florida, the University of Miami, the University of North Florida, the University of South Florida and the University of West Florida.

## NELLIPPALLIL JOINS NSF-FUNDED INITIATIVE TO SUPPORT DECISION-MAKING IN COMPLEX ENGINEERING PROBLEMS



Assistant professor [Anand Balu Nellippallil](#) is collaborating on a program funded by the National Science Foundation (NSF) that can easily retrieve relevant public data, such as models and formulas, to help engineers make decisions efficiently when solving complex design problems.

The NSF granted \$300,000 to the project, "Open-Source Decision Support in the Design of Engineering Systems," through its Pathways to Enable Open-Source Ecosystems (POSE) program, which supports organizational management by promoting collaboration and innovation. The collaborative open-source platform will empower more distributed developers and designers to perform multidisciplinary design, explore design alternatives and make informed decisions more efficiently. Platform users will be able to inspect, modify and enhance public data.

With this grant, Nellippallil—a co-principal investigator alongside principal investigator Lin Guo and co-principal investigator Suhao Chen, both from the South Dakota School of Mines and Technology—hopes to develop a domain-independent decision

support platform that can synthesize all questions an engineer may have while working through a complex problem, from designing an engine to designing software. The platform would pull public data and tools to offer relevant solutions and to make the design process more efficient.

He wants to begin developing this platform in tandem with a decision-support tool that helps engineers work through these problems. With the proposed NSF-funded platform, engineers will be able to access recommended tools and models specific to their project as they complete each step. The platform will remember each step of the process, and its recommendations will consider those steps to provide more relevant guidance.

Nellippallil hopes this collaborative technology can eventually support a wide range of industries looking to solve societal challenges, such as materials, advanced manufacturing, supply chains and national defense through the collective knowledge of researchers, educators and industry professionals.



## Research Highlights



### STUDIES REVEAL MILLENNIA OF HUMAN INFLUENCE IN THE AMAZON RAINFOREST

A study led by Florida Tech professor [Mark Bush](#) and University of Amsterdam associate professor Crystal McMichael '12 Ph.D. examined microfossils from Lake Cormorán in Ecuador's Upano River Valley to reconstruct 2,700 years of ecological change. Their findings, [published](#) in *Nature Communications*, reveal that the so-called "Lost City of the Amazon" saw human occupation beginning around 750 B.C., with corn and alder cultivation lasting over 1,200 years. A later 300-year settlement dramatically altered the forest, creating a modern ecosystem dominated by tall palms—a landscape only about 200 years old.

In a complementary [study](#) across the Amazon basin, Bush and McMichael combined data from over 7,000 archaeological sites with more than 100,000 historical biodiversity records and 1,521 forest plots to assess how pre-Columbian Indigenous and European colonial activity continues to influence species distribution and carbon storage.

Using spatial modeling, they found that indigenous and colonial communities left lasting impacts on tree species distribution, particularly along rivers where fertile soils supported settlements. Areas with long-term human activity show

higher abundances of economically and ecologically important species, like Brazil nuts, rubber and murumuru palm, while other species declined due to intensive extraction during colonial and rubber boom periods.

"Our findings show that seemingly undisturbed parts of the Amazon have been shaped by people over hundreds or even thousands of years," McMichael said.

"These invisible legacies may still be affecting ecosystem functioning, as well as biodiversity," Bush said, "and the type of legacy likely depends on who lived there last."

Their research reframes the Amazon as a living mosaic of coexistence between people and nature, cultivated, abandoned and reborn across millennia.

### SIMULATIONS OF EXOPLANET FORMATION MAY HELP INFORM SEARCH FOR EXTRATERRESTRIAL LIFE

[Howard Chen](#), an assistant professor of space sciences, is contributing new theoretical insight to NASA's search for life beyond Earth through research on the TRAPPIST-1 planetary system, one of the most closely studied exoplanet systems in the galaxy.

Chen is lead author of the paper "[Born Dry or Born Wet? A Palette of Water Growth Histories in TRAPPIST-1 Analogs and Compact Planetary Systems](#)," published in *The Astrophysical Journal Letters*. The study was conducted in collaboration with researchers from NASA, Johns Hopkins University and Harvard University.

TRAPPIST-1 is a red dwarf star located about 40 light-years from Earth and hosts seven rocky, Earth-like planets. Several of the planets orbit within the star's habitable zone, where temperatures could allow liquid water. Despite this, telescopes have not detected clear signs of water.

While some theories suggest water may have escaped these planets over time, Chen and his collaborators explored an alternative explanation: Some planets may have formed without water.

Using mathematical models, the research team simulated the early formation of the planets, beginning when they were as small as one kilometer wide. The models examined how collisions, atmospheric erosion and material exchange influenced planetary growth. After running hundreds of simulations, the team found that the system's three innermost planets were overwhelmingly likely to have formed dry.

Chen said the compact nature of the system likely led to violent, high-velocity collisions that stripped away gases needed to retain water. Without an atmosphere, any water present would have escaped into space.

By better understanding how planets form and evolve, Chen's work provides a framework for interpreting future observations. His findings can help scientists and NASA prioritize which distant worlds are most promising for further study in the search for life.

### UNRAVELING THE ROLE OF PHR SIGNALING IN NEURODEGENERATION

Tauopathies are neurodegenerative diseases marked by the misfolding and aggregation of the tau protein, leading to synaptic dysfunction and neuronal loss. [Melissa Borgen](#)'s lab is using *C. elegans* models to map the genetic and molecular pathways that drive these processes.

Her team discovered a new prodegenerative role of RPM-1/Phr1/MycBP2 in tau-mediated neuronal damage. This research, funded by the National Institutes of Health (NIH), has identified three downstream pathways influencing degeneration, with key contributions from graduate students Xinxing Ding, Aidan Anderson and Evan Landreth. Their findings promise to shed light on the early mechanisms of neurodegeneration and open new avenues for therapeutic intervention.



## OCEAN ENGINEERING SENIORS SHOWCASE INNOVATIONS AT SUMMER SYMPOSIUM

Four groups of ocean engineering students showcased innovative prototypes at the July 2025 Student Design Summer Symposium, highlighting projects aimed at advancing naval architecture, renewable energy, coral reef restoration and autonomous instrument deployment. The work was developed through the [Marine Field Projects](#) course, a senior-level summer class in which students design, build and test technology in teams.

The symposium gave students the opportunity to pitch their projects to peers, industry professionals and faculty, applying classroom knowledge to real-world coastal and ocean engineering challenges.

### Current Capture



Sofia Scarpa, Maggie Palmer, Ricky Gay, Hayden Linkel and Colin Stefan designed a modular hydro

turbine that generates electricity from ocean currents for ships. The turbine lowers off a vessel's stern and transmits power back on board. The team built a small-scale prototype with plans for commercial deployment.

### Naval Architecture



Annalee Maloy, Aidan Johnson, William Mullray and Nathan Laplaca are developing a gyroscopic stabilization system for a 1/23-scale model of the U.S. Navy's R/V Melville. The 12-foot-long model only operates in calm conditions; the system is designed to reduce rolling and simulate full-size vessel performance in various sea states.

### ReefStarter

Jacob Elston, Jaidyn Lodens, Dylan Alvarez and Alexander Ketchen created a single-point hydraulic lift system to safely deploy heavy interlocking

concrete blocks for "ReefStarter," a modular reef restoration initiative led by associate professor [Robert Weaver](#). The lift mechanism, built into a central cavity in the blocks, allows precise placement in water. The team is testing 1/3-scale versions and plans to build a full-scale system.

### Project Yellow Cat



Scott Santore, Cruz Halbich and Kyle Grifflis developed a proof-of-concept autonomous marine surface vehicle for instrument deployment. The multipurpose platform can transport student-designed or commercial equipment from dock or barge to deployment sites, supporting research and demonstration work in the Indian River Lagoon and beyond.



## ADVANCING NONINVASIVE BIOSENSING FOR CARDIAC AND PAIN MONITORING

The Wearable Instruments and Sensing Laboratory (WiSe Lab), led by [Mehmet Kaya](#) and [Peshala Gamage](#), is advancing wearable health technology through two projects focused on cardiovascular and pain monitoring funded by National Institutes of Health (NIH).

The first project is developing a wearable, machine-learning-based system to estimate heart function—such as ejection fraction and stroke volume—using subtle 3D chest vibrations. In collaboration with Mayo Clinic cardiologists, this innovation could transform heart failure monitoring beyond clinical settings.

In partnership with industry, the WiSe Lab is also developing Pain Vitals, a chest-worn, AI-powered biosensor providing an objective measure of pain to improve dosing precision and patient safety.



## GLOBAL CONSORTIUM DEVELOPS 'ROADMAP' FOR HARNESSING PLANT SCIENCE IN SPACE EXPLORATION

Humans are set to return to the moon in 2027 with NASA's Artemis III mission, marking the first lunar landing in 55 years. While astronauts may spend fewer than 10 days on the surface, scientists are already planning how to grow food and sustain life on the moon—and eventually, Mars.

A global consortium of more than 40 researchers from 11 countries and seven space agencies has developed a roadmap for the plant science and technology breakthroughs needed to support long-term human space habitation. Their findings were published in *New Phytologist* in the article "[Expanding frontiers: harnessing plant biology for space exploration and planetary sustainability](#)."

"Learning to grow plants beyond Earth is more than science—it is a promise of hope," said provost [John Z. Kiss](#), a co-author on the paper. "The innovations that sustain life on the moon and Mars will empower us to build a greener, more resilient future for all humanity."

The paper introduces a new Bioregenerative Life Support System Readiness Level framework, extending NASA's crop evaluation scale to measure how well plants can recycle air, water and nutrients in space habitats. Plants not only provide nutrition but also essential life-support functions for sustainable deep space exploration.

Key highlights include recent progress in space crop sciences, the promise of synthetic biology and precision agriculture for designing crops suitable for space and Earth's changing climate, and the psychological benefits of growing and consuming fresh produce in space.

The roadmap also discusses the upcoming Lunar Effects on Agricultural Flora (LEAF) experiment, which will grow and return the first plants from the moon with Artemis III and emphasizes the need for coordinated international collaboration to establish self-sustaining lunar and Martian farms as the International Space Station nears decommissioning around 2030.

## EQUATORIAL REEFS MAY ACT AS REFUGIA FOR CORALS DURING MARINE HEATWAVES

A global analysis of coral bleaching across 81 countries found that reefs in the equatorial Coral Triangle experienced the weakest marine heatwaves over the past two decades, suggesting the region may serve as a refuge for corals as global warming threatens reefs worldwide.

Marine heatwaves—periods of elevated seawater temperatures that trigger mass coral bleaching and mortality—pose a critical threat to coral survival. But certain areas, known as marine-heatwave refugia, remain stable amid environmental changes and may help sustain coral populations.

The 2.3-million-square-mile Coral Triangle spans Indonesia, Malaysia, the Philippines, Papua New Guinea, the Solomon Islands and Timor-Leste. Home to more than three-quarters of the world's coral species, it is among the largest potential coral refugia on the planet.

"The severity of coral bleaching was reduced on any reefs, not just equatorial reefs, which were exposed to strong currents, high wave energy, frequent cloud coverage or turbidity. We suspect that marine-heatwave refugia for corals are concentrated

near the equator because cloud coverage is most frequent near the equator," said Zachary Ferris, a Ph.D. candidate in [biological sciences](#) and first author on the paper. "Indeed, marine heatwaves and coral bleaching were least severe on reefs in the Coral Triangle region from 2002 to 2020, likely because frequent cloud coverage reduced solar radiation and heating during summers."

"This work provides hope that there are locations worldwide where corals may survive marine heatwaves," added professor [Robert van Woesik](#), director of the Institute for Global Ecology at Florida Tech and co-author of the paper.

The study, "[Coral bleaching: the equatorial-refugia hypothesis](#)," was published in *Global Change Biology*. Ferris conducted the research with fellow Florida Tech Ph.D. candidate Andrew Walker '21, van Woesik and Håvard Rue, chair of the statistics program at King Abdullah University of Science and Technology in Saudi Arabia.

## PH.D. STUDENT MAKES CASE FOR EXPLORING LIKELIHOOD OF LIFE AROUND WHITE DWARF STARS

Caldon Whyte '23 is advancing research that could reshape how scientists search for life beyond Earth as part of his doctoral studies in [space sciences](#).

After earning a bachelor's degree in [astrobiology](#), Whyte began investigating white dwarf stars—the cooling remnants of low-mass stars—and whether planets orbiting them could support life. While white dwarfs were long considered unlikely candidates due to declining energy output, recent observations from the James Webb Space Telescope have identified white dwarfs with exoplanets in their orbits, renewing scientific interest.

Working with advisors [Manasvi Lingam](#) and [Luis Henry Quiroga-Núñez](#), Whyte developed a model to determine whether two key life-enabling processes—photosynthesis and ultraviolet-driven abiogenesis—could occur within a white dwarf's habitable zone. His findings showed that, over an estimated maximum habitable period of about 7 billion years, a planet could receive enough energy to support both processes simultaneously. This overlap is uncommon around many types of stars and suggests white dwarf systems may be viable targets in the search for life.

The results were published in *The Astrophysical Journal Letters* in the paper "[Potential for Life to Exist and be Detected on Earth-like Planets Orbiting White Dwarfs](#)." Co-authors include Lingam, Quiroga-Núñez and Paola Pinilla of the University College London's Mullard Space Science Laboratory.

Thanks to Whyte's findings, astronomers now know that white dwarfs create a potentially viable environment for some planets.

# An Eater's Guide to Mars

This piece was originally featured in the [fall 2025 issue](#) of *Florida Tech Magazine*.

As humanity sets its sights on Mars, scientists are hungry to answer an essential question:

## HOW WILL OUR INTERPLANETARY TRAVELERS EAT?

Student and faculty experts at Florida Tech suggest that learning to cultivate crops in regolith—the dusty, poisonous substance that covers the Martian surface—might be a key to feeding future explorers.

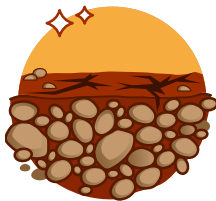
NASA predicts it will send its first astronauts to Mars in the 2030s. SpaceX's Elon Musk dreams of creating a self-sustaining settlement on the red planet by 2050. And research stations and habitat prototypes are already being tested in remote areas of Earth to simulate what life might be like for these intrepid explorers.

There will be plenty of challenges facing these adventurers, and a big one is what and how they'll be able to eat.

One potential, if complicated, solution is growing food inside a biohabitat using Martian regolith—the gritty material that blankets the planet.

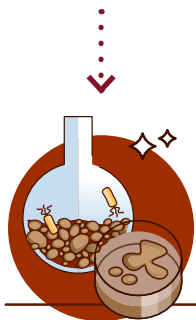
It's a tall order. Regolith lacks nutrients and is laced with toxic chemicals. Still, many researchers at Florida Tech see potential in coaxing life from Martian terrain.

## FIRST THINGS FIRST: GET TO KNOW REGOLITH



### REGOLITH IS OFTEN COMPARED TO SOIL, BUT THE TWO ARE (QUITE LITERALLY) WORLDS APART.

Soil is a living ecosystem with microbes, organic matter and a structure that supports water, air and nutrient flow; Mars regolith is a mix of rock and dust, containing lots of toxic materials and no life at all.



### WE DON'T HAVE ACCESS TO REAL REGOLITH.

Mars rovers haven't brought any regolith home with them, but thanks to gas chromatography, mass spectrometry and laser spectrometry analysis, scientists do have a detailed sense of its composition. That said, Mars regolith is not uniform.

"If you go from Florida to California, the soil varies significantly," says associate professor [Toufiq Reza](#). "On Mars, the regolith varies as well."

Florida Tech does much of its testing on a lab-developed regolith simulant known as "Mars Global."



### SPENDING ON SIMULANT

Mars regolith simulant variations cost between \$30 and \$50 per kilogram; Florida Tech spends about \$3,000 on simulant for its research annually.

## TO USE REGOLITH FOR EXTRATERRESTRIAL AGRICULTURE, WE'LL HAVE TO ...



### STRIP OUT THE TOXIC CHEMICALS

#### Especially perchlorate ...

Perchlorate is by far the biggest baddie as we think about growing food on Mars. It's so dangerous that Earth-manufactured simulants do not contain it because it is linked to cognitive impairment, respiratory problems and a range of different cancers. (Researchers who want to study it in the simulant must add it in separately under highly controlled conditions.) In a collaboration with researchers from Arizona State University, **Frannie Edmonson '23** is studying if plants can be grown successfully in regolith that has been infused with perchlorates and then treated to neutralize them.

"It's almost like we're domesticating it," says Edmonson. "[Regolith] is really wild and elemental, and we're trying to get it into a more familiar form."

**... as well as zinc, chromium and manganese (among other things).**

**Emily Soucy '25** has found one offbeat solution: bladderworts, carnivorous plants that can grow in nitrogen-poor environments and absorb metals into their tissues.



## INTRODUCE CHEMICALS THAT PLANTS WILL NEED TO THRIVE

### Like nitrogen ...

One possible option to introduce nitrogen into the regolith is through cyanobacteria—an organism known as an “extremophile” that can thrive even in harsh environments. In her experiments growing cyanobacteria in simulant, **Haley Murphy '24** found that the organism could likely convert Mars’ atmospheric nitrogen into a usable form for agricultural life.

“On Earth, we use these species of cyanobacteria to generate fertilizer from materials in the surrounding environment,” she says. “If we can replicate this on the moon and Mars, it will limit the amount of materials we have to ship and make extraterrestrial farming more feasible.”

### ... and carbon.

To introduce carbon into regolith, Reza and **Robert Cheatham '24** are experimenting with biochar, a carbon-rich material that could be developed by heating organic material—like the inedible parts of plants—at temperatures of up to 600 degrees. Biochar has an added benefit, says Reza: It can help with water retention, another challenge of regolith.



## MAKE THE REGOLITH BEHAVE LIKE SOIL.

Regolith is typically light and dusty—but once water is added, its texture and cohesion is similar to clay. To support plant growth, the mix needs to be well-aerated so air, water and nutrients can circulate. **Trent Causey '25** has found that ground-up peanut shells—fibrous and slow to degrade—could be mixed into regolith to support a soil-like structure. Peanuts, he says, offer a tantalizing twofor: The hardy crop, which grows in some regolith simulants, would also be a good source of protein and fat for Mars residents.



## TAKE A DIY APPROACH.

Why such a big focus on creating soil from scratch? Experts estimate that it costs about \$100,000 to bring a single pound of material to Mars, so they’re focused on in-situ resource utilization—developing and using materials on-site, rather than bringing them from Earth. **Hayley Ernest '22, '25 M.S.** has conducted research zeroing in on the potential of clover, which can be grown in regolith and paired with its symbiotic bacteria, rhizobia, to draw nitrogen from the atmosphere and convert it into nutrients. Once dehydrated and tilled back into the soil, the clover enriches the regolith, creating a stronger, more fertile substrate for future growth. It’s a tiny system that can be expanded: The rhizobia bacteria can be transported to Mars in a small, self-watering cord. That’s led Ernest and her labmates to suggest that astronauts could potentially “take a pack of clover seed and a shoelace full of bacteria to Mars, and you will have dirt.”

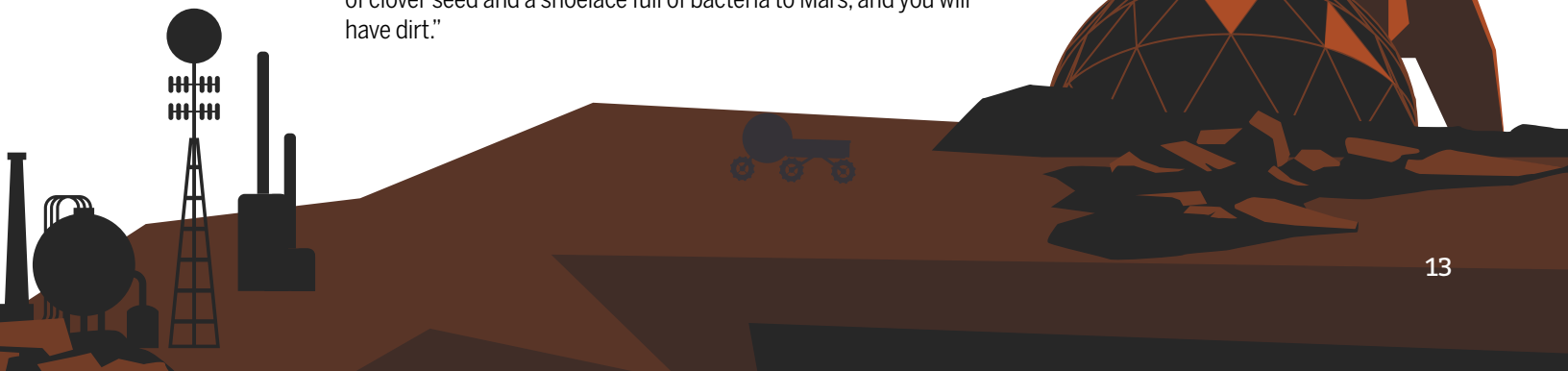


We are taking the most challenging scenario and trying to solve that one. If we can solve that one, everything else will be easier. We'll learn so many things along the way.



.....

Toufiq Reza  
associate professor



## SO, LOOKING AT THE BIG PICTURE



**THE FIRST CROPS FOR HUMAN CONSUMPTION WILL LIKELY BE QUICK TO GROW, EASY TO MANAGE AND ENTIRELY EDIBLE—THINK LETTUCE AND BASIL.**



### COULD KETCHUP BE ON THE MENU?

As part of a two-year collaboration starting in 2019, associate professor [Andrew Palmer](#) collaborated with Heinz to grow some 450 ketchup tomato plants in regolith simulant. The tomatoes were transformed into a limited-run prototype “Marz edition” ketchup.



### SOME EARTH-BASED FOODS MIGHT NEVER APPEAR ON THE RED PLANET.

“Agricultural economics look very different on Mars,” Palmer says. Water-intensive crops, like almonds and acai berries, are likely a no-go.



### CULTIVATING FOOD ON MARS WILL HELP IT FEEL LIKE HOME.

It’s one thing to travel to a place and eat prepackaged food. It’s another to literally put down roots and grow your own, Palmer says.

“I think we’ll feel more like we’re vacationing—or just on Mars for work—until we’re growing food there.”



### COULD MATT DAMON’S MARK WATNEY REALLY HAVE GROWN POTATOES IN THE REGOLITH HE MODIFIED, AS HE DID IN THE OSCAR-NOMINATED FILM “THE MARTIAN”?

Palmer has his doubts about the process shown in the movie (perchlorates are one reason), but he holds his fire.

“I love ‘The Martian’ because it’s inspirational,” he says. “It really provides people an opportunity to think about what could be.”



### WE CAN APPLY THE LESSONS FROM THIS RESEARCH TO OUR HOME PLANET.

The work that Florida Tech researchers have done has plenty of applications closer to home: It can help communities with poor soil conditions or in extreme environments increase their agricultural yields. It can also help remediate soil around mines or industrial areas.

“We are taking the most challenging scenario and trying to solve that one,” Reza says of their work on Martian regolith. “If we can solve that one, everything else will be easier. We’ll learn so many things along the way.”

## And the Award Goes to ...

### 1. Danilo de Camargo Branco

2025 AIAA Faculty Advisor Award

Assistant professor [Danilo de Camargo Branco](#) received the [American Institute of Aeronautics and Astronautics](#) (AIAA) 2025 Faculty Advisor Award during the 2026 AIAA SciTech Forum in Orlando, Florida. Branco was one of six recipients honored for exceptional leadership, dedication and commitment to AIAA student mentorship over the last year.

“Working with Florida Tech’s AIAA student branch has been one of the most rewarding aspects of my role as a Florida Tech faculty member,” Branco said. “I continue to be inspired by the dedication, creativity and passion of our students, and it has been a privilege to support their growth and achievements.”

### 2. Cordelia Case, Kayla Conklin, Alexis Hopper and Jessica Watkins

Student Spaceflight Experiments Program

Florida Tech is moving into its second season of the [Student Spaceflight Experiments Program](#) (SSEP). Leading the way is this year’s winning project: “Effects of Microgravity on Neurodegeneration using Tauopathy Model” by sophomores Cordelia Case and Kayla Conklin and juniors Alexis Hopper and Jessica Watkins. The experiment, which will explore the effect of microgravity on the rate of neurodegeneration found in diseases such as Alzheimer’s, is set for testing aboard the International Space Station (ISS) this year.

Their project is one of 20 proposals from universities across the United States and Canada selected to fly in SSEP Mission 21.

### 3. Souvik Das, Marcus Hohlmann and Erick Yanes

Breakthrough Prize

Faculty members [Marcus Hohlmann](#) and [Souvik Das](#), along with Ph.D. candidate Erick Yanes, have been named 2025 Breakthrough Prize laureates for their contributions to groundbreaking research at CERN’s Large Hadron Collider (LHC).

Often called the “Oscars of Science,” the Breakthrough Prize in Fundamental Physics recognizes global collaborations advancing understanding of the universe at its smallest scales. Hohlmann, Das and Yanes were honored as part of the Compact Muon Solenoid (CMS) Collaboration—one of four major detector teams at the LHC—for work that includes precision measurements of the Higgs boson, studies of rare particle processes, and exploration of matter under extreme conditions.

The CMS Collaboration, comprising roughly 4,500 scientists, engineers and technicians worldwide, received one-third of the \$3 million prize, which laureates have agreed to use to support graduate students at CERN—helping train the next generation of physicists pushing the boundaries of our understanding of the universe.

“It’s exciting to see our efforts help push the boundaries of what we know about the universe,” Yanes said. “I’m grateful to be part of a collaboration where progress continues to be made, step by step, through the dedication of so many.”



#### 4. Selim Habib

##### NASA Research Initiation Award

Assistant professor [Selim Habib](#) has been awarded the NASA Research Initiation Award (RIA), for his project, “Energy-efficient, compact, and cost-effective sensor for continuous and real-time monitoring of critical atmospheric greenhouse gas emissions.”

The RIA is a \$300,000, highly competitive and prestigious grant program that recognizes innovative and impactful early-stage research. The grant will support graduate and undergraduate students.

Habib’s project focuses on developing a next-generation fiber-optic sensor system capable of continuous and real-time detection of key greenhouse gases. This work directly supports NASA’s Science Mission Directorate goals by advancing cutting-edge environmental monitoring technologies essential for understanding and mitigating climate change.

#### 5. Travis Hunsucker

##### NAVSEA Professorship in Experimental Hydrodynamics

Assistant professor [J. Travis Hunsucker](#) ’11 M.S., ’16 Ph.D., has been awarded the NAVSEA Professorship in Experimental Hydrodynamics by the U.S. Navy. Focusing on experimental hydrodynamics in relation to seakeeping, ship resistance and powering design aspects, he will develop curriculum and lead research and development of Navy-relevant capabilities in ship design.

#### Rahi Kashikar ’25

##### Phi Kappa Phi Pioneer Award

Rahi Kashikar, who was initiated into [Florida Tech’s Phi Kappa Phi \(PKP\) chapter](#) in 2024, is one of 50 students nationwide and one of five in Florida to receive the \$1,000 PKP Pioneer Award. The Pioneer Awards encourage and reward undergraduate members for developing the research, engagement and leadership skills necessary to become successful scholars. The selection process is based on academic achievement, honors, service and more.

#### 6. Hafeez Khan

##### 1st Place, 2025 Workshop and Competition on COGS

Hafeez Khan, a Ph.D. student in [computer science](#) and graduate research assistant in professor [Siddhartha Bhattacharyya](#)’s [ASSIST Lab](#), won first place out of 200 competitors in the 2025 Workshop and Competition on Computationally Optimal Gaussian Splatting (COGS). The competition, held in Honolulu, was hosted by Meta and the University of Toronto at the 2025 International Conference on Computer Vision (ICCV).

This year’s competition focused on 3D Gaussian Splatting (3DGS): a novel, state-of-the-art technique that enables real-time rendering of 3D photorealistic scenes from 2D image samples. It aims to improve the quality of digital 3D landscapes used with virtual tours, augmented reality or interactive maps.

Participants were challenged to build the fastest 3DGS pipeline using lossless data compression techniques to drastically reduce model size without losing image quality. This makes 3DGS practical on low-power, storage-limited devices, such as smartphones and VR headsets.

Khan, who studies computer vision and machine learning, won by achieving the highest compression rates while maintaining high image quality.

“I’m only just getting started,” Khan said. “Conferences like these really push us to bring our best work forward and grow as researchers. More than that, they bring together some of the brightest minds in the community, people whose work I’ve followed and learned from so much.”

#### 7. Michael King

##### IEEE Biometrics Council Distinguished Leader

Professor [Michael King](#) has been selected as an IEEE Biometrics Council Distinguished Lecturer for academic years 2025–2027.

Designation as an IEEE Distinguished Lecturer signifies King’s strong reputation within the Biometrics Council and reflects his expertise in biometrics and identity intelligence. In this role, he will present lectures on key biometric topics to IEEE Chapters and Sections, helping to expand awareness and education in the field.

King’s lecture topics include “Wrongful Arrests and Face Recognition: Technology, Policy, and Human Oversight”; “Illumination, Skin Tone, and Fairness: Rethinking Face Recognition Accuracy”; and “The Promise and Peril of Face Recognition: A 20-Year Journey,” highlighting both technical challenges and societal implications of biometric systems.

#### 8. Jackson Neering

##### SMART Scholar Program

Sophomore Jackson Neering began training in the U.S. Air Force’s SMART Scholar Program in summer 2025. He’s one of five new scholars in the newest program class based at the Air Force Technical Applications Center (AFTAC) at Patrick Space Force Base.

SMART—Science, Math and Research for Transformation—is a career-development program that provides mentorship and a professional network within the Department of Defense (DOD) to its students. The program awards annual scholarships to U.S. college students who are pursuing degrees in STEM.

Students are matched with scientists and engineers who help prepare them for full-time federal employment. After graduating, students commit to a service agreement with the DOD.

#### 9. Richard Turner

##### Sigma Xi Fellow

Professor emeritus of biological sciences [Richard Turner](#) was elected as a 2025 Fellow of Sigma Xi, the Scientific Research Honor Society. He is one of 18 members in a cohort recognized for their sustained contributions to scientific research or engineering, leadership and service.

Turner primarily researches echinoderms, a phylum of seafloor animals that includes starfish, sea urchins and other bottom dwellers. He was

recognized for decades of contributions to marine biology research and more than 50 years of service to the scientific community.

“Election as a Fellow of Sigma Xi is significant to me because this society not only encourages and recognizes ‘zealous research’ but also promotes honor, integrity, and ethics in science,” Turner said in a statement to the society. “My respect for these values in our profession has been cultivated largely because of the influence of publications and programs of Sigma Xi over the last half century of my membership.”





## ON SHIP, SENIORS TEST ARTIFICIAL REEF PROTOTYPE

Students from the [Department of Ocean Engineering and Marine Sciences](#) were aboard the W.T. Hogarth research vessel in the Florida Keys as part of a [Marine Field Projects](#) course.

During three cruises that spanned 10 days, students learned to operate multiple instruments, snorkeled shipwrecks and explored Fort Jefferson in Dry Tortugas National Park while gaining experience living and working aboard a research vessel.

Seniors Jake Elston, Jaidyn Lodens, Dylan Alvarez and Alexander Ketchen worked on a design team supporting associate professor [Robert Weaver](#)'s research on scalable concrete artificial coral reef technology aimed at reducing coastal erosion and restoring marine habitats.

The team's design objective was to develop a scalable lifting apparatus capable of safely moving the concrete reef structures, which weighed 320 pounds at one-third scale. While at sea, the students tested eyebolts cast into the concrete bricks using the vessel's crane.