

FLORIDA TECH

M A G A Z I N E

WINTER 2022

A man with short brown hair, wearing a dark green polo shirt, is smiling slightly and looking towards the camera. He is holding a small, round, red tomato in his right hand, which is raised towards the left side of the frame. The background is a lush green environment, likely a greenhouse or a field of tomato plants, with many green leaves and stems visible. The lighting is bright and natural, suggesting an indoor or well-lit outdoor setting.

**Tomatoes
of Tomorrow
and the World's
First Cosmic
Condiment**



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ANYTIME, ANYWHERE

[floridatech.edu/
magazine](http://floridatech.edu/magazine)



CANDLELIGHT VIGIL

Students, staff, faculty and other members of the university and local communities gathered on Panther Plaza Dec. 7, 2021, for a candlelight vigil remembering Alhaji Sow, a student who died in an officer-involved shooting on campus earlier that month. Together, we grieved, supported each other, honored and remembered the life lost.

Photos: Tim Shortt/Florida Today

FLORIDA TECH MAGAZINE

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PRESIDENT Dwayne McCay, Ph.D.

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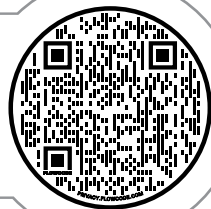
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Ibrahim bin Hamad Al-Rashid '02 M.S.

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Scan the QR code to visit our university and Florida Tech Alumni Association social media pages.



20210863

PRESIDENT'S PERSPECTIVE

Dear Alumni and Friends,

I talk a great deal about perseverance these days. I will continue to talk about it because I believe it goes to the heart of this university's character. It matters to who we are and what we stand for.

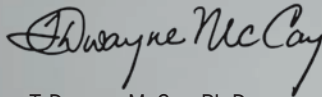
What does it mean to be relentless? To survive in challenging times is an accomplishment, and to thrive during those times is truly special. But then, Florida Tech is a special place with many hardworking and talented faculty, staff and students. We continue to successfully navigate a global pandemic and offer a high-quality STEM education that students and their parents know has the value to create brighter futures. Enrollment is strong, our reputation is growing and our campus facilities are evolving to meet the requirements of tomorrow's high-tech skill sets.

None of this is easy, but it should—no, must—be done. It's why this university was founded and still exists today. It's why so many of us have devoted years of our lives and invested our careers in nurturing that mission. Call it grit. Call it determination. Whatever you call it, it matters.

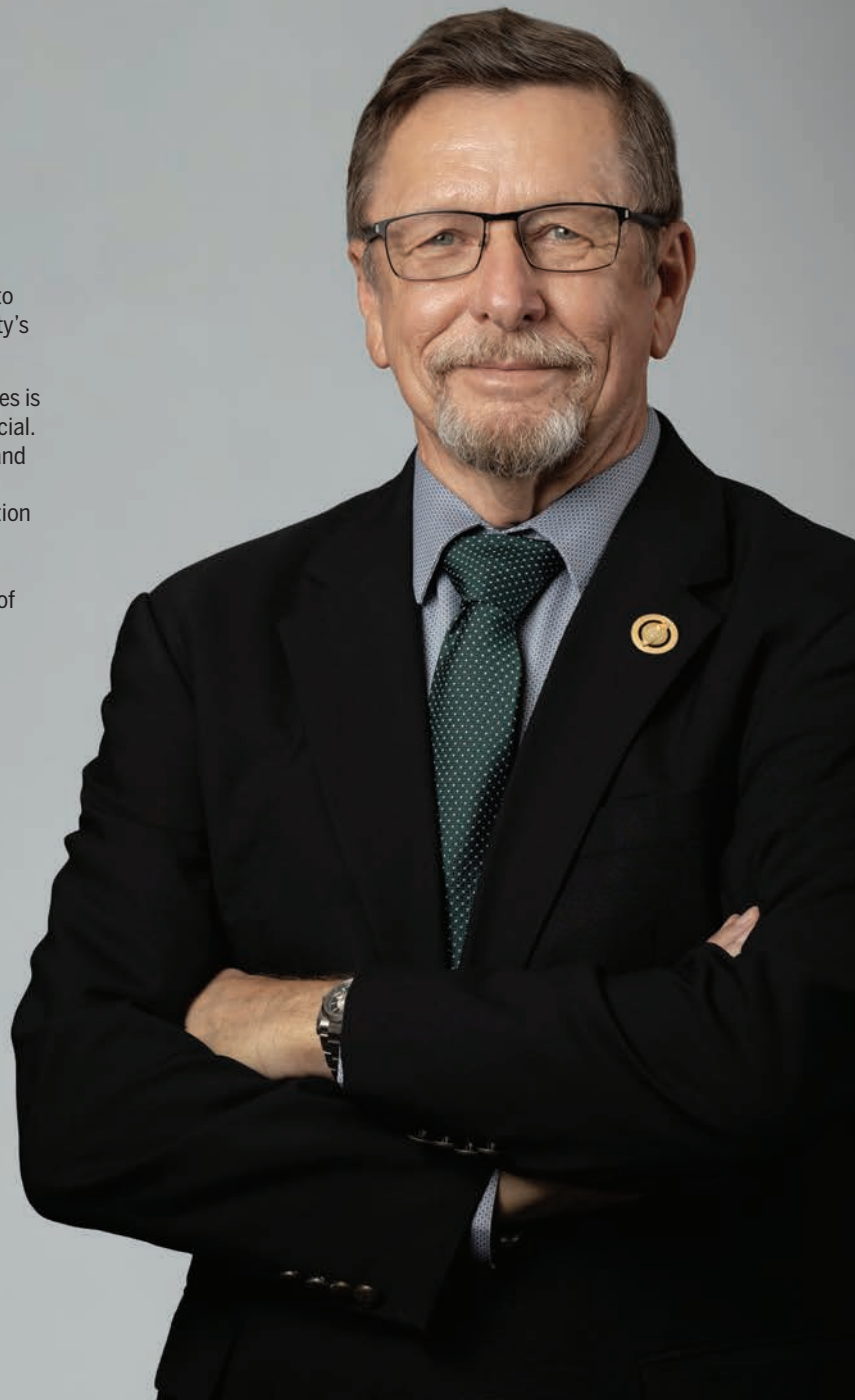
I've always believed that you should judge a university by its product, and our alumni remain our biggest success. Coupled with the amazing research of our faculty, you have a dynamic university community that is poised for whatever the future brings.

To me, that's the realization of a relentless ride. Thanks for being on this amazing journey with us.

Sincerely,



T. Dwayne McCay, Ph.D.
President and CEO



3 FINAL THOUGHTS

COVID AND COMMENCEMENT

What a great day Dec. 18 was, as we celebrated fall 2021 commencement with two in-person ceremonies. It was all the sweeter as we made good on our promise to have graduates from previous virtual ceremonies walk across the stage. More than 130 students who graduated via virtual ceremonies in 2020 and spring 2021 chose to return and be recognized.

STEM STARS

We have launched a new radio program to highlight the strength of our faculty expertise covering a range of topical issues. "Today in STEM" airs on WFIT-FM and is available as a weekly podcast, too. Topics range from rocket science secrets to the latest on the health of the Amazon rainforest and everything in between. Check out wfit.org for more information.

JAGS SCHOLAR

It was great to see the Jacksonville Jaguars recognize one of our students, Jack Brophy, at their Jan. 9 home game. Jack is our most recent Florida Tech/Jags STEM scholar and has a bright future ahead. We've been the official STEM education sponsor of the Jacksonville Jaguars since 2019. Congratulations again, Jack.

Nelson Gives \$5.1 Million Gift to Name Health Sciences Building

Florida Tech's newest building will bear the name of Gordon L. Nelson, honoring the longtime dean and professor who pledged \$5.1 million. This gift, announced in October 2021, supports the university's strategic investment in biomedical and health research and education.

During the groundbreaking Oct. 16, 2020, Florida Tech president T. Dwayne McCay emphasized that this facility would advance work that benefits the nation and the world. It will do this by meeting the needs of students today and in the future and by supporting premier research programs. The 61,000-square-foot building is anticipated to open in early 2022.

The majority of Nelson's gift will establish an endowment to sustain innovative research conducted in the building and to ensure that it remains at the forefront among facilities of its kind at top universities.

The gift is the largest individual donation to Florida Tech in its 63-year history.

"We have excellent students; we have excellent faculty, but we need world-class facilities," says Nelson, an accomplished polymer chemist who has spent nearly his entire career at Florida Tech. "This gift will help make that happen."

The funds used and the endowment in perpetuity will contribute to keeping

up with high-tech demands in the field. The program, Nelson says, is meant to "catalyze research innovation."

"Dr. Nelson has left a lasting impression on this university through his years of service as a dean and professor," McCay says. "This philanthropic gift only elevates his impact in new and worthwhile ways. That impact will be felt by generations of Florida Tech students to come. All of his contributions are deeply appreciated."

The Gordon L. Nelson Health Sciences building will be a three-story center for teaching and research centered on biomedical engineering, biomedical sciences and health sciences. It will feature over 20,000 square feet of classrooms and research laboratories, state-of-the-art teaching laboratories in human anatomy, augmented and virtual reality teaching tools and facilities for orthopedics, tissue studies and advanced computational simulations.

Nelson has had a front-row seat to Florida Tech's growth and evolution over the last three decades, as well as key roles in pushing the university to the top reaches of higher education. He was heavily involved with the construction of the F.W. Olin Physical Sciences and F.W. Olin Life Sciences buildings.



ABOUT GORDON L. NELSON

Already a renowned chemist and past president of the 160,000-member American Chemical Society, Nelson came to Florida Tech in 1989 to serve as dean of the College of Science and Liberal Arts. He remained dean of the college, which later became the College of Science, for 22 years. From 2011 to 2012, he was vice president for academic affairs. He was then named university professor of chemistry, the position he holds today.



TOUFIQ REZA

On Upcycling Waste Into Valuable Products

With a rapidly growing world population already over 8 billion people, the world faces two significant challenges in its immediate future: waste remediation and global warming.

My research group at Florida Tech applies fundamental chemical engineering concepts to recover energy and value-added products from unwanted wet and dry wastes. This is a win-win-win situation for the community, industry and environment.

Our targeted wastes include municipal solid waste (MSW), human waste, agricultural waste and waste plastics. Along with the environmental benefits, these particular wastes allow favorable process economics, as they are all what we call “negative-value feedstocks.” This means the waste producers are paying us in the form of a “tipping fee” to dispose/utilize their wastes.

When it comes to upcycling wastes, there is no “one size fits all” technology. We need to understand the source, quality, composition, variability and availability of a waste to propose value-added applications.

For example, MSW is rich in organics, but it is also wet and heterogeneous. At Florida Tech, we are upcycling MSW to renewable natural gas and activated carbon materials in a National Science Foundation (NSF) project.

The renewable natural gas can be injected into a natural gas pipeline, which will reduce our dependency on fossil fuel. Highly porous functionalized activated carbons have shown tremendous potential to capture carbon dioxide. We believe that adding value to the waste could potentially divert MSW from landfills.

Eutrophication, or excessive richness of nutrients in a body of water, is believed to be a major contributor to harmful algal blooms (HABs), and improper disposal of animal manure and human waste often leads to eutrophication.

With funding from the U.S. Department of Agriculture (USDA) and the Sugar Bush Foundation, we have been developing a new technology called “hydrothermal treatment,” which recovers nutrients. This way, we are less reliant on inorganic fertilizers and can potentially close the loop of the nutrient cycle and prevent HABs in the long term.

However, HABs are already a threat to Florida’s coast, as well as to the Great Lakes. To control HABs in the short term, we are studying the efficacy of biochar on adsorption of HAB species and corresponding toxins. Our research efforts to control and mitigate HAB outbreaks have been funded by the USDA, U.S. Environmental Protection Agency and Florida Sea Grant.

Waste plastics are undoubtedly a major threat to the environment. Although recycling has improved significantly over the past years, most plastics (e.g., foam, pipe, mattresses, clothes, etc.) are still nonrecyclable.

Our research group has been developing a chemical recycling process called solvothermal conversion (SolvX), where these plastics are depolymerized into monomers, chemicals and fuels. SolvX is versatile and can accept mixed plastics as well contaminated plastics. SolvX could be a game changer and could have a potential impact on waste plastic remediation.

In our research group, we believe “wastes” are “resources.” With proper technologies, they can be upcycled into value-added products. With the world’s limited resources, we need to close “waste loops” to leave a better world for future generations.

Toufiq Reza is an assistant professor in the biomedical and chemical engineering and sciences department and is in the top 2% of researchers in the world, according to the 2021 Stanford Report. His research focuses on transforming waste into energy and materials.

FITSEC Cybersecurity Team Top in the Nation After Major Victory

In November 2021, Florida Tech competitive cybersecurity team (FITSEC) members and computer science students **BLAKE JANES** '20, Carl Mann, **STEPHANIE WOOD** '21, **DAVE BREEDEN** '21, Tiffanie Petersen, Isaiah Thomas and Logan Suarez won the National Cyber League (NCL) Team Championships, beating over 3,900 teams to secure FITSEC's status as the top team in the nation.

The biannual NCL tournament pits the top 650 colleges and high schools against each other. Teams race to solve challenges representative of real-life cyberthreats mapped to National Security Agency-aligned courses and the cybersecurity framework of the National Institute of Standards and Technology's National Initiative for Cybersecurity Education.

As the second team captain in FITSEC history, Janes has seen the program grow from three ambitious students to a university-sponsored team with nearly 100 members. The team credits executive vice president and provost Marco Carvalho for his enthusiastic support.

Janes also credits his friend **JOSH CONNOLLY** '21, a computer engineering graduate and FITSEC's first captain, for building the charter and technical foundation for FITSEC.

Janes has sought to grow the team from a collection of technical wizards to a tight-knit group of students who bond both in and out of competition.

"We find that the competitors that socialize and hang out outside of the hacking stuff work so much better together. If you have someone you can trust and rely on, you know that you can give them the job and move on to something else," Janes says. "Hacking is always more fun with friends."

How Can You Help?

You don't have to have a Ph.D. to upcycle waste, reduce your ecological footprint and make a lasting positive impact on Earth. Try incorporating these four simple suggestions into your routine:

1. **COMPOST** organic wastes, like food scraps.
2. **RECYCLE**, reuse and repurpose plastic, glass, metal, paper and cardboard materials.
3. **COLLECT** dead batteries, waste engine oil and waste cooking oil, and drop them off to designated upcycling locations.
4. **DISPOSE** of electronic waste, or e-waste, like cell phones, computers, calculators, etc., which contain valuable rare-earth metals that can be repurposed into touch screens and more, at designated locations.

For Students, By Students: Go Panthers App a Hub of Useful Campus Information

Key questions likely on the minds of most Florida Tech students just got a lot easier to answer.

What’s on the menu at Panther Dining Hall? How quickly can I contact the Rathskeller to order a pizza? Where, amid the dozens of washing machines on campus, is one that’s available right now?

Answers to all of them, and access to essential campus resources from security and tutoring to Panther cash and campus activities, are available via a new, student-designed app called Go Panthers.

It was designed by ResKit Labs, a company started by software engineering senior Harold Raghunandan.

The app is the second Raghunandan has developed. His first app, ResKit, was designed for RAs, or resident assistants, which he was at the time.

resources that I need to succeed in my career, and she continually provides me with valuable feedback that enables me to be the best at what I do,” he says.

About a year ago, Raghunandan surveyed the multiple apps designed for students and, knowing how well his ResKit app was received, figured something that consolidated all of them into a simple-to-use system might be popular, as well.

“We have this app that does everything for RAs,” Raghunandan says he was thinking. “What if we make one for the whole student body? That kick-started the idea of the Go Panthers app.”

Raghunandan also had some help by this time.

Sydney Richards, a software engineering senior, became part of



The goal with the Go Panthers app was to make sure all of the information was as accessible as possible.

—Sydney Richards

The app began as ResTech, Raghunandan’s capstone design project, then morphed into ResKit. The app was strong enough that, with the help of director of residence life **JAQUELINE HETHERINGTON** ’14 M.E., ’17 Ed.S., Embry-Riddle Aeronautical University and Florida State University both agreed to pilot it on their campuses. In summer 2021, Bryan College in Tennessee purchased a subscription to the app, too.

The boost was one of many ways Hetherington helped, Raghunandan says, describing her as a tireless mentor and supporter during his three years as an RA.

“Over the past three years, she has been connecting me to the necessary

ResKit Labs in 2020 and has helped with coding, rolling out and marketing the apps, developing app websites and tackling key design issues.

“The goal with the Go Panthers app was to make sure all of the information was as accessible as possible,” she says. “In the first version, it wasn’t as easy to find. So, we improved the display, added a search feature. We thought that would be helpful, especially for freshmen—we have this information all centralized, so let them get to what they need as quickly as possible.”

The Go Panthers app is available in both the Apple and Google app stores.



Available in the Apple and Google app stores, the Go Panthers app offers easy access to:

- » Academics
- » Tutoring Services
- » Student Wellness
- » Campus Dining
- » Reporting Concerns
- » Getting Involved
- » Campus Life
- » Residence Life
- » Campus Services
- » Campus Map
- » Trolley Schedule
- » Directory



Bruce Buggs



Dorothy Linson

MLK Jr. Event Honors Community Leaders

In February, university students, faculty and staff gathered for Florida Tech's Rev. Martin Luther King Jr. commemoration event. The keynote speaker was **JORDIN CHANDLER '19**, a governmental relations consultant with Space Coast Strategy Inc. and recipient of the 2020 Brevard County Diversity and Inclusion Excellence Award issued by Brevard County Government. Leonard Ross performed a rendition of King Jr.'s "I Have a Dream" speech.

Philanthropist Bruce Buggs, founder and president of Buggs Funeral Home in Melbourne, received the Julius Montgomery Pioneer award. Buggs serves as president-elect of the Independent Funeral Directors of Florida and is a past vice president and treasurer. He is also an active member of the Florida Morticians

Association and the National Funeral Directors & Morticians Association. In 2018, he was named funeral director of the year by Kates-Boylston Publications and was featured on the cover of its magazine. In May 2019, he received the W. Clyde Lankford Distinguished Service award from the Independent Funeral Directors of Florida.

Community leader Dorothy Linson was awarded the Dr. Harvey L. Riley Bridge Builder award. In 1989, Linson, known to many as Ms. Dot, founded Club Esteem alongside her friend Gladys William. The two founded the organization with the hope of teaching children in the community how to be upstanding citizens and the importance of getting an education.



SGA INSTALLS SOLAR STATIONS ACROSS CAMPUS

Looking around campus, you may notice some new additions. Florida Tech has installed solar-powered tables that are as functional for working students as they are a shady place from the sun.

The solar station project was initiated and funded by the Student Government Association and coordinated with EnerFusion Inc. on design, fabrication and installation, which occurred in August 2021.

The tables' structural components are made from aluminum, preventing potential rust. The coverings have one 100-watt and three 65-watt solar panels, and they generate and store electricity for use day or night. The tables also feature four USB outlets in weatherproof housing and four Qi wireless charging locations on the table surfaces.

Florida Tech, Winter Haven Hospital Foundation Establish Training Program for Psychology Students

A powerful partnership developed by the Florida Tech School of Psychology and the Winter Haven Hospital Foundation is providing psychology doctoral students valuable real-world experiences and important services to patients in need.

Spearheaded by **JOEL THOMAS** '97 MBA, president of the Winter Haven Hospital Foundation, and Patrick Aragon, Florida Tech assistant professor of clinical psychology, the program launched in September 2020 with doctoral clinical psychology students **TENASIA WYNN** '17, '19 M.S., and **SHELBY GREGSON** '16, '20 M.S.

Two days each week, Wynn and Gregson see patients and provide care at several Polk County facilities in the BayCare Health System and, just as important, they work alongside medical residents from the Florida State University College of Medicine's family medicine residency program in Winter Haven.

"It is unique to have two universities working together helping people," says

Aragon, who supervises the program for Florida Tech.

A 2018 Polk County Community Health Needs Assessment highlighted the need for mental health services, so Thomas and the foundation developed a multipronged approach to addressing this need that included the establishment of the Psy.D. Internship Training Program with Florida Tech.

"You've got the best and brightest of these new medical students combined with the best and brightest of clinical psychology," he says. "It's state-of-the-art thinking going into the patient encounter."

For Wynn and Gregson, the experience is a critical step as they prepare for their professional futures.

"This is allowing me to apply the clinical and assessment skills that I learned from my classroom experiences," says Wynn, who aspires to be a health service psychologist. "I am also able to see firsthand how cultural factors influence

the psychological well-being and testing performance of medically compromised individuals."

Gregson, who hopes to work in a medical setting to advocate for mental health, is excited to be building on her classroom knowledge, as well.

"I have always said, it is one thing to 'learn' about what to do, but it is another to actually utilize what you have learned," she says. "Being involved in this training program has also given me a better understanding of psychopharmacology and the biological basis of behavior, and working with a diverse interdisciplinary team has allowed me to gain knowledge from many different disciplines within an integrative behavioral health setting."

Since the program's inception, **MARIAN AMUNDSEN** '19, Maria Consbruck, **MORGAN DAVIES** '20 M.S. and **SHIFRA GROSS** '19 M.S., all in the doctoral clinical psychology program, have also participated.



Ready for Takeoff

In September, **HENRY CASTELLANOS** '00, donated his award-winning Boeing B-787 Dreamliner replica to the university. The giant model, clad as a United 787 and retired from competitive flying, is now hanging in George M. Skurla Hall on campus for College of Aeronautics students and faculty to enjoy.

A Modern Heroine

Astrobiology student Alyssa Carson was featured in *Elle* magazine's online feature "Modern Heroines," which the publication describes as a showcase of "individuals who embody the kindness and courageousness of Disney princesses and queens." In the piece, Carson discusses her goal to visit Mars and her STEM studies, as well as being a fan of Disney princesses. *Elle*'s "Modern Heroines" feature can be viewed at bit.ly/3EKgWm9.



Photo credit: Celeste Sloman



A Visit from Blue Origin

SCOTT HENDERSON '88 M.S., vice president of test and flight operations at Blue Origin, spoke to students at an on-campus event Dec. 1, 2021. After his presentation, Blue Origin representatives conducted on-the-spot interviews with students pursuing careers in aerospace, mechanical and electrical engineering and computer science/software development.



Light the Night

As a sponsor of the Space Coast Lightfest, the university got to see its logo in lights, and our community experienced the show at a discount during a special Florida Tech night.



Who We Play For looks to eliminate preventable sudden cardiac death in youth through affordable heart screenings.

Who We Play For

Panthers partner with nonprofit to raise awareness for cardiac treatment for scholar-athletes

By Jerry Durney and Daniel Supraner

With the health and safety of Florida Tech scholar-athletes in mind, the athletic department has partnered with Who We Play For (WWPF), a local nonprofit that raises awareness for cardiac treatment and preventive care.

“Throughout my career in intercollegiate athletics, I have, unfortunately, seen undiagnosed heart conditions that lead to the catastrophic effects for scholar-athletes at many peer institutions,” says Florida Tech director of athletics Jamie Joss. “When approached with the vision of Evan Ernst from Who We Play For, this aligned with our dedication to providing the safest environment possible for our scholar-athletes. We can help prevent catastrophic events from occurring with a simple heart screening of all our scholar-athletes.”

Many people have been affected by a cardiac event at some point in their lives, be it themselves or someone they know or love. For



Rafe Maccarone (Photo provided by Maccarone Family)

Ernst, co-founder of WWPF, it all started Nov. 30, 2007.

Ernst’s teammate and friend, Cocoa Beach High School soccer player Rafe Maccarone, was warming up for practice when he went into sudden cardiac arrest and passed away a day later.

It was determined post-mortem that Maccarone, who had passed all the necessary physicals to play sports, had suffered from hypertrophic cardiomyopathy (HCM), a condition in which the heart

becomes thickened without an obvious cause.

HCM, a recurrent cause of sudden cardiac arrest in young athletes, has caused the deaths of several young athletes, most famously, college basketball star Eric Wilson “Hank” Gathers Jr.

Maccarone’s passing sent shockwaves throughout Brevard County. How could this happen to someone so young and nearing the



#1

Sudden Cardiac Arrest (SCA) is the No. 1 killer of student-athletes.





What are the warning signs?

- » Shortness of breath
- » Fainting or seizures during or immediately after exercise
- » Unusually rapid heart rate
- » Chest pains
- » Dizziness
- » Fatigue
- » Unexplained death of a family member under 50



What causes it?

Two types of conditions:

- » **Electrical:** The heart doesn't beat properly, and the rhythm is off.
- » **Structural:** The heart is malformed. Either it's too big, or a valve is in the wrong place.



How to prevent it?

- » **Heart screenings:** Electrocardiogram (ECG) screenings detect heart problems.
- » **CPR:** Chest compressions can save someone's life until an AED arrives.
- » **AED:** An automated external defibrillator is a lifesaving device that shocks the heart back to life. It should be in reach during athletic activities.

“ We can help prevent catastrophic events from occurring with a simple heart screening of all our scholar-athletes.”

—Jaime Joss, *Director of Athletics*

prime of his life? What, if anything, could have been done to prevent this?

Researchers learned that HCM is not only detectable but also preventable. Countries around the world have implemented heart-screening protocols to identify at-risk children before they take the field. Italy, for example, has seen cases drop by 89% due to these measures.

“When we learned this in college, we came together to create Who We Play For with the vision that we can create a movement to save kids by empowering and helping communities across the country to provide affordable, noninvasive, simple, lifesaving electrocardiogram (ECG) heart screening,” Ernst says.

“So, we created this heart-screening program and partnered up with hundreds of schools across the country over the last 10 years, from the most vulnerable middle schools up to the most elite Division I professional programs,” he says.

WWPF has screened about 200,000 student-athletes and has saved over 200 lives, Ernst says.

“Florida Tech is the first school in the Sunshine State Conference to do our screenings. We're hoping to grow this so that all colleges across the U.S. get behind doing this, as well.”

WWPF came to Florida Tech's campus and performed ECGs for all 393 of Florida Tech's scholar-athletes when they arrived on campus in August 2021 before practices began.

“Since arriving at Florida Tech, it has been a priority of mine to optimize the scholar-athlete experience. As an athletic trainer, it is important to me that we implement preventative measures in our screening process in an effort to identify potential issues that can be addressed upfront,” says Luis Velez, Florida Tech assistant athletic director for sports medicine and performance. “Having Who We Play For and their network of cardiologists on board with us to help screen all of our scholar-athletes not only gives me and my staff peace of mind, but it can also save lives.”

Leaving a Legacy

While WWPF was screening Florida Tech scholar-athletes on campus, Ernst learned his path had already indirectly crossed with one student.

“There was a baseball player [freshman Luca Wentzel] there with a pretty obscure Connecticut city on his chest: Wilton. So, I asked him, ‘Do you happen to know George DiRocco?’” Ernst says.

For about a year, WWPF had been working with the family of DiRocco, who died of an undiagnosed heart condition that led to cardiac arrest in September 2020.

“He was a teenager in the prime of his life, never had a sign or symptom until he collapsed and died,” Ernst says.

Wentzel attended the same high school as DiRocco and was friends with his sister.

“I didn't understand how something like that could happen, especially to someone who's that young. I thought people who suffered from heart conditions were usually much older,” Wentzel says. “It opened my eyes to the types of struggles people are going through, and that it's important to have access to equipment like the ones we used for the ECG screening.”

Florida Tech's partnership with WWPF is already taking root, expanding beyond just the heart screenings. Ernst presented to a senior design class during the first week of school, and his project proposal piqued the interest of men's soccer player Carlo Campanini.

Campanini and his siblings had played in local charity soccer games hosted by WWPF for years. Now, he and his senior design group are helping to increase awareness for the organization by creating a registration system to simplify the process for families everywhere to access heart screenings.

“We're going to include Carlo and his peers on our presentations to the American Academy of Pediatrics, UCF College of Medicine, Advent Health, Nemours and Arnold Palmer,” Ernst says.

The university's hope is that the Florida Tech-WWPF partnership will ease the grief caused by cardiac events like Maccaroni's, allow his memory to live on and prevent tragedies like his from happening in the future.



Planets Gone Rogue Could Sustain Life, According to Study

In research highlighted in summer 2021 in *Discover* magazine, assistant professor and astrobiologist Manasvi Lingam, along with Harvard researcher Avi Loeb, studied how life might survive on a rogue planet via oceans prevalent underneath a thick layer of ice.

The cold of interstellar space would be too much for the oceans to remain entirely liquid, but the researchers believe any putative biospheres would be protected from the cold via the ice layer, and the planet's core would heat the planet from the inside. Underneath the ice would potentially exist Earth-like oceans that could support life.

The possibilities for rogue planets facilitating life are of deep interest to Lingam as more planets are being discovered. He noted that for every solar system discovered—each of which contains a handful of terrestrial planets—there are approximately 30 to 40 rogue planets traveling in the cold expanses of interstellar space. The nearest exoplanet to Earth is, therefore, expected to be one of these rogue planets.

“We normally think of planets bound to stars, such as Mars, that could support life, but in reality, these types of life-supporting planets could just be floating out there in the vast void of space with rich biospheres,” he says.

The next steps in the research are to do experiments on Earth to ascertain under what extreme conditions life could survive, such as low temperatures or low pressure. A way of doing this is to analyze microbes that would not need sunlight, thereby building on previous research that has conclusively shown that more microbes exist that don't require sunlight than those that do.

Another direction that merits future research is to look at rogue planets as they enter our solar system and research the planets' conditions to see if they would facilitate life.

SMARTPHONE VIDEO GUIDANCE SENSOR STUDIES TO CONTINUE ON ISS

Mechanical engineering professor Hector Gutierrez and Florida Tech's Aerospace Systems and Propulsion Laboratory, partnering with the NASA Marshall Space Flight Center, saw their smartphone video guidance sensor (SVGS) delivered to the International Space Station (ISS) on the Crew-3 launch vehicle in November 2021. A vision-based technology for navigation and proximity operations, SVGS started testing and operations in mid-January and will continue through 2022.

SVGS captures images of a four-point LED beacon and analyzes the pattern of the illuminated dots on the captured images to determine the range and orientation of the target relative to the camera frame. The system will be deployed and tested using NASA's Astrobee free-flying robots.

If successful, SVGS could enable future use of small satellites in multispacecraft flight formations and demonstrate its potential advantages in proximity operations, such as rendezvous, docking and landing maneuvers. The marketplace for a proximity operations sensor for space applications is open, and the ISS demonstration is an important milestone to help position SVGS for future opportunities.



SECURING FOOD THROUGH AI

Bisk College of Business associate professor Darrell Burrell, along with colleagues from Grand Canyon University, Temple University and Illinois Institute of Technology, recently published “Exploring technological management innovations that include artificial intelligence (AI) and other innovations in global food production” in the *International Journal of Society Systems Science*. The research offered new data on technological innovations that may help overcome agricultural concerns for meeting a process improvement initiative.

The study analyzed technologies being used to increase food production and included insights from those in the industry. The research found there are several AI-related systems that are used in farming, ranging from drones surveying the crops to solar panels and sunset-triggered irrigation to motion sensor technology that serves as a digital scarecrow by scaring birds away from crops with a simulated human yell. The paper even looked at robots picking crops.

Machine Learning May Help Understand Neurodegenerative Diseases

Facial recognition and analysis, and the machine-learning techniques behind them, have many applications, from affirming identity documents to unlocking mobile phones. Now, this technology may have the power to help doctors better understand and diagnose neurodegenerative diseases.

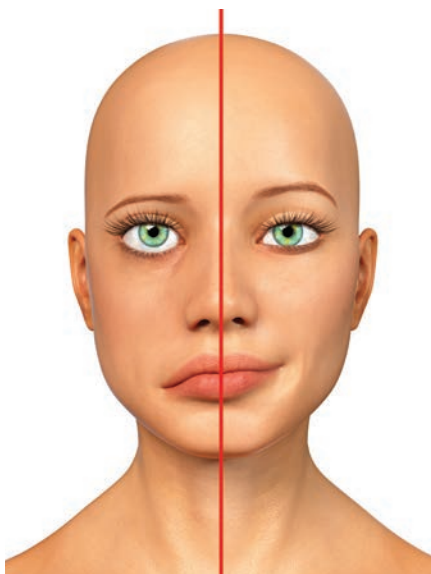
Diego Guarín, assistant professor in the biomedical engineering program, has been working on using facial recognition and analysis and machine-learning algorithms to evaluate the effects of different neurodegenerative and motor disorders in speech production and facial movements.

The overall goal of Guarín's research is to use facial recognition techniques to analyze whether patients have neurodegenerative or motor disorders, such as Bell's palsy, Parkinson's disease and Lou Gehrig's disease, also called amyotrophic lateral sclerosis, or ALS. Using this new technology would allow doctors to provide more effective care to individuals who are developing these diseases, as well as to track disease progression and provide a baseline to see if those with the disease are improving with treatment.

Using an artificial neural network to find a specific location on the face, Guarín then uses the recognition technology to track how the person moves his or her face. His experiments are performed in well-controlled environments, such as a room with a good camera, low noise and proper illumination. Next, Guarín will test these approaches to detect neurodegenerative diseases in home environments during a video call.

"The patients are going to perform certain exercises in front of the camera, such as opening their mouth and saying some sentences," he says. "The computer is going to track how the patient moves their mouth and face, and then we're going to have an idea of if that movement belongs to a healthy individual in their age group or if that movement belongs to a person with a specific disease."

Guarín's techniques were able to recognize individuals' diseases based on photos and video recorded in laboratory and clinical settings. In the paper,



"The Auto-eFACE: Machine Learning-Enhanced Program Yields Automated Facial Palsy Assessment Tool," involving Guarín and researchers from Harvard University, Auto-eFACE, a software developed by Guarín to automatically analyze and score faces based on static and dynamic symmetry, differentiated normal faces from those with facial palsy. The report also noted that the Auto-eFACE's scores were comparable to scores provided by expert clinicians, opening the door to automatic facial analysis in facial palsy.

In another study, "A New Dataset for Facial Motion Analysis in Individuals with Neurological Disorders," published in the April 2021 edition of *IEEE Journal of Biomedical and Health Informatics* and involving Guarín and researchers from the Toronto Rehabilitation Institute, University of Toronto and Simon Fraser University, Guarín and his co-authors introduced the first public dataset with videos of orofacial gestures—movements related to the mouth and face—performed by individuals with orofacial impairment due to neurological disorders such as ALS and stroke. The report also introduced a technique to automatically evaluate the disease severity based on facial movements estimated from videos.

Novel Brain-Boosting Research Featured in Journal for Children

Psychology assistant professor Rick Addante and clinical psychology doctoral student **MAIRY YOUSIF** '21 M.S., along with researchers from California State University, San Bernardino, looked at brain-boosting potential in the research paper, "Boosting Brain Waves Improves Memory."

The paper was published in the November 2021 edition of *Frontiers for Young Minds*, an open-access scientific journal written by scientists and reviewed by a board of children, teens and expert scientists. As the largest impact journal in the *Frontiers* system, this allows for more—and younger—eyes to look at new scientific research that is not often seen by the masses.

The original empirical discovery was published as a technical report, but this version was specially developed and written for accessibility to public STEM audiences.

"[Cognitive neuroscience is] a pretty niche field, and we don't get a lot of exposure and readership on what the discoveries are. But through this journal that they've developed, they can get millions of downloads per month of individual articles because it's free; it's open access to kids all around the world," Addante says.

The team analyzed if memory could improve by stimulating the brain using flashes of lights and sounds that caused the brainwaves to be in sync. People received rhythmic brain stimulation in special goggles and heard auditory beeps in headphones. This process, known as entrainment, trains the brain to be in sync at a specific wave pattern called theta.

People whose brains were trained to be in theta showed improved memory compared to people receiving random stimulation. The team found that entrainment can safely manipulate brain waves to improve people's memory, which opens the possibility of using devices like the ones researched for helping people who suffer from memory disorders.





Cybersecurity Goes to **HIGH SCHOOL**

Researchers introduce teens to the field in hopes of building a more sustainable and diverse cybersecurity workforce.

By Ryan Randall

As society's reliance on technology grows, so have the security threats to users and their personal information. Data breaches in the first half of 2021 exposed 18.8 billion records, according to Risk Based Security.

Though there are an estimated 4.19 million cybersecurity professionals worldwide, an increase of more than 700,000 compared to 2020, the 2021 International Information System Security Certification Consortium (ISC)² Cybersecurity Workforce Study found that the workforce will need to grow 65% to "effectively defend" critical assets around the world.

Yet, even as threats—and the need for skilled workers in this field—surge, there remain substantial diversity inequities. The U.S. Department of Labor says African Americans comprised 12% of information security analysts in the U.S. in 2020, and Hispanics represented about 16%. White workers represented 80% of the field. Women represented just 11.4%.

And among minority cybersecurity professionals, 23% hold a role of director or above, 7% below the U.S. average, the (ISC)² found.

A new program launched at Florida Tech in late 2021 seeks to remedy some of these discrepancies from a critical starting point: high school.

With "Educational Approaches and Curriculum to Engage and Educate a More Diverse Cybersecurity Workforce," the university is taking a local approach. Funded by a three-year, \$750,000 Office of Naval Research (ONR) grant, the program seeks to expose youth to potential cybersecurity career opportunities. Cocoa High School's junior ROTC (JROTC) program is the initial focus.

Led by Meredith Carroll, aeronautics professor, and TJ O'Connor, computer engineering and sciences assistant professor and head of Florida Tech's cybersecurity program, the program is built on exposing high school students to cybersecurity training in a way that appeals to them and, thus, establishes a foundation that could lead to a career in the field.

The Search for Opportunity

The genesis of the Educational Approaches program came from another ONR grant won two years ago. Carroll was conducting educational research on increasing learner engagement for unmanned aircraft systems training when she came across a STEM grant opportunity that focused on cybersecurity but also had a training and human factors component to it, which are key elements of Carroll's research. She reached out to O'Connor and computer engineering assistant professor Siddhartha Bhattacharyya about teaming up for the project.

Their effort was successful. The team won the \$250,000, one-year grant with a proposal titled, "A Multidisciplinary Approach to Internet-of-Things (IoT) Cybersecurity Research to Develop the Research Capacity of ROTC Students."

As the group conducted more research on its way to developing the Educational Approaches program, the lack of diversity in the field became an undeniable factor. Through discussions with a female colleague, O'Connor focused initially on his own areas, including the university cybersecurity team.

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“My colleague had some really good thoughts on it and shared them with me. And one is, you tend to go with people that look like you and act like you. You have mentors that are similar to you in nature,” O’Connor says. “And there wasn’t a lot of representation on the team from women, so it wasn’t driving the team. We started looking at some opportunities to integrate more women into cybersecurity research and the cybersecurity program, and it’s yielded a lot of positive internal results.”

While most cybersecurity education heavily leverages competition-based coursework, O’Connor saw the barriers to entry in the field for historically marginalized communities. They led to discussions with Carroll on ways to better include underrepresented groups in cybersecurity programs.

Their initial take was to ground the educational activities in technology that students are familiar with, like IoT devices, such as security cameras and camera doorbells. This would increase meaningfulness to students, and allowing the students to tinker with the technology would take some of the abstract concepts and make them concrete and relevant to their everyday lives.

That familiarity, combined with instructional strategies that have been shown to effectively engage women and minorities, they believed, would lead to higher levels of interest and engagement than the bright neon lights, dark

65%

Workforce growth needed to “effectively defend” critical assets globally

—
2021 (ISC)² Cybersecurity Workforce Study



U.S. diversity representation for information security specialists in 2020:
12% African American
16% Hispanic
80% White

Women account for 11.4% of the field
—
U.S. Department of Labor

lighting and techno music often associated with cybersecurity and hacking competitions.

“We want to make cybersecurity accessible to all, and we are investigating how to make curricula exciting and fascinating to a broad array of the populace,” O’Connor says.

Project Start

As Carroll and O’Connor’s discussions continued, they looked around for more tandem research opportunities. Carroll discovered another ONR grant, this one to develop a course.

Carroll and O’Connor reached out to Cocoa High’s administration and provided an overview of their initiative. Cocoa High’s administration thought JROTC cadets would pair well with Florida Tech and the cybersecurity program.

Retired Lt. Col. Joseph Pavone, Cocoa High JROTC lead, said the educational program will enable cadets to experience technology in a new way and allow them to develop skills they may use in future careers. The program also aligns with the goal of the JROTC: setting the students up for success after they leave high school.

“I believe that exposure to cybersecurity will create opportunities, and this is an excellent beginning, especially with our diverse student body. Information, knowledge and education will enable underserved minority groups and females, the target audience of this classroom



Students in Cocoa High School’s JROTC program worked with Florida Tech researchers to hack network-connected, remote-controlled cars and race them against each other.



initiative, to better understand career prospects,” Pavone says. “Cybersecurity instruction will prepare our cadets to be successful and equipped for their future. Cybersecurity is a growing field and will require all students to be mindful so they can pursue higher education or new, challenging and high-paying careers.”

In December 2021, in one of the first group exercises, the team worked with the high school students by having them hack network-connected remote-controlled cars and race them against each other.

“I thought it was fun learning about different types of hacking and how it can be beneficial,” sophomore Nicholas Deans says. “If we had a class here, I’d probably join it as an elective. I thought it was really fun and interactive.”

The Course

In working with Cocoa High, the Educational Approaches program will showcase cybersecurity training to traditionally underrepresented groups. Using research from her Advancing Technology-Interaction and Learning in Aviation Systems (ATLAS) Lab, Carroll is utilizing instructional strategies and applying them based on the students’ background and interests.

“Some of the findings from the learning science literature indicate there are certain strategies that work better for certain people,” Carroll says. “In general, meaningfulness is really important. Have you ever had a teacher who, say, when you’re learning math, they create math problems that are really relevant to you? For example, if you’re into sports, they might frame a problem based on aspects of the football field that you can truly relate to. If you can tie concepts to something that’s meaningful to that person, then that can help them understand concepts. You’re utilizing knowledge structures they already have to bring meaning to new concepts.

“So, if you’re trying to attack a network, most students are like, ‘Network? What does that even look like?’” she continues. “But if you’re going to say, ‘Hey, we’re going to attack your Alexa. We’re going to attack your friend’s Alexa; you can make it say funny things,’ suddenly, it’s relevant to them. It’s meaningful. They understand it, and it increases engagement, but it also increases their ability to learn and

understand how things work. That’s one of the key things that’ll be part of the project.”

A goal of this program is to both spark interest as well as prepare the Cocoa High students for cybersecurity courses in college, which happens unevenly in schools and districts around the country.

Where a school with more opportunities for its students may have an honors computer science course with a dedicated instructor, schools with less support may only have an online program, if that. By exposing students earlier to expanded instruction, the team hopes to help prepare them for future instruction, as well as to instill confidence that they can learn the language of cybersecurity.

“We’ve been talking to some of the computer science instructors [at different colleges] about, what are the main things that the kids are missing? What are some things that we could target?” Carroll says. “And a lot of them have said confidence and motivation, because we need to debunk the idea that computer science is something that is so hard that they can’t do it.”

Making a Difference

ZHENE BROWN ’20 is finishing up her master’s degree in computer software engineering and will then enter the university’s doctoral program. Brown’s passion for the field started in high school, and she understands the importance of having classes to prepare for college courses.

Through talking with the high school students in the program, she sees how different backgrounds and lives outside of school may affect opportunities in school. She noted, for example, that one student didn’t have a laptop until he was a senior in high school.

“So, when they come, everything is really fresh for them,” Brown says. “Sometimes, they struggle in terms of catching up or just understanding different topics because they weren’t exposed to them previously. So, that’s really the goal of this program, and the goal that I expressed to Dr. O’Connor where we want to expose them. We want them to have that background knowledge coming into college. We want them to be prepared so that they can be successful, and they can feel capable.”

Above: Senior computer science student Tiffanie Petersen works with students at Cocoa High School during the launch of the “Educational Approaches” research grant.



We want to make cybersecurity accessible to all, and we are investigating how to make curricula exciting and fascinating to a broad array of the populace.

—
TJ O’Connor, computer engineering and sciences assistant professor, head of Florida Tech’s cybersecurity program and co-investigator on the “Educational Approaches” research grant

KETCHUP
OUT OF THIS WORLD





WHEN A TOMATO IS MORE THAN JUST A TOMATO

By Adam Lowenstein

In two rooms on the second floor of Florida Tech's Center for Advanced Manufacturing and Innovative Design, amid a tangle of green plants and red fruit, a scientist and 15 of his students brought us a little closer to Mars.

Collaborating with global food business The Kraft Heinz Co., associate professor Andrew Palmer and his team succeeded in growing food-grade tomatoes in simulated Martian regolith—a dirt-like substance that is similar in composition to the actual surface material on Mars. With 450 plants and hundreds of tomatoes produced, this was a remarkable achievement in Martian farming on a scale rarely attempted.

The nearly two-year process resulted in an international sensation: Heinz Ketchup Marz Edition, the first ketchup made with tomatoes grown in Mars-like conditions. Though not available to the general public, the popular condiment represents the successful result of a process that reflected the

true nature of scientific discovery: Some things worked; some didn't, and plenty was learned.

What remained steadfast was the participants' faith in a future that includes humans on Mars.

"I think it is inevitable that we will be colonizing other planets, especially Mars," says Ruth Nichols, a sophomore and project participant majoring in astrobiology and applied mathematics. "The importance of this project is showing that the Martian regolith itself can be used for growing crops for human consumption."

We talked to Palmer, undergraduates Nichols and Benjamin Sheely, an aerospace engineering-astronautics junior, and **DAVID HANDY '19**, a second-year Ph.D. student in biological sciences, about this remarkable endeavor, what it means for our quest to colonize Mars and how it could end up making a big impact on Earth.

The interview has been condensed and edited for clarity.

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This tomato was grown in soil that replicates what is found on Mars. Future settlers on the red planet will have to grow much of their food, and this project will help scientists understand what is necessary to do that.

Q: You started with a pilot program of about 30 plants then scaled up to 450. That's quite a leap. What did that teach you about this growing process?

Andrew Palmer: What we experienced is a really good example of how things don't necessarily scale proportionally. What I mean by that is that we did this pilot study, and we did 30 plants, and we were convinced, 'Okay, we know how to get the yield to work. We know how to optimize everything that we need to get the plants to grow.' And then, we went from 30 plants to 450 plants, and it turned out that there were new problems.

So, we had to work on how to make sure that much larger group of plants got equal amounts of light. We had to make sure that temperature conditions and the entire room were the same as in the pilot study, which was harder in a bigger space. We had to keep airflow going so that plants were getting an equal amount of air. We

had to figure out a watering schedule for all of these plants, handled by our students, because we wanted to optimize growth and couldn't really set an automated watering system.

I think we also learned a lot about trying to grow in a monoculture approach, and we think that one of our take-home messages is, we don't want to grow a room full of one thing. We want to diversify, and we think that's going to give us a better nutrient profile in the regolith. The goal is to move to larger, trough-based systems, where the plants can intermingle, which allows them to complement each other. Also, when you have different plants, you reduce the spread of disease, and you have the potential to cultivate a better variety of microbial partners.

Benjamin Sheely: To our group's knowledge, this was the largest harvest attempt in Mars regolith ever conducted. Conducting experiments on a mass scale can provide a viewpoint perhaps missed with smaller sample sizes, regardless of the number of trials. Hopefully, our mass-scale experiment will add to the collective considerations for this research topic globally.

Palmer and a team of more than a dozen scientists, technicians and students, including Thiara Bento (pictured here), worked in a greenhouse, known as the Red House, installed at the university's Center for Advanced Manufacturing and Innovative Design.

Q: The fact that Heinz made ketchup out of these tomatoes certainly captured the headlines, but what is the greater potential impact of this study?

Andrew Palmer: I think there's certainly intellectual value from learning from the challenges here. We've learned a lot about proper nutrient balance for growing plants like tomatoes. We've learned a lot about the actual amount of water that it'll take to do a process like this with these conditions. We've learned a lot about how much artificial lighting we need to provide. We've learned about controlling day/night cycles. We've taken a lot of the stuff we already knew in traditional agriculture, started to apply it here and realized that a lot of it will hold up, with some tweaking.

I think a larger component of it, though, is inspirational. It's about showing that this is hard work, but it's work worth doing. This Martian agriculture is something we don't have a high technological readiness level of, but we're looking at, 20 years from now, trying to set up a Mars base; we've got the time to do it. I think we can't thank Heinz enough for wanting to take the challenge, for trying to do this.

Ruth Nichols: I think one of the most significant results of this project was proving that plants grown in Martian regolith simulant can be food-grade quality. Although we were sure the food would be fine for consumption, getting the confirmation is a big breakthrough.

Benjamin Sheely: We can help narrow down corrective actions needed to optimize agriculture in nonfertile areas on Earth. Considering the moon or Mars, understanding the compositional boundaries of regoliths that Earth flora and bacteria can successfully thrive in now can allow for thorough analysis of sustaining life elsewhere through human agriculture with modifications.

David Handy: My biggest takeaways were from the scale of it. As one of the people tending to the plants day to day, my experience really highlights the need for automation in things like irrigation systems. One of the things that the pilot study especially solidified is that we need to not only consider what crops, but what varieties of each crop, are used.

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Q: After this experience, are you still confident that someday, humans will colonize Mars?

Andrew Palmer: It's a really good question. So, things didn't work out here exactly as we planned, but until the very last couple of weeks, we had hundreds of tomatoes in this room. Then yes, something happened, and that was unexpected, and I think it points out, for one, how perilous agriculture is, no matter where it's done. Disease or something goes wrong in the water supply or something happens, and farmers can lose a large portion of their crop. It's not uncommon. The concern of that is certainly amplified when we think about Mars. We have to be able to grow food, and I think what we saw was that we successfully did that. We did produce hundreds of tomatoes that would be viable. Does it also tell me that the process is more difficult? Yes. It's going to be even more challenging than I already thought, but that's not a reason to think we can't accomplish it. It just lays out a better sense of where we are.

Ruth Nichols: I think it is inevitable that we will be colonizing other planets, especially Mars. One of the most crucial steps we must take for that

“ The importance of this project is showing that the Martian regolith itself can be used for growing crops for human consumption.

—Ruth Nichols, astrobiology and applied mathematics undergraduate student researcher

to happen, though, is to make sure we have the food to sustain us there, and one of the best ways to go about making food on Mars is by utilizing the Martian regolith through in-situ resource

utilization (ISRU). Carrying soil or equipment for growing crops in Earth-like conditions on Mars would take a lot of money and increase payloads. The importance of this project is showing that the Martian regolith itself can be used for growing crops for human consumption.

Benjamin Sheely: Yes. The long-term benefits of this and future related work: Humans on Earth all have food. Humans not on Earth all have food.

David Handy: I believe we definitely will one day, though how long it will take is going to depend on a lot of factors, especially politically when it comes to funding. I hope that this research can help us achieve self-sustainable colonies faster, where we plan to be growing food on these colonies from the start.

Q: Will growing things in regolith be the only approach to cultivating food on Mars?

Andrew Palmer: I think, right now, we are exploring a variety of options. Growing in regolith is not going to be the only option for growing food on Mars and, in fact, it would be really foolish to put all of your eggs in one basket—or all of your seeds in one plot of soil. We see things like the film “The Martian,” and that's influenced a lot of people's opinions of what we could do on Mars. ‘I saw Matt Damon grow food on Mars!’ But let's be clear: That is not a documentary.

We'll have a mix of approaches. There's going to be hydroponics and probably aeroponics, and then there's going to be this regolith-based method. There's going to be a mix of that with prepackaged foods that are going to come because there's going to be things that it's just going to be too costly to make on Mars right away. We'll still have to rely on some things coming from Earth, but we'll leverage the things that we know about hydroponics to grow certain types of food that we can grow better there than we can grow in our regolith. So, it's going to be a blend.



Q: Does Heinz Tomato Ketchup Marz Edition taste like regular Heinz Tomato Ketchup?

Andrew Palmer: You wouldn't be able to taste the difference. The project's aim was to see if Heinz and Florida Tech could grow tomatoes with all the correct properties, such as thickness, color and sweetness, to make the Heinz Tomato Ketchup traditionally grown in the fields. Mission accomplished!

Beyond the tomatoes, what other Mars-related research projects are Andrew Palmer and his team involved in?



Martian Regolith

The team has been doing research into different Martian soil simulants. Understanding that, as on Earth, soil is different chemically and mineralogically from one place to the next on Mars, they are working to catalog how Earth-derived regolith simulants mimic what is found on the red planet in an effort to create a standardized procedure for investigating these different substrates.

Palmer says:

“We can actually go through and investigate and interrogate which one of those is going to be better for growing plants, which could help us when we decide to land, someday, on Mars and set up a colony. We could say, ‘Well, it’ll be a lot easier to grow plants if you land at this site than if you land at this site.’”

Improving Plant Growth

When plants grow in Earth's soil, they are surrounded by bacterial and fungal “assistants.” These things help take nutrients that may be hard for plants to absorb, such as phosphorus and nitrogen, and make them more usable for the plants. So, the team is now working on growing different bacteria and different fungi and growing them with plants to see if they can improve growth. What Palmer and his team are developing could eventually be added to Martian regolith to help plants grow.



Palmer says:

“So, we're leveraging the microbial world now, and instead of creating this super sterile environment, we're trying to create a bacteria-rich environment, but with the bacteria we want, which will help the plants grow better.”



Top: Andry Sweet '89, president and CEO of the Children's Home Society of Florida

Left: Brenda Behan '86 (pictured right), director of the gender office at World Food Programme

Above: Jonathan V. Wilson '98, vice president of organization development and talent management for the Leukemia & Lymphoma Society



Mission of **SERVICE**

**For those in community service,
the work is more of a calling than a job.**

By Stephanie R. Herndon '07

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Volunteerism is vital to nonprofit organizations and their beneficiaries, and volunteers derive a sense of fulfillment from giving time and talent.

Some occasionally volunteer, such as serving a Thanksgiving meal at a soup kitchen or participating in an annual cleanup event. Others donate their time more regularly, delivering Meals on Wheels to seniors or operating a thrift shop storefront on Saturday mornings.

A few among us go beyond this call. For this benevolent band, volunteering isn't enough. These big hearts have chosen to make service their daily work—their careers. However, if you ask them, they will phrase it differently.

“Like many in my field, I never saw it as a career—it has always felt more like a mission,” says **ANDRY SWEET** '89. Sweet is president and CEO of the Children's Home Society of Florida (CHS-F), a statewide nonprofit focused on strengthening families and communities.

POWER OF PARTNERSHIPS

Part of Sweet's mission is to build and maintain relationships with key influencers—corporate partners, legislators and donors, to name a few—to forge connections and drive impact for CHS-F.

“No one organization can solve the root causes of child poverty and neglect,” Sweet says. “When organizations bring their respective resources to the table, we can have greater impact. So much of my time is spent on developing and nurturing those partnerships.”

Being on the Children's Home Society of America (CHS-A) board offers Sweet several more impactful connections. CHS-A is a membership organization of 22 nonprofits representing 24 states that, like CHS-F, have roots well over a century old.

The larger organization focuses its attention on helping keep families intact wherever possible and preventing child maltreatment through member partnerships with the Centers for Disease Control and Prevention (CDC) and academic institutions for research on early childhood trauma.

Not unique to CHS, partnership is a powerful and important concept in the larger world of nonprofit work. **JONATHAN V. WILSON** '98, vice president of organization development and talent management for the Leukemia & Lymphoma Society (LLS), says partnership is the best part of the job.

“I partner with some amazing leaders and teams to find talent solutions that have a direct impact on our ability to achieve business results,” he says. “For us at LLS, that means to cure cancer.”

For Wilson, those connections happen with other enterprisewide human resources leaders across the vast national organization to ensure LLS has the right people in place to meet its long-term goals. He and his team support succession management, human resources recruiting and onboarding, and strategic planning for LLS' executive leadership.

On the larger scale, LLS collaborates with policy advocates, researchers and health care professionals, patients and caregivers, and local and national sponsors who fund the organization's important work.

Similarly, **BRENDA BEHAN** '86, director of the gender office at the United Nations' World Food Programme (WFP), works with partners to address inequality in food systems. To make an impact, WFP relies on a vast network of partnerships worldwide: governmental organizations, private sector businesses, UN agencies, academia, think tanks and more.

SENSE OF URGENCY

According to WFP, up to 811 million people do not have enough food, and 45 million people are on the edge of famine. The chief drivers of these startling statistics are worldwide conflict, climate change, natural disasters and structural poverty and inequality.

Behan is helping address the latter of these causes through WFP's gender equality initiatives, which aim to improve access to assets, education, jobs and opportunities that enable women and men to be in charge of their own food security.

Working on task forces for emergencies like those in Afghanistan or Northern Ethiopia and offering technical assistance to governments layers an additional level of urgency behind Behan's work.

“WFP is called on to respond often when situations are very quickly degrading, and time is of the essence in order to save lives,” she says. “This means that every single person in WFP has to be focused on the need to be working effectively and as a team. ... I am mindful every day of the responsibilities to people in need across the globe, and it is a motivation to always bring my best to the job.”

While Wilson focuses on filling executive roles within his organization, the LLS mission of curing blood cancers is always at the core, driving his work. This underlying

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Moment of Impact

“ One of my favorite moments was when I was in a refugee camp in southwestern Uganda, and I spoke to women and men about the difference that WFP’s assistance had made to them, how the cash transfers had sustained them during a difficult period, what their plans were to create their own livelihoods and how the financial literacy training provided by WFP was helping them to transform the household dynamics to be more balanced between women’s and men’s roles.

—Brenda Behan '86,
director of the gender office,
World Food Programme

Pictured here: A woman stands in the WFP community garden in Bandaro, Chad. Photo credit: World Food Programme





ANDRY SWEET

President and CEO
Children's Home Society of Florida



JONATHAN V. WILSON

*Vice president of organization
development and talent management*
Leukemia & Lymphoma Society



BRENDA BEHAN

Director of the gender office
World Food Programme

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objective means that not having enough time is the hardest part of his nonprofit work.

"This is not from a work-life balance standpoint whatsoever, but from knowing that we must do more every day to save lives," Wilson says.

“The hardest part about working in nonprofit is time ... knowing that we must do more every day to save lives.

—Jonathan V. Wilson '98, vice president of organization development and talent management, Leukemia & Lymphoma Society

He explains that while LLS has made tremendous strides in finding cures and providing access to care, every 180 seconds, someone in the U.S. is diagnosed with blood cancer. This unsettling fact puts an urgency on everything the organization does.

Sweet also keeps in mind the gravity of why she and others in CHS-F work so tirelessly.

"The hardest part of the job is when a child is harmed despite our best efforts to keep them safe," she says. "In human services, there are very few situations that are black and white. Judgment calls are made every day, and sometimes, it may not be the right call. It's devastating."

When these incidents happen, Sweet's team experiences secondary traumatic stress, which is a leading cause of burnout and turnover.

"Though these incidents are rare, they are a constant reminder of how important our work is and how we must support our team through the triumphs and the heartbreak," she says.

INSPIRING STORIES

Keeping sight of the mission and celebrating the victories help drive through the heartbreak. Sweet's passion for children led her to begin her career with the Melbourne branch of CHS nearly 22 years ago and continues to fuel her fire to keep going, even in hard times.

"Your ZIP code should not define your success in life, but sadly, it still does," she says. "I am energized by the thought that our work in communities across Florida is turning odds into opportunities for a generation of children who do not have the same advantages I had growing up."

Advocacy drives Sweet—advocacy for the children CHS serves and for her frontline.

"Much like teachers, social workers are often underpaid and under-resourced, yet they are responsible for children who have suffered some of the most severe trauma. They are not always viewed as 'first responders,' but they are the ones going into the homes in neighborhoods where law enforcement does not go in without backup. They are all heroes in my book. I will always champion them," she says.

The year 2020 brought both difficulty and resilience for many around the world. Despite the challenges, people banded together and made amazing things happen. Of all the good that came from the bad, perhaps some of the most impactful was WFP's work, recognized with the 2020 Nobel Peace Prize.

"I was surprised, moved and honored to hear the news. I was working in my office in Kenya at the time," says Behan, now back in Italy after seven years of extensive East Africa travel in support of WFP operations. "It was an emotional moment for so many of us in WFP—hugely humbling and moving. ... The Nobel Peace Prize was a recognition of the important connections between conflict and hunger and the need to find political solutions to end conflicts in order to have food security and end suffering."

LLS had reason to celebrate in 2020, as well. That year alone, the organization helped advance 14 of the 17 blood cancer treatment options approved by the Food and Drug Administration (FDA). Wilson says that overall, LLS has helped advance more than 85% of FDA-approved blood cancer treatments. The impact of these accomplishments keeps him motivated to do more.

"What keeps me going are the personal stories—the stories of survival, the stories of perseverance, the stories of volunteers and donors who lost someone but found solace with their involvement with LLS," he says. "The stories of

“ When organizations bring their respective resources to the table, we can have greater impact.

—Andry Sweet, President and CEO, Children’s Home Society of Florida



new staff and volunteers who found their calling through their role at LLS; the stories of leaders excited for providing career growth opportunities for their teams to impact our mission even more.”

ACADEMIC FOUNDATIONS

Regarding his own career growth, Wilson says his time at Florida Tech and with Army ROTC made him a lifelong learner. The psychology graduate followed his Florida Tech undergraduate degree with a master’s degree in organizational change from Hawaii Pacific University. He is a U.S. Army veteran and a member of Florida Tech’s College of Psychology and Liberal Arts Advisory Board.

“Learning about leading teams in Army ROTC, understanding the people dynamics of organizations through my coursework and internships at the School of Psychology, managing complex personal schedules—all while finding the time to rest and connect with friends, family and community—these experiences have been a driving force in my entire career.”

Also a Florida Tech psychology graduate, Sweet earned a master’s degree in health care administration from the University of Central Florida and worked for the State of Florida Department of Substance Abuse and Mental Health before joining CHS. She says the connections she has through Florida Tech have influenced her career.

Some of those staff members who impacted her path were “Dr. Frank Webbe, Dr. Art Gutman, Dr. Jose Martinez-Diaz—who I met after my time at Florida Tech, but when he joined Florida Tech, we reconnected,” Sweet says. “I am close with my fellow Florida Tech alumni: **RENE LEDFORD** ’81, **ROBIN (LOOMIS) CORNELL** ’89, **NANCY (NEWCOMB) KING** ’92. Each of them had a role in my career and who I am today.”

Behan received her bachelor’s degree in ocean engineering at Florida Tech and later earned her master’s degree in community and economic development from Penn State University. She says the rigor of her engineering studies at Florida Tech gave her “a great foundation for my career, as well as a balanced approach to working hard but still enjoying life.”

STUDENT SERVICE

Florida Tech sets up students to make a habit of community involvement, thanks to the university’s Office of Civic Engagement. The office provides students, as well as faculty and staff, opportunities to meet community needs while developing leadership through service.

“We work to connect community leaders and organizations with the interests of our student population,” says Tony Trimpe, assistant director of orientation and civic engagement. “For example, when United Way of Brevard asked for hygiene kits for the homeless population in our county, we created our fall Big Day of Service, with over 150 volunteers creating more than 5,000 hygiene kits for men, women and children.”

“Some faculty regularly include civic engagement as part of their course,” says Cat Nanney, director of student involvement, “and staff members consistently help when requested.”

The Civic Engagement Tracking System, powered by the Give Pulse platform, allows volunteers to find service opportunities and track those individual and organization volunteer efforts for scholarship, graduate school and job applications.

Tracking hours allows Florida Tech to recognize the top campus volunteers and organizations at the annual Civic Engagement Awards ceremony. Logging service hours also makes civic work available for consideration for the President’s Volunteer Service Award program—an initiative in conjunction with the USA Freedom Corps and the Corporation for National and Community Service.

RESOURCES

If you’d like to be more involved in your community, check out these resources for volunteer and philanthropic opportunities.

VOLUNTEERMATCH.ORG or **GIVEPULSE.COM**

Find volunteer opportunities in your area, filtered by cause, skill, age, virtual/in-person and more.

UNITEDWAY.ORG/FIND-YOUR-UNITED-WAY

Are you outside the U.S.? No problem. United Way has operations in 40 countries and territories around the world. Find yours to volunteer or donate for local impact.



FLORIDA TECH HOMECOMING 2022

RELENTLESS TWENTIES

MARCH 24-26

Florida Tech's annual homecoming celebration, previously held during the fall semester, has been permanently moved to spring to take advantage of the beautiful Florida weather this time of year and entice our out-of-state alumni to return to campus to celebrate!

This year's Homecoming theme, "Relentless Twenties"—originally slated for 2020—is even more fitting in 2022! We hope you will join us for this opportunity to reconnect, reminisce and recognize outstanding Panthers.



Thursday, March 24 **5K Run/Walk**

Kick off the Homecoming festivities with a 5K race through campus.

Register online.



Friday, March 25 **Homecoming Fest**

FREE concert in Downtown Melbourne featuring Saint Motel!

Street vendors, food, drinks, family activities and live music.



Saturday, March 26 **Homecoming Gala**

Our signature formal gala featuring dinner, awards ceremony, live music and dancing!

RSVP by March 11.

For more details and registration:

HOMECOMING.FIT.EDU



Photo credit: Catie Laffoon



FEATURING

SAINT MOTEL

ACCOLADES: Top 10 alternative radio, RIAA-certified gold

APPEARANCES: Coachella Valley Music and Arts Festival, Lollapalooza, Bonnaroo Music and Arts Festival, national TV

ABOUT: Since its breakout success in 2015, Los Angeles-based band Saint Motel has scored a loyal fanbase with kaleidoscopic sound, inventive live performances and first-of-their-kind virtual reality and augmented reality album releases.

MEMBERS: A/J Jackson, vocals; Aaron Sharp, guitar; Dak Lerdamornpong, bass; and Greg Erwin, drums

TOP SONGS

1. "My Type"
2. "Move"
3. "It's All Happening"
4. "Van Horn"
5. "Preach"



News from the desk of
Fin Bonset '96,
'99 MSA
Florida Tech
Alumni Association President

Is it me, or did 2021 fly by and blend with 2020? The pandemic is certainly keeping us on our toes with new variants and more unknowns. We have started to return to some normalcy and have experienced successes ranging from hybrid classes to safely planned in-person sporting and alumni events. How about that run by our women's soccer team in the NCAA Southern Region tournament?!

As an alumni association, we are excited to be part of in-person events planned by the Office of Alumni Affairs, including Homecoming, for which we are planning incredible events March 24–26. We will be diligent in following the best practices related to the pandemic as we remain resilient and endeavor to create alumni gatherings and events, both in-person and virtual.

In other important alumni matters, we are excited to welcome several new board members to our association. If you are interested in giving your time and talent to the university as an alumni association board member, please contact me to learn more. Speaking of giving back, our seventh annual Day of Giving was an incredible success. Our Florida Tech community raised nearly \$800,000 for our colleges, athletics, student organizations and featured programs. The day was a true testament that Florida Tech holds a special place in the hearts of our alumni.

We have begun strategic planning for the alumni association to identify where we can best help the university. During a recent FTAA board meeting, President Dwayne McCay shared a study predicting that Florida Tech would no longer exist after COVID-19. Not only are we still here, we have come through this stronger than before. In my eyes, that confirms the tenacity and community demonstrated by our leaders, trustees, faculty, staff, students and alumni. This resilience is at the core of being a Panther!

No matter what happens next, we will continue to prevail! We will keep shooting for the stars—Ad Astra Per Scientiam!

YOUR ALUMNI ASSOCIATION OFFICERS

- Fin Bonset '96, '99 MSA | President | Indialantic, FL | fbonset@vhb.com
Sherry Acanfora-Ruohomaki '93, '00, '05 M.S. | Vice President | Melbourne, FL | sherry@k9kampus.com
Chad Shoultz '96 | Treasurer | Indialantic, FL | cshoultz@icloud.com
Warren Pittorie '15, '18 M.S. | Secretary | Melbourne, FL | wpittorie2012@fit.edu
Jody Palmer '07 | Member-at-Large | Melbourne, FL | jodybpalmer@yahoo.com
Chris Fernando '02 | Member-at-Large | Raleigh, NC | cfernando@gmail.com
Kim Bozik '87 | Past President | Chandler, AZ | kim.bozik@regan.com
Bino Campanini '90, '92 | Executive Director | Satellite Beach, FL | bcampanini@fit.edu

DAY OF GIVING 2021

\$778,881

Total Raised (A New Record!)

2,857

Participants

*Thank you,
Panthers!*



#participationmatters

SUBMIT YOUR NEWS TO
alumnotes@fit.edu

1970s

THOMAS P. WEBER '79 A.S. was appointed CEO of Hobe Sound Early Learning Center. He is a longtime member of nonprofit boards, especially those benefiting children and families, and has chaired the Education Foundation and Children Services Council of Palm Beach County.

1980s

DON BARTHELMESS '80 A.S., a Santa Barbara City College professor of marine technology, joined the board of directors of Stop Oil Seeps California.

1 CAMILLE IURILLO '80, president of Iurillo Law Group, merged her practice with Englander Fischer, expanding the firm's practice areas.

HERIBERTO RODRIGUEZ '80 recently retired after a finance career working in various industries.

DOUG HUGGETT '83 was hired to provide services for the County Shore Protection Office of the Beach Commission, Carteret County, North Carolina.

2 ERIC ZILLMER '83 M.S., '84 Psy.D., stepped down after 23 years as the Drexel University athletics director. Zillmer will take a one-year sabbatical and return to the faculty in fall 2022 as the Carl R. Pacifico Professor of Neuropsychology.

MATTHEW MEAD '85 recently became vice president and national senior aviation planning director of Los Angeles-based WSP USA.

3 JOHN BITTENBINDER '86, **BRIAN SARGENT** '88 and **DARREN PATTERSON** '93 recently worked together on a United Airlines flight from Lisbon, Portugal, to Newark, New Jersey.

4 KEVIN DILALLO '86 MBA was promoted to group vice president of the Florida region with UHS

Delaware, overseeing four medical facilities and the associated ambulatory care access points.

5 Col. JON FRISTOE '87 was elected the 62nd president of the Fiesta San Antonio Commission, a nonprofit organization that plans, promotes and coordinates an annual celebration of the diverse heritage, culture and spirit of San Antonio for its residents and visitors.

6 RHONDA D. SAMMON '87 MBA retired after nearly 39 years with L3Harris Technologies Inc. In her final role, she served as small business liaison officer in the space and airborne systems segment, supply chain Center of Excellence.

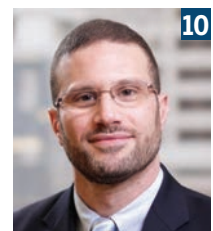
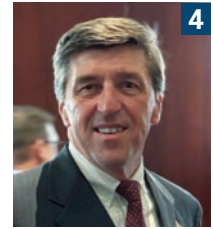
7 FAHRI DINER '89 was featured in *Forbes* for his breakthrough company, Plume, which is redefining the smart home category and improving the internet connection experience for service providers and their subscribers.

1990s

SUSAN HUTCHISON-JOHNSTON '90 M.S. recently retired from NASA after a 37-year career at Kennedy Space Center and Johnson Space Center. Her career highlight involved working on the console communicating with astronauts during the STS-99 mission. She ended her career with responsibilities for assets on the International Space Station.

THOMAS W. DUSSAULT '91 MBA is in the senior executive service at the U.S. Department of Energy, and he serves as the department's deputy senior procurement executive. He recently reached the milestone of 35 years of service in the federal government.

SAEED AL HAML '91 has been appointed an independent director to the board of directors of Yalla, a voice-centric social networking and entertainment platform in the Middle East and North Africa. He previously was the CEO of Etisalat Egypt.



Welcomed a Panther Cub?

Contact us for a free infant T-shirt, bib or onesie. Then, send a photo of your cub in his/her Panther swag with an AlumNote about yourself, and it may appear in the magazine.

For details: alumni@fit.edu

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11

8 AMAURY DE BARROS CONTI '92 was named partner and vice president of investments with Sendero Wealth Management. Conti credits his training as a pilot for incorporating a clean, mental checklist to sort through all the market noise in investing.

U.S. Army Corps of Engineers Jacksonville District during a change of command ceremony at the Times-Union Center for the Performing Arts' Terry Theater in Jacksonville, Florida.

2000s

9 JOEL STEPHENS '93 was named president of the life insurance division of Thomas Financial.

12 MRIDULA SRINIVASAN '01 M.S., Ph.D., became director of the marine mammal and turtle division of the NOAA Southeast Fisheries Science Center. She holds a joint appointment as a visiting research scientist at the Earth System Science Interdisciplinary Center (ESSIC) at the University of Maryland, College Park.

DEREK A. DYSON '94 MBA was named president and CEO of Today's Power Inc.

10 MUNIR HAFEZ '95, '97 M.S., was recently appointed senior vice president and chief information officer for TransUnion.

13 Capt. **ROB JEFFERIS** '03 A.S., '05, and his wife, Melissa Jefferis, M.D., are pleased to announce the

11 Col. **JAMES L. BOOTH** '97 (left) became the 61st commander of the



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15

ERIKA AMBRIOSO '20 describes her first post-graduation job as a “dream”—and also, a little chilly.

In June 2021, Ambrosio accepted a software developer position with Vinik Sports Group (VSG), parent company to the Tampa Bay Lightning, a National Hockey League (NHL) team and reigning Stanley Cup champions.

Her office is housed in Amalie Arena, where the Lightning play, and part of her job is to attend home games to gather statistics.

“I get to go to the games and count it as working,” Ambrosio says. “Working in sports was really something I never thought I was going to be able to do—but here I am!”

A computer science alumna, Ambrosio evaluates Lightning game, team and player statistics, running performance models, writing code and conducting various tasks that team management and coaches request.

Employing software developers to run numbers is common practice for professional sports teams, but hockey is just breaking into the practice, Ambrosio says.

“It’s very much on the ground level in hockey, so it’s very cool to be getting into it now, while there is so much change that can come,” she says. “There’s a lot of freedom to do things the way I want to.”

Ambrosio credits her Florida Tech education, particularly her senior design experience, with preparing her for the extensive interview process and, ultimately, the duties of the job itself.

In her senior design project, Ambrosio worked with Embraer to create a sensor system for tracking aircraft production using software that she uses daily in her job at VSG.

“Plus, senior design was basically, ‘Here’s a big project; figure out how to do it.’ And that’s exactly what I do in my job now—figure out the best way to get things done.”

The youngest and only female software developer on her team, Ambrosio also recognizes the value of teamwork and not being afraid to ask for help.

“My professors taught me that people want to help. We all have the same goal here, so I have no fear reaching out when I need to.”



TV SHOW OF THE MOMENT: “New Girl.”

YOUR SUPERPOWER: Eagle eye, I find money all the time.

ALTERNATE CAREER: Teaching kids math/science.

PETS: I have a rescue dog named Penny.

USUAL WEEKEND ACTIVITY: Drinking lots of coffee and accomplishing nothing.

YOUR VICE: Watching Hallmark Christmas movies.

YOUR OLYMPIC SPORT: Figure skating.

FAVORITE FLORIDA TECH MEMORY: Working concession stands at football games; met some amazing people.



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23

birth of their twins, Liam and Amelia. Big brother Alex couldn't be prouder.

14 SANCHEZ BROOKS '04 was recently promoted to assistant managing director of NUA Insurance Agents & Brokers Ltd. in Nassau, Bahamas.

15 JESSICA GRAHAM '04, '11 Ph.D., was named Florida State University Panama City's new estuary program director for St. Andrew and St. Joseph bays.

16 STACEY REED '07 welcomed her daughter, Elei Francesca, July 16. She arrived as a special angel after Stacey underwent a new treatment to beat uterine cancer.

17 SANDRA BROGL '08 Ph.D. began working for the European Space Agency as a deployment engineer for the ground segment in the control center in Germany. Previously, she worked with the International Space Station as a payload engineer for the Columbus module and later with the European navigation program, Galileo.

AMBER CLARK '09 was appointed to the Georgia Aviation Hall of Fame by Gov. Brian Kemp. Clark serves as airport director for Columbus Airport Commission (CSG).

2010s

18 DEAN FAITHFULL '11, who played soccer for four years at Florida Tech, is kicking in his second athletic career as a senior place kicker for the Colorado State University Pueblo Thunderwolves and is believed to be the oldest college football player in the U.S.

19 CEDRIC FLOWERS '11 MBA was recently promoted to vice president of DTE Gas at DTE Energy.

20 LYNISHA NELSON '11 was recently inducted into the Space Coast Sports Hall of Fame. She holds the rank of sergeant in the Army National Guard.

21 STEPHANIE ZOUTENBIER '11, a commercial engagement leader with Baker Hughes, Texas, has been named one of Hart Energy *Oil and Gas Investor's* Forty under 40.

22 ADNER MARCELIN '12 MBA, J.D., is the new Tallahassee executive for Self-Help Credit Union.

TINA TUCKER '12 M.S. was recently appointed chief operating officer of Pinnacle Solutions Inc. in Huntsville, Alabama.

RODNEY TURNER '12 M.S. recently became a vice president with GovernmentCIO.

23 JOAO ALBERTO DE FARIA '13, '15 M.S., recently accepted a new role as a specialist software engineer at Amgen, working on pharmaceutical process development.

RODNEY BROWN '13 M.S. was promoted to principal architect with AT&T Integrated Solutions & Consulting.

24 KYLE HEBERLE '13 recently returned to his home state, Missouri, to take a new role as CEO of TNT Crust.

25 BENJAMIN PITTMAN '13 and Katrina Pittman recently welcomed future Panther Samuel Thomas Pittman.

26 KATHRYN POCCHIARE '13 MBA was recently promoted to IT manager with Health First.

27 ROBERT HIMLER '14, '15 MSA, manager of marketing & communications at Melbourne Orlando International Airport, was recently honored as Communicator of the Year by the Space Coast chapter of the Florida Public Relations Association.

28 STEPHEN WADE '14 MBA has been hired as the City of Topeka's director of financial and administrative services. Wade has been serving as the acting director for the past year and oversaw the 2022 budget process.

29 STEFANIE JANSSON '15 M.S. and **DANIEL KOLODNY '02**, '15 M.S., welcomed Ezra Jansson Kolodny July 18.

30 SUMMER REBENSKY '15, '17 M.S., '20 Ph.D., following her postdoctoral fellowship with the Consortium Research Fellows Program with the Air Force Research Laboratory, is now a research scientist with Aptima, focusing on performance assessment technologies.

31 PETER ZAPPALA '15, '19 M.S., and **JAMISON BURCH '19** competed as "Florida Tech Boyz" in the two-person relay in the World's Toughest Mudder event. Each completed 10 five-mile, nonstop laps over a mud obstacle course in 24 hours, earning a fourth-place finish.

32 SIHARA MATEO '16 M.S. became co-CEO of Jos Associates, an IT solutions business in the Dominican Republic.

33 NATHANIEL GALE '17, '21 MBA, became the assistant director for communications and digital strategy with the Missouri Valley Conference of St. Louis. He was recently accepted into the Minority Opportunity Athletic Association Rising Star mentorship program.

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DANIEL RASSOUL '17, '19 MBA, joined Nike as a consumer planner in the global promo apparel group.

34 SAMANTHA ALLARD '18 was married in November 2021. She and her husband met at Florida Tech!

35 JOSEPH BURBY '18 M.S., after 24 years of service with the U.S. Air Force, recently transitioned to Liberty Mutual Insurance as a scrum master working with telephone technology projects.

36 SIDNEY LEGARRETA '18 was recently promoted to airfield duty manager at Dallas Fort Worth International Airport (DFW) in Texas.

37 AMAL BINSALMAN '19 M.S. now heads the scientific research department of Al-Rayan Colleges in Saudi Arabia.

38 MELISSA JUDGE '19 landed a new role as data manager with Samford University in Birmingham, Alabama.

DIONDRA WHINDLETON '19 M.S. joined the Federal Reserve Bank of Richmond as a senior cybersecurity analyst on the national incident response team.

2020s

HIBA GHRAIR '20 M.A. is the lead therapist with Mohammed bin Rashid Center for Special Education, operated by the New England Center for Children in Abu Dhabi, United Arab Emirates.

DE'SHANNA HAYDEN '20 M.S. joined Dell Technologies as an IT project manager after more than six years with Boeing Co.

39 DANIEL IMHANSIEMHONEHI '20 M.S. joined Publix as a senior cloud security engineer.

40 EYAD KHAWAJAH '20 joined Abbott Diagnostics as a technical services specialist.

THOMAS MURPHY '20 was promoted to analyst, aircraft records with Spirit Airlines after completing his degree.

PER HENRIK HOLM NAG '20 joined SpareBank 1 Markets in Oslo, Norway, in high-yield credit sales.

41 CASSONDR A PETERSEN '20, '21 M.S., began work as a research and development test engineer with the Medtronic Foundation. Her involvement with cardiovascular medical device research, pharmaceutical research and

internships in R&D, quality and human factors engineering helped sharpen her professional focus.

KAYLA SIMMONS '20 M.S. advanced her career in supply chain management with a new role as purchasing agent for SiteOne Landscape Supply.

42 JOHNATHAN WATTS '20, an aerospace propulsion system engineer with NASA at Marshall Space Flight Center, supports operations for Artemis and future missions to the moon and Mars, working in the in-space manufacturing division.

43 KARA WATTS '20 went on to the University of St. Andrews in Scotland after completing her B.S. in animal behavior to study foraging behaviors of grey and harbor seals in the North Sea. Back in the

ADAM COOPER '09 first became interested in a career in the space industry when he joined his high school robotics club, quickly becoming intrigued by rovers. It was this interest that led him first to Florida Tech, then onto a career at NASA.

After graduating from Florida Tech with an aerospace engineering bachelor's degree, Cooper got his foot in the door, working in quality assurance at a NASA co-op. He later transitioned to NASA's mechanical engineering branch, focused mostly on launch vehicles, and today, he is a subject-matter expert on composite overwrapped pressure vessels for both the Commercial Crew and Launch Services programs.

"It's our job to kind of understand how the vehicle works and any inherent risks or concerns there might be," Cooper says. "We assess any sort of changes or nonconformances that happen, we share concerns we may have and we bridge any gap in knowledge between the contractor and the program."

His role requires a blend of nitty gritty, mathematics-based knowledge and the ability to apply it to the program—skills he says he honed during his time at Florida Tech.

"Florida Tech is definitely like a boot camp when it comes to a lot of this. It pushes you to really, really get to know the information and how to best interpret it while also figuring out how to balance—time management and project skills," he says. "That was definitely a very tough and beneficial few years that I spent there—really got me ready to handle major projects and how to make sure I focus on what is important."

While launches are easily the most rewarding part of his job, Cooper says that seeing the missions through beyond the launch can be equally gratifying. And as the space industry continues to broaden and evolve, he is right where he wants to be.

"As far as being exposed to a lot of different things, NASA is the place to be. I get to broaden my knowledge across multiple different launch vehicles, multiple different centers, multiple different projects—to see where the cutting-edge technology is headed."



TV SHOW OF THE MOMENT: "Cowboy Bebop."

YOUR SUPERPOWER: Timing stop lights.

ALTERNATE CAREER: Woodworking.

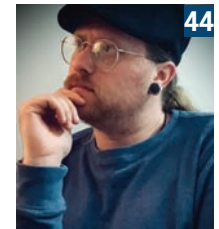
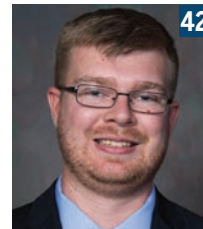
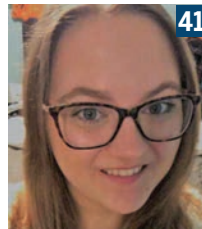
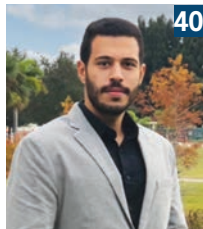
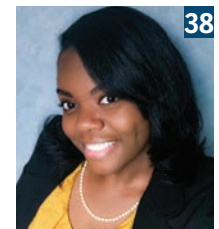
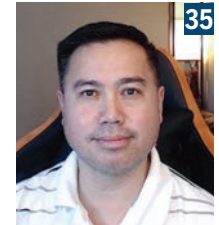
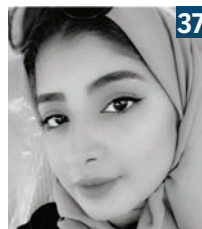
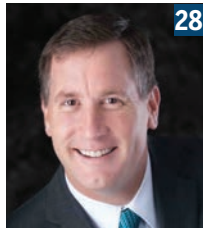
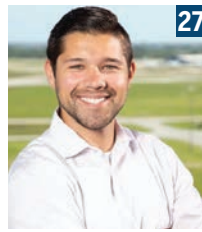
PETS: Two dogs: a lab and a mutt.

USUAL WEEKEND ACTIVITY: Camping.

YOUR VICE: Ice cream.

YOUR OLYMPIC SPORT: Curling.

FAVORITE FLORIDA TECH MEMORY: Working at Gleason Performing Arts Center.



U.S., Watts landed her dream job as an aquatic research associate at The Seas with Nemo and Friends in Walt Disney World's Epcot.

MATTHEW BACKERT '21 recently joined 5-D Systems Inc., a KRATOS company, as a systems engineer in Austin, Texas, developing the XQ-58A Valkyrie UAV.

44 ZACHARY BEHLOK '21 A.A., '21 A.S., a behavioral therapist at The Sonder Autism Center, recently published his second book, *Penalties of a Judgmental Mind*, which provides a new perspective on ethics, behavior and societal bias to heighten equality and societal morale.

45 CHANELLE LOCHAN '21 began work as a clinical research associate with the Cure 4 The Kids Foundation for children's cancer, hematology and rare genetic diseases in Las Vegas. Her role impacts new forms of patient treatment, revolutionary drugs, medical devices and more.

46 ZACHARY SEYMOUR '21 accepted a full-time position with Blue Origin as a manufacturing engineer.



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GATHERINGS

Virtual Gatherings



7
events



630
attendees

Visit **FLORIDATECH.EDU/ALUMNI/EVENTS** to view recordings of past events and mark your calendar for new offerings.

ALUMNI SOCIAL EVENT



Mixology Class

Presented by Shana Race of Talk Tales Entertainment



LUNCH & LEARN LECTURE



Cryptocurrency & Nonfungible Tokens— The Real Deal or a Bubble?

212
attendees

Presented by Tim Muth, instructor of business and personal finance in the Bisk College of Business, and **KYLE BOCCI '14**, financial analyst

DID YOU KNOW? The first purchase made with Bitcoin was in May 2010: 10,000 bitcoins for two Papa John's pizzas, which is worth about \$600,000,000 (at the time of the lecture).

LUNCH & LEARN LECTURE



The Battle of Britain & London During the Blitz

114
attendees

Presented by Robert Taylor, interim dean of the College of Psychology and Liberal Arts and professor of history, and Fiona Lukas, award-winning London tour guide

DID YOU KNOW? During the London Blitz, British officials closed Aldwych tube station to store valuable items, such as tea sets and crockery from Buckingham Palace.

LUNCH & LEARN LECTURE



Converting Waste to Energy & Sustainable Materials

61
attendees

Presented by Toufiq Reza, assistant professor of chemical engineering and director of the Biofuels Research Lab

DID YOU KNOW? The organic material left over from waste management processing, "pulp," can be utilized to produce energy via a process called anaerobic digestion.

LUNCH & LEARN LECTURE



Zombies vs. Vampires— The Role of the Undead in Popular Culture

38
attendees

Presented by Angela Tenga, associate professor in the School of Arts and Communication

DID YOU KNOW? Zombies and vampires are used in popular culture to symbolize many fears and anxieties. Vampires typically reflect human temptations, and zombies are a looming force threatening to overtake humans.



THEN

Feb. 10, 1996, Homecoming Parade. The theme was "Let the Games Begin" in honor of the upcoming 1996 Summer Olympics in Atlanta.



NOW Still cheering for the Panthers!

Alumni Photo Contest

Panthers re-created their favorite photos from back in the day for the #Panther4Life Alumni Photo Contest. Winners **TANJA GLYNN '97, '99 MBA**, and **DAN SCHOMISCH '06**, featured here, each received a \$150 gift card to the Florida Tech Bookstore for showcasing their outstanding Panther Pride!

LUNCH & LEARN LECTURE



Tour of the Paris Catacombs

76 attendees

Presented by French tour guide Léo Kavernicol

DID YOU KNOW? The bones of more than 6 million people can be found in the Paris Catacombs. There are three times more skeletons residing underneath Paris than above it.



THEN

Damian Harasiuk '06, '11 M.S. (left), and Dan Schomisch '06 (right) paddle their raft in a flooded area on campus after Hurricane Jeanne in 2004.



NOW Friends since their freshman year, 2002, at Florida Tech, Dan and Damian reinterpret their 2004 photo from Chicago (Harasiuk, left) and northern Virginia (Schomisch, right).

IN MEMORIAM

FRANK LESLIE '68 M.S., a popular adjunct instructor of renewable energy and sustainability and longtime supporter of the university's music program, passed away Oct. 31, 2021. A longtime employee of Harris Corp. (now L3Harris Technologies Inc.), he worked on military and industrial systems until his retirement in 1999.

JOHN A. CHAPPELL JR. '70 of Hanover, Massachusetts, died Dec. 21, 2021, at age 78 after a courageous battle with cancer. His career as a grassroots advocate for people with disabilities began in the early '70s after starting out as an electrical engineer. He worked to help pass the Americans with Disabilities Act in 1990. He was also instrumental in establishing the New England Chapter of the Florida Tech Alumni Association.

Lt. Col. **NORMAN C. HAYES** '72 M.S., a U.S. Army veteran of the Korean and Vietnam wars, passed away Nov. 5, 2021. His military honors included the Legion of Merit, the Bronze Star and the Air Medal.

STEVEN HAUSRATH '77, M.D., died after a yearlong battle with cancer.

MARK MORROW '86 died while piloting a Cessna Citation 560XL near the Outer Banks of North Carolina. He held transport pilot, flight instructor and mechanic certifications with the Federal Aviation Administration.

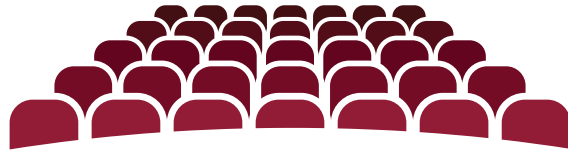
DAVID WRIGHT '09, safety and quality assurance manager with AJAS Aviation Services, died Aug. 23, 2021.

PIETER DUBBELDAY, a Florida Tech physics professor for 20 years, passed away Oct. 23, 2021, at age 92. His legacy at Florida Tech lives on in the Dr. Pieter S. and Mrs. Afaf A. Dubbelday Scholarship Endowment in Physics.

Established in 2014, the scholarship supports students majoring in physics who demonstrate financial need and high academic merit.

Dubbelday earned his doctorate in nuclear physics from the Vrije Universiteit, in Amsterdam, The Netherlands. Known for his intellect, integrity and dedication to students, his service at Florida Tech spanned from 1961 to 1981. In 1980, he was recognized as Teacher of the Year by the Student Government Association (SGA).

Among his professional achievements, he received the Science Faculty Professional Development Award from the National Science Foundation (NSF), engaged in hydroacoustic research and authored 45 publications.



TAKE A SEAT

Gleason Seat Legacy at Florida Tech

Leave a permanent legacy within Gleason Performing Arts Center by sponsoring a seat.
FLORIDATECH.EDU/SEAT

FLORIDA TECH

BE PART OF THE
TRADITION

The Official Ring of
Florida Institute of Technology

See Florida Tech's ring collection at BALFOUR.COM/FIT



balfour.

PANTHER PROFILE

Societal Change Through Technology

CEO of Saudi Arabia's largest social bank, Ibrahim bin Hamad Al-Rashid '02 M.S. uses technology to steer the country through turbulent times.



"I have this conviction that technology is the catalyst for change across all sectors."

It is this conviction that has driven **IBRAHIM BIN HAMAD AL-RASHID** '02 M.S. to success throughout his entire career.

After earning his undergraduate degree, Al-Rashid worked for four years as a programmer and systems analyst in the health and financial sectors. He moved to the United States for two years to pursue his master's degree at Florida Tech. Then, he returned to Riyadh, the capital city of Saudi Arabia, to manage technology projects in the financial sector and the stock market before fulfilling his lifelong dream of becoming chief information officer of Al-Rajhi Bank, the largest bank in the Middle East.

Today, Al-Rashid is the CEO of Social Development Bank (SDB), the largest social bank financing individuals and small projects in the Middle East. SDB is a Saudi government fund that provides personal, concessional loans to different segments of society—particularly less privileged citizens and emerging businesses.

"My role as CEO is, primarily, to bolster SDB's powerhouse role within the economy, propelling businesses into productivity and ensuring increased social and economic inclusion of all social segments by translating SDB's

short- and long-term strategies into attainable objectives," Al-Rashid says.

Al-Rashid earned his master's degree in computer science from Florida Tech, spurred by the belief that technology seeps into all industries and, ultimately, fuels progress.

"This helped foster a passion within me to understand technology trends and harness them to transform financial products from their traditional, paper-based format into a digitized and instantaneous one," he says.

Recently, Al-Rashid and SDB were featured in *Forbes Middle East* for their efforts to help alleviate the impact of the COVID-19 pandemic on micro and small businesses.

"The pandemic caused a remarkable degree of disruption and uncertainty for small businesses, with many businesses, irrespective of size, being forced to cease entire operations for extended periods of time," he says.

The National Development Fund allocated more than half of its \$6 billion COVID-19 stimulus package funds to SDB, which, in turn, doubled social lending to support struggling families and increased business lending to benefit more than 21,000 small businesses in the country.

"With the rather turbulent and unpredictable nature of this pandemic in mind, we continue to closely monitor

CURRENT CITY: Riyadh, Saudi Arabia.

FAMILY: Wife, two girls and three boys.

HOBBIES: Camping.

FAVORITE FLORIDA TECH MEMORY: Presenting a team project to IBM, which extended funding.

the small business sector, and Saudi economy as a whole, and are very pleased with how businesses have been recovering," Al-Rashid says.

This recovery is evidenced by the ever-growing demand for business loans for both existing and new businesses, he says. SDB currently provides financing to 6,000 startup companies, valuing \$800 million annually, which Al-Rashid hopes to double within five years and extend to more customers across Saudi Arabia.

"Passion continues to fuel humanity and guide our sense of wonder," he says. "The field of technology is packed with trials and obstacles. But the youth, armed with their inner passions and fueled by their dreams and aspirations, will venture on."

BACK IN THE DAY

1980s ●

1990s ●

2000s ●

The sisters of Gamma Phi Beta circle up for a photo op. Florida Tech's first sorority, Gamma Phi Beta was founded on campus in 1981.

Do you see any familiar faces? Let us know at MAGAZINE@FIT.EDU, and help us give this photo a little context!

