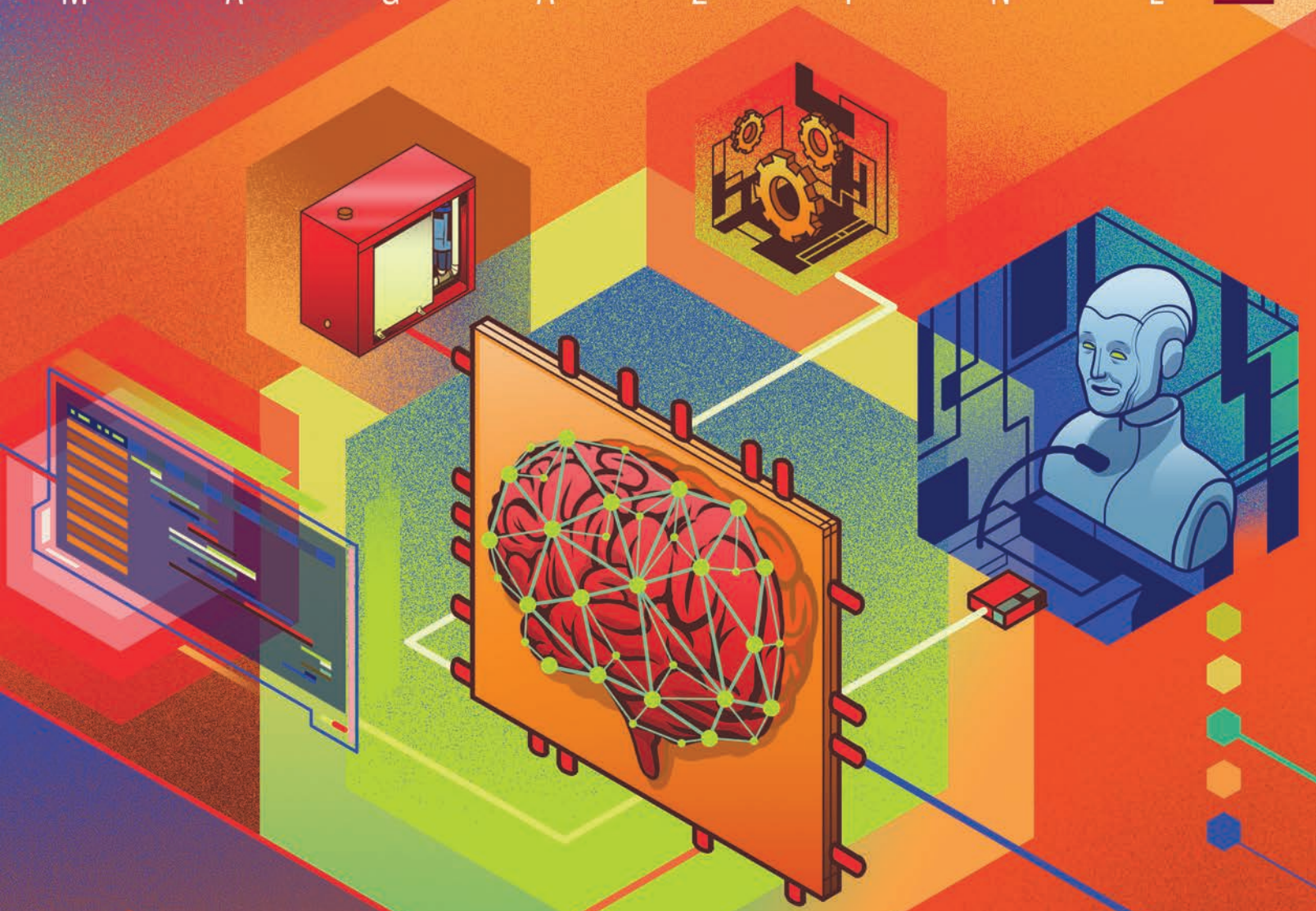


FLORIDA TECH

M A G A Z I N E

SPRING 2020



The Project Mindset

How immersive, hands-on education fosters purpose, passion and prosperity

PLUS CORONAVIRUS COVERAGE: UNIVERSITY REACTION, RESPONSE AND RESEARCH



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ANYTIME, ANYWHERE
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On the cover: Simultaneously, projects hone the hard skills—building, writing, coding, prototyping—and the soft—collaboration, communication, leadership. Incorporating elements from senior design projects past and other hands-on learning concepts, here, local illustrator Nicholas Roberts depicts the most important component: connecting them—to each other, to a purpose, to the real world.

Social distancing requirements may have canceled traditional commencement this spring, but they didn't stop us from celebrating our newest graduates. On May 8, the university livestreamed its first-ever virtual commencement ceremony. The video, which has since garnered almost 10,000 views on YouTube, is now available at floridatech.edu/virtual-commencement to view, share and treasure for years to come.

FLORIDA TECH MAGAZINE

floridatech.edu/magazine

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PRESIDENT'S PERSPECTIVE

Dear Alumni and Friends,

This may be the first time I have used the word “pandemic” in my note to you, but there are two other words I’d rather focus on: proud and encouraged. As Florida Tech, our state, our nation and the world have responded to the coronavirus pandemic, we have all witnessed and experienced the unique challenges this unparalleled situation has caused.

Displaying the relentless drive that is Florida Tech’s hallmark, however, our students, faculty and staff have faced these hurdles head-on. They have proven their tenacity and dedication and shown a remarkable willingness to innovate and succeed even under these most unusual and difficult circumstances. Their efforts have ranged from virtual to handcrafted, and all have made an impact.

No face-to-face classes? Let’s unleash the full power of our faculty and IT staff to build a universitywide online education program—in about two weeks—that ensured main-campus students wouldn’t be without their world-class Florida Tech instruction for the spring term.

No physical graduation? Let’s create a virtual commencement, read all 1,200 names of the graduates and provide a unique and memorable experience to share with family and friends. We did that, and more than 10,000 people have viewed it since its initial airing May 8.

Front-line health workers need face shields to protect themselves? Let’s harness our 3D printers and design ingenuity and make them some.

Campus dining employees need cloth masks? One staffer spent her weekend sewing 50 of them (with an assist from her mother).

There is plenty to be concerned with as we collectively seek our new normal, but I feel there is even more to be encouraged about, starting with our return to face-to-face classes in the fall.

As we slowly but surely move beyond the coronavirus and all it has wrought, I will never forget how the true Panther spirit shined so brightly during these darkest of times.

I am fond of saying that a crisis shows you who the warriors are. We have a lot of warriors at Florida Tech.

Sincerely,



T. Dwayne McCay, Ph.D.
President



3 FINAL THOUGHTS

THE PANDEMIC

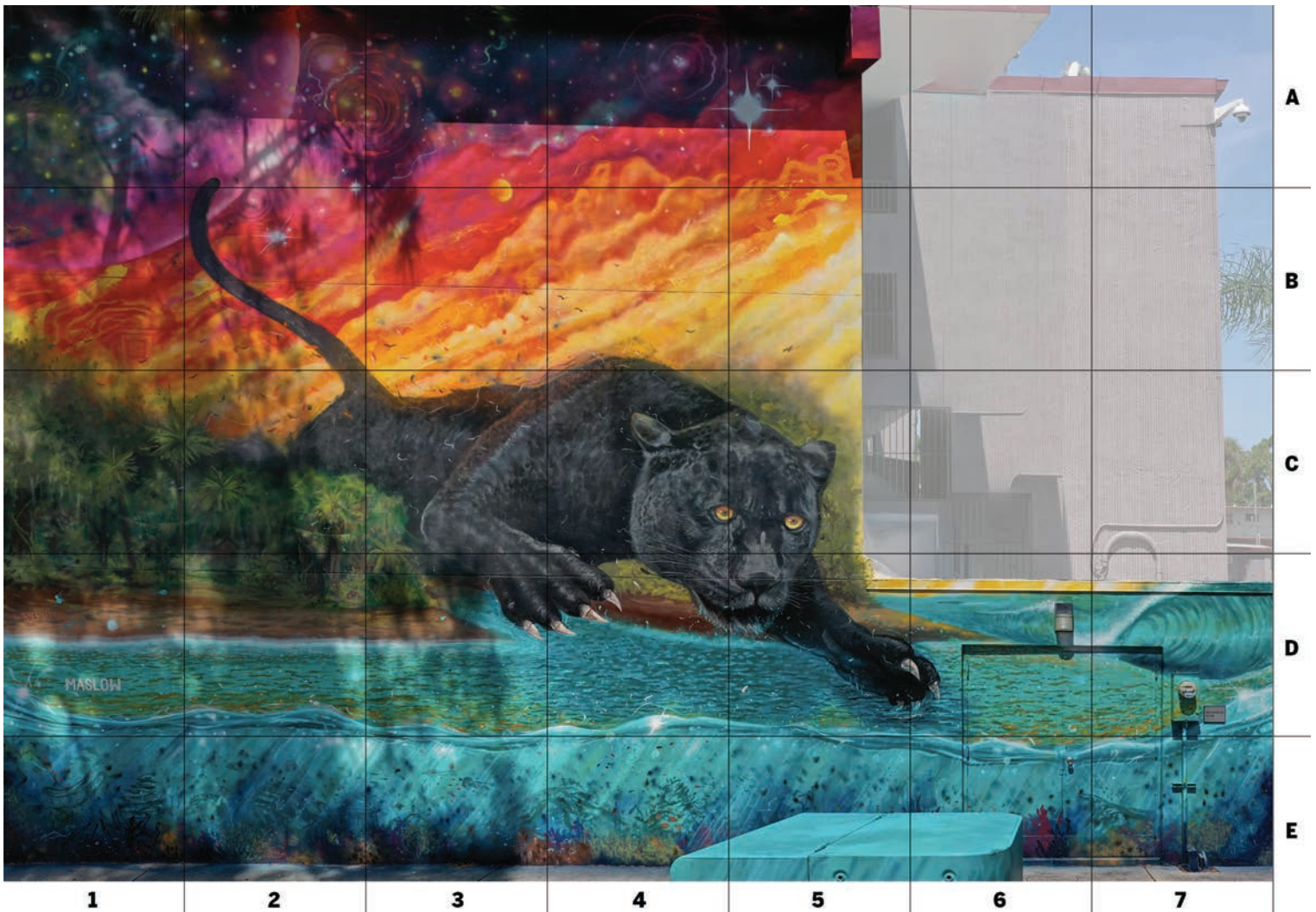
This COVID-19 era has been difficult for us all. However, I have been most impressed with how our students, faculty, staff and alumni continue to prove their tenacity, dedication and willingness to tackle challenges despite unusual circumstances. Fortunately, our Florida Tech family remains healthy, and while we are not yet through the turbulence, I am confident we will overcome this and any other obstacles that come our way, together.

VIRTUAL COMMENCEMENT

Please join me in congratulating the class of 2020, whom we recognized in the university’s first-ever virtual commencement ceremony May 8. While it may not have completely alleviated graduates’ disappointment in missing out on the long-standing tradition, we are proud to have honored their accomplishments in this unique, resourceful way. View or download the video now at floridatech.edu/virtual-commencement.

BACK TO “NORMAL”

Beginning fall semester, the university will resume normal operations. Faculty will report to campus and students will begin moving into residence halls Aug. 10, and face-to-face classes will begin Aug. 17. Rest assured, “normal operations” will be a new normal, as we will continue with extra sanitization steps, modified social distancing and other measures necessary to ensure the safety of our students, faculty and staff.



Southgate Mural Receives “Relentless” Makeover

You can’t miss it.

The Panther mural that for more than 20 years has adorned the south wall of Southgate Apartments’ Building M has received a much-needed facelift.

A companion to Florida Tech’s landmark mural in Downtown Melbourne and created by the same artist, Christopher Maslow, “Relentless” stands three stories high and, like the downtown mural, depicts a Panther plunging through space, sky, land and sea—a nod to the many areas in which the university conducts its groundbreaking research.

Completed Feb. 6 after four weeks of intense artistry, the new mural pays homage to Florida Tech’s roots through a series of 15 student body-selected “Easter eggs” hidden within its strokes.

Can you find them all? We’ll give you a head start.

Search “Southgate mural” on adastra.fit.edu to discover where all the Florida Tech Easter eggs are hidden!

1-D “1958” | When it all began.

Jerome P. Keuper founded Brevard Engineering College, now Florida Tech, the same year the U.S. space program was established.

2-E ATOMIC TOILET | A Florida Tech landmark.

A small structure near the Crawford building, the “toilet” sits above an underground facility that, in the 1970s, was used to conduct experiments aimed at using radioactive cobalt-60 to purify sewage water. What is down there now is up to your imagination.

7-E SGA LOGO | The impetus for this mural.

The Student Government Association (SGA) acts as a liaison between the student body and the faculty, staff and administration by presenting programs, projects and activities that reflect consensus priorities of the student body—like this mural!

1-E MELBOURNE MAMMOTH | Florida Tech’s fossil.

The remains of a Columbian mammoth were discovered on campus in the 1920s. Today, part of the gigantic creature’s 10,000-year-old molar is on display in Evans Library.

1-B QUAIL EGGS | The subject of perhaps the zaniest tale in university lore.

In fall 1972, Keuper decided to launch a quail hatchery on campus. By early December, FIT Farms Inc. housed 300 quails that were “laying like mad.” However, marketing the eggs proved difficult and by 1974, Keuper had decided to close the hatchery.

7-E OYSTER | A symbol of Indian River Lagoon research.

Since oysters act as living filters, removing impurities from the water naturally, efficiently and constantly, Florida Tech, Brevard County and Brevard Zoo have created the Living Shoreline project to restore oyster beds in the lagoon.



ONE BIG QUESTION WITH TOBY DALY-ENGEL

Why Are Shark Attacks So Rare?

You are more likely to be killed by a Christmas tree, a vending machine or a toilet bowl than a shark.

But if you only listened to the annual glaring headlines about sharks appearing perilously close to shore, waiting to prey indiscriminately on native Floridians and snowbirds alike, or watched movies that cast sharks as voracious, mindless killers, you might think that sharks eat humans all the time—or at least, they want to.

The reality, however, is far different.

Sharks and their relatives are the top predators in nearly every aquatic environment on the planet. They have six finely honed senses, including their famous talent for smelling blood in the water, an even better sense of hearing and the incredible ability to detect small electrical impulses emitted by hidden prey.

Sharks can eat just about anything the ocean has to offer, including loud, splashy, easy-to-find humans invading their territory. If sharks wanted to eat us, they absolutely could.

However, only about 50 attacks occur per year in the U.S., and fewer than 3% result in death.

Why so few?

First, sharks are hardly the mindless feeding machines that Hollywood makes them out to be. They live as long as, or even longer than, humans—and you do not get to live that long by being reckless.

Sharks are naturally cautious creatures. Because their natural prey are mostly fish, marine mammals and sea turtles—which have sharp spines, claws and beaks that can inflict a lot of damage during a predation event—sharks prefer to scavenge injured or dead food over chasing healthy prey that can fight back. Also, they are not hunger-driven, meaning a shark that has starved for a week is no more likely to attack than a shark that ate an hour ago.

Second, and most important, humans are air-breathing terrestrial animals, not aquatic, so not a shark's natural prey. Since we don't resemble their usual food, we may be a threat, and sharks tend to avoid us.

Why, then, do sharks attack humans at all?

Nearly half of all documented shark attacks are actually provoked by humans.

The others, it is thought, result from mistaken identity: To a shark, a person splashing around may look like a tasty—and perhaps injured—seal.

If you are in the water and see a shark, my advice is to move slowly and calmly and avoid splashing.

But when it comes to surviving those toilet bowls, you're on your own.

Toby Daly-Engel is director of Florida Tech's Shark Conservation Lab and an assistant professor of ocean engineering and marine sciences who uses molecular tools and fishery-independent monitoring to research how shark populations are responding to climate change. This work is supported by private donations; contribute at give.fit.edu/shark.

5 Tips For Avoiding A Shark Attack

While shark attacks are rare, they do happen. And the more you know about typical shark behaviors, the more prepared you are to avoid them. Remember: Sharks aren't out to get you, but when you're in their territory, they might confuse you for food or fear you're a threat. Next time you dive in, remember these five tips for distinguishing yourself from food or foe.

1. DON'T SWIM ALONE.

Sharks are more likely to attack lone individuals.

2. DON'T SWIM WITH YOUR DOG.

Or any pets, for that matter. Their erratic movements may attract sharks' attention.

3. AVOID SWIMMING WHERE PEOPLE ARE FISHING.

Large numbers of bait fish and animal blood could attract sharks.

4. STAY CLOSE TO SHORE.

Swimming too far from the coast isolates you from help.

5. IF YOU SEE A SHARK, DON'T SPLASH.

It may mistake you for injured—and, thus, easily caught—prey.



Big Day of Service

Hundreds of students, faculty and staff members volunteered in Florida Tech's first Big Day of Service Feb. 23. Organized by the Office of Civic Engagement, the high-energy event circulated volunteers through multiple assembly lines, where they packaged nutritious meals for local children in need through The Children's Hunger Project. To combat childhood hunger and malnutrition, The Children's Hunger Project distributes the meals to elementary school children every Friday, ensuring they have food to eat over the weekend.

"The Office of Civic Engagement plans to host a Big Day of Service with The Children's Hunger Project every year," says Krishna Patel, director of orientation and civic engagement. "We are hoping to create a lasting partnership with them."

Want to know more? We've broken down Florida Tech's first Big Day of Service by the numbers:

421
VOLUNTEERS

representing

25 & **33**
STUDENT ORGANIZATIONS CAMPUS DEPARTMENTS

in

3
SHIFTS

contributing

521
TOTAL HOURS

packaging

5,122
MEALS

for

15
BREVARD COUNTY ELEMENTARY SCHOOLS

will supplement the

2,300
MEALS THE CHILDREN'S HUNGER PROJECT DISTRIBUTES LOCALLY EACH WEEK

Up for the Challenge

In January, when Kathryn Rudloff and Tina Goldsmith assumed their roles as executive directors at weVENTURE and The Scott Center for Autism Treatment, respectively, they expected the usual challenges. Learning the ins and outs of the university. Building trust and rapport with their employees. Making important decisions.

Neither of them, however, anticipated leading a new team through the unfamiliar territory of a worldwide pandemic during their first 90 days. But neither panicked. Instead, they persisted.

Here, Rudloff and Goldsmith provide insight into how leaders find a way when business as usual gets quarantined.

Kathryn Rudloff

HOW IS weVENTURE CONTINUING TO PROVIDE QUALITY SERVICE TO CLIENTS DURING THESE UNCERTAIN TIMES?

As a Small Business Administration (SBA)-funded local community partner, weVENTURE is on the front lines of helping small businesses respond to the challenges brought about by the COVID-19 crisis. Our staff is working remotely, and all our consultations and programs are now entirely virtual. We remain available to help businesses understand the disaster recovery programs available to them, help them decide what to apply for and work with them as they reassess their business and plan for moving forward in this new normal.

WHAT IS THE NO. 1 PIECE OF ADVICE YOU HAVE BEEN GIVING TO SMALL BUSINESS OWNERS?

I am preaching patience. Every day that passes, more information is available. These new federal recovery programs are being written and implemented in real time. Avoid making rash decisions, and instead, assess your business plan and respond in a strategic, thoughtful way.

WHAT MESSAGE DO YOU HAVE FOR SMALL BUSINESS OWNERS WHO ARE STRUGGLING RIGHT NOW?

Don't get stuck with your head down, wallowing in your own anxiety. We must stay connected and talk about working through this as a community. It is one thing to be physically isolated; it is another to think you are going through this alone.

WHEN THE PANDEMIC HAS PASSED, WHERE DO YOU SEE THE STATE OF BUSINESS AND ENTREPRENEURSHIP?

I love working with entrepreneurs because they see opportunity where others don't. I believe that after riding the booming economy for the last decade, entrepreneurs will be extremely motivated to get back to business. The entrepreneurial spirit is hard to break, and many thrive in the face of adversity. In true Florida Tech spirit, the relentless pursuit of innovation will drive entrepreneurs to succeed, no matter what obstacle they may face.



Having served as an advocate for women and children in the community and political organizations as well as on multiple political campaigns, Rudloff has garnered extensive fundraising experience and connections within the local business community that have already begun to effectually serve the mission of weVENTURE.

Tina Goldsmith

THE COVID-19 PANDEMIC HAS TURNED BUSINESS AS USUAL UPSIDE DOWN IN ALMOST EVERY INDUSTRY. HOW HAS IT IMPACTED THE SCOTT CENTER AND ITS CLIENTS?

Our mission is to help people, and our help has traditionally been delivered in person, in real time, where we've had careful control over the variables that influence learning. The pandemic has made this impossible. We've had to close our center for the first time in its history, and we've had to rapidly but thoughtfully transition from in-person to virtual care. We've trained our providers, onboarded our clients and scaled our technology solutions almost overnight. It's been a massive undertaking, but as of today, our telehealth program is flourishing.

WHAT CAN THE COMMUNITY DO TO SUPPORT YOU IN THIS TIME—AND IN THE FUTURE?

Give, and give generously. Unfortunately, insurance companies do not pay us to provide exemplary care; they pay us to provide "the standard of care." At The Scott Center, that's simply not acceptable. We believe that every child with autism deserves access to empirically supported intervention that is delivered by highly trained experts. Unfortunately, the real cost of doing this grossly exceeds what insurance companies are willing to pay. It's only through the generosity of others, and our good stewardship of their donated funds, that we're able to fulfill our mission.

WHAT MESSAGE DO YOU HAVE FOR THE SCOTT CENTER CHILDREN AND FAMILIES WHO ARE STRUGGLING RIGHT NOW?

Our message is that we know that you are struggling in ways that others cannot begin to comprehend. We know that the small daily routines that have given your family some sense of stability and control have been tossed out the window, and you have limited access to everything you once used to support your child's success. We know how very hard this is for you, and we are just an email, phone call or telehealth session away.



Goldsmith is dually trained as a clinical psychologist and doctoral-level, board-certified behavior analyst. She previously served on the faculty of the University of New Mexico before accepting an executive leadership position at a multistate behavioral health organization. She is excited to merge her passions for both clinical service and academia in her new role with The Scott Center.



Aviate Program, Now Boarding

University flight students now have a direct path to pilot careers at United Airlines through the Aviate program, which signed Florida Tech as a partner university in February.

Students who apply and are selected to participate in Aviate are guided, step by step, toward becoming a first officer at United. The experience includes serving as a certified flight instructor, gaining experience at a United Express Aviate partner airline—such as ExpressJet Airlines or CommutAir—and building no less than 2,000 hours of flight time.

Students selected for Aviate also enjoy special travel privileges, mentorship by United pilots, leadership and professional skills training, development events and guided tours of United operational facilities.

Additional details about Aviate may be found at unitedaviate.com.

Students Pump Up The [X-FILES] Jam

On Feb. 8, students from several Florida universities gathered on Florida Tech's campus for the inaugural X-FILES Jam. Part of the National Science Foundation's eXploring the Future of Innovative Learning Environments (X-FILES) project, the jam was a one-day ideation session in which student teams, using artificial intelligence, machine learning, mobile learning, virtual reality and other cutting-edge technologies, each developed a solution that "improves or enhances the

student experience for a challenging dimension of college-level STEM education."

After brainstorming, identifying and prioritizing STEM students' unmet needs, each team built a low-fidelity prototype addressing the need and presented it to judges, which included industry and education leaders, their peers and jam co-organizer Kurt Winkelmann, a Florida Tech biomedical and chemical engineering professor.

The big winner: Team Measure won the best technology, most impactful and best overall awards for its development of a controlled environment—using ambient music for a relaxing atmosphere, virtually assessed tasks and Oculus eye movement tracking to denote attention—for administering formative assessments to students requiring special accommodations.

WISE Awards Honors Influential Women

In celebration of Women’s History Month, the Office of Alumni Affairs launched the Women Inspiring Success and Excellence (WISE) Awards in March. The awardees were evaluated and selected for their support of female participation and development within the Florida Tech community, the respect they’ve garnered from community members and colleagues as role models and mentors, their roles as leaders in their fields and their emphasis on inclusion and equality. The WISE Awards Luncheon, which was postponed due to coronavirus concerns in spring, has been rescheduled for Oct. 1.



JOANNE DAMATO '97

ALUMNA LEGACY AWARD

Joanne "Jo" (Lomurno) Damato is vice president of educational strategy and workforce development for the National Business Aviation Association and an active member of Women in Aviation International, Women in Corporate Aviation and the Florida Tech College of Aeronautics Alumni Board. In 2010, Damato helped launch an all-volunteer nonprofit that later merged with Patient Air Lift Services. She has been featured on the cover of *Aviation for Women* magazine and was named one of *Airport Business* magazine's inaugural "40 Under 40."



OLIVIA MCKELVEY '20

STUDENT CATALYST AWARD

Olivia McKelvey, who graduated in May with a bachelor’s degree in marketing, served as the editor-in-chief of Florida Tech’s student-run newspaper, *The Crimson*. In 2019, McKelvey’s in-depth coverage of how the university collects and reports crime statistics to the federal government prompted Florida Tech to reform various processes related to campus security and the enforcement of Title IX policies, ultimately resulting in a safer, more informed student body.



SHARON C. IRVIN

FACULTY EXCELLENCE AWARD

Sharon Irvin has been a faculty member at Florida Tech for nearly 50 years, currently teaching Scientific and Technical Communication, a course for which she helped design the online version. She co-authored the book *Technical Writing in Private Industry* and has published four children’s books. Part of a true Panther family, Irvin met her late husband, Jim, at Florida Tech, and both of their children are alumni. Outside of work, Irvin has volunteered for Harbor City Volunteer Ambulance Squad and currently volunteers at Brevard Habitat for Humanity.



ALISON BOGART

JOAN BIXBY IMPACT AWARD

In addition to serving as Florida Tech’s director of internal audit for the past seven years, Alison Bogart has led the annual United Way campaign on campus for the past two years, raising more than \$119,000 each year. Under Bogart’s leadership, Florida Tech was honored with a Campaign Achievement Award in 2019. For serving United Way in several other capacities, Bogart also received the 2014 Kathy King Award for outstanding community impact volunteer, and she has volunteered extensively for various other nonprofits.

Award-Winning Creativity

You may have noticed some improvements in this magazine over the past year. Florida Tech’s Office of Marketing and Communications, which publishes *Florida Tech Magazine*, has dedicated itself to stepping up the caliber of the publication to better suit its readers—you!

From an expanded editorial board and revised storytelling approaches to new sections and revamped design, these changes have been recognized with multiple awards, including a Gold Institutional Award from the Council for Advancement and Support of Education (CASE) District 3, a Gold ADDY from the American Advertising Federation (AAF) Space Coast chapter and an Honorable Mention from the University & College Designers Association (UCDA) Design Competition. The Office of Alumni Affairs also earned an Honorable Mention in the CASE Institutional Awards for its work on the book *60 For 60: Celebrating Sixty Years of Alumni at Florida Institute of Technology* in the best practices in alumni relations category.

In true Florida Tech fashion, the team continues to aim for excellence in its work, including further improvements to *Florida Tech Magazine*. Keep your eyes open for more good things to come.



Hacking Hero

MUNTASER SYED '17 M.S., a computer engineering Ph.D. student and member of Florida Tech's hackathon team, Team Zero, was named one of Major League Hacking's Top 50 Hackers. With a list of accomplishments as lengthy as his, this accolade comes as no surprise.



We've won so many prizes, I don't even know what we've won at this point."

MUNTASER SYED '17 M.S.

Crimson, Gray—and Green

Sustainability actions are increasingly central to life at Florida Tech and on the Space Coast. We have received various awards and recognitions for our continuous sustainability efforts, most notably, being named in the top 20% of green universities in the country by the *Princeton Review Guide to Green Colleges*. Other recognitions include a bronze Campus Sustainability rating from the Sustainability Tracking, Assessment & Rating System, a LEED building certification, a Bicycle Friendly University award and Tree Campus USA status.

Visit floridatech.edu/sustainability to learn more about campus sustainability efforts.



Game Day Lights

Thanks to generous alumni donations, the future of several Florida Tech athletics teams is looking a little brighter. In the past few years, our baseball, soccer and, in January, softball fields were outfitted with all-new, high-quality lights. The upgrades are already paying off, this year lighting the softball team's way to its first Sunshine State Conference Championship in program history.

Festival of Fire

Thousands gathered at Palm Beach International Raceway the first full weekend in March for the second annual Festival of Fire. Hosted by Larsen Motorsports and its nonprofit, Blazing Trails, the event kicked off teaching area high school students the science behind jet dragsters and concluded with a heated competition, pitting some of the top jet dragster racers from across the country against one another on the racetrack.





New Zoo Complex Supports Spider Monkey Research

A new facility powered by a partnership between Florida Tech and Brevard Zoo will allow researchers to continue key voluntary behavioral research.

Brevard Zoo recently completed construction of the Spider Monkey Complex. This habitat includes three enclosures connected by sky bridges, which allow the monkeys to break off into subgroups, mimicking how they would live in the wild.

According to Florida Tech psychology assistant professor Darby Proctor, the zoo's spider monkey researcher leading this initiative, the habitat may be the first in the world to provide such a natural environment. It could influence how other facilities provide habitats for monkeys.

In addition to the new habitat, and in collaboration with Florida Tech, the zoo built a cognitive research center to explore spider monkeys' minds. The cognition center is a 36-by-24-foot open-air structure with two enclosures, allowing Proctor and her students to engage in voluntary behavioral studies with the spider monkeys. The center's remaining area contains seating for the public to watch research in action.

"A couple of years ago, I was sitting in a meeting talking about this kind of thing, and I just sort of off-hand mentioned these ideas, and the zoo ran with them, which shows how much they value Florida Tech as a collaborator for promoting the science of working with animals and using science to inform animal welfare," Proctor says.

How the monkeys are adapting to the new environment will be among the research Proctor will explore. Based on previous data, Proctor will analyze the primates' activity patterns in the new habitat and compare them to those in the wild.

Scheduled to open to the public in summer, the cognition center opened for the monkeys in March. They are now spending time in the center so they can acclimate to the new space and get used to research activities.

The Spider Monkey Complex and cognitive research center are part of Brevard Zoo's \$4.4 million Rainforest Revealed expansion, the largest in the zoo's 25-year history.



Ad Astra Per Electricity

The vehicles that will take astronauts into space in the next century are an oft-discussed subject, with various companies presenting an array of designs.

But what about how the spacecraft will transport its passengers? The answer could be ... electrifying.

Florida Tech astrobiology assistant professor Manasvi Lingam, alongside Harvard University professor Abraham Loeb, recently published in the journal *Acta Astronautica* a paper comparing the effectiveness of electric sails to light sails.

Electric sails generate momentum via the deflection of stellar wind particles through electric forces, while light sails use radiation pressure exerted by sunlight to accelerate over time.

Using a multitude of formulas and examining factors, such as deceleration caused by traveling between stars and, thus, not receiving propulsion, Lingam and Loeb analyzed

the properties of electric sails for different stellar systems. Electric sails were compared with light sails powered by stellar radiation, with the research finding electric sails outperformed light sails for most stellar systems.

Lingam noted that under optimal conditions, with Earth and Mars at the shortest distance from one another, one could get to the red planet "in a few months" with an electric sail-equipped spacecraft. Unmanned spacecraft have taken up to 10 months to reach Mars previously.

The lighter design of the electric sail spacecraft also allows for faster travel than a shuttle or rocket.

"The bulk of the rocket's mass is actually made of liquid fuel, whereas the electric sail gets its fuel for free, in a sense," Lingam says. "It's basically using all of the wind energy of the sun. It doesn't have to carry the fuel on board because it uses

the sun and can reach higher speeds without expending as much energy as a heavier object would."

As the rocket made it possible for humans to explore the stars, electric sails may be the next breakthrough in space transportation. The opportunity to be part of spacecraft designs' evolution is one that resonates with Lingam.

"The future for alternative propulsion technologies, such as electric sails, that do not require onboard fuel is decidedly promising and may become practical in the near-future," Lingam says. "It is exciting to live in an era where humanity is taking its first serious steps toward becoming an interstellar species, and I consider myself very lucky to be contributing to such an endeavor."



RESEARCH SUGGESTS SIMPLIFIED PED TESTING

Chemistry assistant professor Christopher Chouinard is working on a system to better detect previously unidentified performance-enhancing drugs (PEDs) that are not yet found on the World Anti-Doping Agency's prohibited list. This process utilizes ozone to create a chemical reaction with the sample, allowing for PEDs to be discovered in a much more efficient and accurate way than current testing, and detecting steroids that are difficult to differentiate from naturally produced testosterone.

RESEARCH ENSURES NEW FLIGHT SAFETY PROTOCOLS

Under the leadership of flight test engineering program chair Brian Kish and recently retired flight operations associate dean **ISAAC SILVER** '06, '13 Ph.D., Florida Tech is working with the Federal Aviation Administration to create new compliance protocols that will help single-engine aircraft decrease loss-of-control accidents. These involve the unintended departure of an aircraft from a controlled flight, a significant factor in many aviation accidents. The team also analyzed the use of angle-of-attack warning and protection methods to prevent planes from stalling.

A Panther in the Dawg Pound

Despite obstacles, Florida Tech football alumnus J.T. Hassell makes active roster with the NFL's Cleveland Browns

By Jerry Durney and Florida Tech Athletic Communications

Walking off the field at FirstEnergy Stadium Nov. 24, 2019, **J.T. HASSELL** had completed two tackles, one win and one lifelong dream: becoming a professional football player in the National Football League (NFL).

Although thousands of young football players have shared Hassell's dream, few have had to overcome the obstacles that have littered his path to accomplishing it.

While he was still in his mother's womb, an abnormality caused the blood vessels in Hassell's left hand to burst, leaving him with just two fingers on that hand when he was born.

But Hassell never let the birth defect hinder him. Instead, he learned to overcome adversity from an early age.

"I always had to figure out other ways to do things," Hassell says. "Whether it was in the weight room or catching the ball or anything, I always had to find my own way."

The Beginning

Growing up in Titusville, Florida, Hassell was a stud on the high school gridiron.

Having played at both Titusville High School and Astronaut High School during his prep career, he quickly developed a reputation as one of the top defensive standouts in Brevard County.

After high school, Hassell signed a scholarship to play Division I football at South Dakota State University (SDSU). Proving he belonged right from the beginning, he started 14 games as a true freshman for the Jackrabbits, who that year competed in the Division I Football Championship Subdivision (FCS) playoffs. He went on to register 62 tackles over his two seasons with the team.

Playing Division I football was everything Hassell had dreamed it would be. However, he quickly learned that some things are more important than football.

Shortly before he had left for South Dakota State, his son, Cameron, was born. "While I was up there, I felt deep down in my heart I needed to be in my son's life," Hassell says. "Because, my dad's in my life now, but for a short period of time, he wasn't there, and I remember every day what that felt like growing up."

So, following his sophomore season in 2015, Hassell transferred to a university a little closer to home: Florida Tech.

"After just a couple months, me and the coaching staff were able to see for ourselves that he was such a team

player, a leader, a role model, funny to be around and, overall, just great for our team," says Florida Tech head football coach Steve Englehart.

Hassell made an immediate impact on the defense during his first season as a Panther in 2017. He had 79 tackles, including nine for loss and two sacks, on the way to earning Second Team All-Gulf South Conference honors.

But the impact of his playing stats paled in comparison to his leadership on and off the field.

"He always had fun playing and showed the same emotion, no matter if we were winning or losing," Englehart says, recalling a particular 20-something loss against University of North Alabama in 2017. "At the end of the game, while everyone was walking to the locker room, obviously upset, he had a smile on his face and would say, 'That's OK; we'll be alright. Keep your head up.' He always brought that type of leadership and energy."

Hassell's senior season in 2018 was one of the best individual seasons in program history. He logged a program single-season record 124 tackles, anchoring a Panther defense that helped the team to an 8-4 record and its second playoff berth. That year, Hassell earned the Gulf South Conference Defensive Player of the Year award, joining J.J. Sanders as the only Panthers to win the award.

The Big League

On April 27, 2019, just hours after the NFL draft in Nashville, Tennessee, the Cleveland Browns organization announced its plans to sign Hassell as an undrafted free agent.

Hassell had made it to the big league, and he signed to make it official May 3, 2019.

When he reported to rookie camp shortly thereafter, he faced his next challenge. Listed at 5 feet, 11 inches tall, Hassell was told that while he may have been of college linebacker size, in the pros, his stature better fit the safety position, and he needed to decide which route to pursue.

Learning to play a new position may not be easy, but to Hassell, the decision was. If it meant a better chance at playing in the NFL, he would learn.

Coming into the 2019 season, the Browns received a considerable amount of attention, thanks to star players like Odell Beckham Jr. and Baker Mayfield. But even the marquee names, Pro Bowl

players and first-round picks on the roster couldn't distract the Browns from noticing the work that the rookie from Florida Tech was putting in to earn a roster spot after training camp.

So, on Nov. 20, 2019, they gave it to him.

Four days after moving from the practice squad to the 53-man active roster, Hassell made his NFL debut against the Miami Dolphins in Cleveland, and that Sunday afternoon, he became the first Panther in school history to play in an NFL regular season game.

Hassell concluded his first season with the Browns, recording seven tackles in four games. His high for the season came in a Week 13 game, in which he had four tackles against the Pittsburgh Steelers.

"Some of the vets here, guys come up to me all the time; they still ask me 'How do you do it?'" Hassell says. "They tell me I am an inspiration to them."

And Bigger

His teammates aren't the only people Hassell, his success and his attitude have inspired.

Since Hassell became a professional athlete, the spotlight on his hand condition has considerably increased, and he has embraced the roles of public figure and role model, as well.

Through public speaking opportunities and organizations like the Lucky Fin Project, Hassell raises awareness about his condition within the community and reaches out to others, especially children, who were born with the same defect.

"Growing up, I just thought I was different all the time—like I wasn't normal," Hassell says. "I would always hide my hand in my pocket. Now, I'm more comfortable with it and just being who I am."

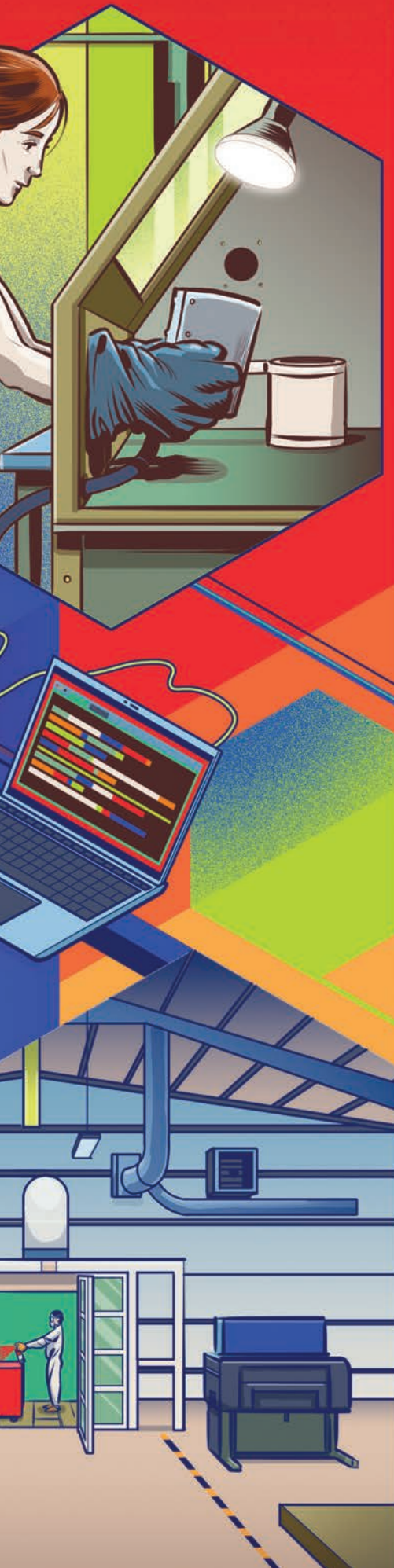
While his spring and summer schedules are packed with a new round of organized team activities, training camps and more to prepare for another season with the Browns, Hassell plans to use any downtime he has before the start of the 2020 season to return to his roots, sharing his knowledge and experience with Titusville youth.

In the meantime, Hassell looks forward to his second season in the NFL and believes the 2020 campaign will be a special one.

Given his record, there's no reason to think otherwise.







The Project Mindset

In a sphere where transcripts and GPAs often reign supreme, Florida Tech focuses on application, insight, curiosity—and the results are A-plus.

By Karly Horn

Illustration by
Nicholas Roberts

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DOUG BIANCHI '15, '18 MBA, was crushed.

The fish identification mobile app he had developed for his senior design project at Florida Tech, and which he'd been prepping for a commercial launch in the App Store, already existed. His invention wasn't novel after all.

That was that. For about a week, anyway.

Bianchi dove back in. He took the core concept of his original project and, after about a year of brainstorming, research, prototyping and adjusting based on community feedback, was ready to launch Fish Masters Live, a virtual fishing tournament app for real fishing anytime, anywhere.

What gave Bianchi the resilience, wherewithal and confidence to breathe new life into a venture that had otherwise been dead in the water? Well, he'd done it all before.

"Plan it. Design it. Do it," Bianchi says. "Senior design gives you the insight to understand that full spectrum."

A multidisciplinary capstone project for all science and engineering seniors, senior design is a yearlong course in which students bring a project from concept to completion, simulating a real-world work environment and culminating in the Northrop Grumman Engineering and Science Student Design Showcase, where teams present their work and field questions from peers, faculty,

industry professionals and local leaders.

It's hands-on. It's engaging. It's effective.

But to fully ingrain the kind of real-world perspective, strategic planning proficiency and been-there-done-that confidence Bianchi harnessed to make Fish Masters Live a reality, project-based learning starts a lot sooner than senior year. And the goal is a lot bigger than an A-plus.

Molding a Mindset

Fish Masters Live had more than 450 downloads in just the first month and was up to almost 2,500 by mid-May.

"I want it to be big," Bianchi says. What's big?

Downloads? Users? Money?

For Bianchi, it's a lot more than that.

"Eventually, I want to get to a point where I can start funding projects that can help correct some

of the issues that we, as humans, cause and that affect our waters and wildlife," he says.

While the revenue isn't quite yet there, Bianchi has already reached out to Florida Tech professors in the hopes that the stream of geolocated, measured and categorized fish images the app garners can contribute to research efforts, particularly in the Indian River Lagoon.

"I think there's a lot of cool ways to give back or fund researchers," Bianchi says. "Not everyone's mindful of that."

At Florida Tech, this kind of big-picture thinking is encouraged, and in higher education, it has a name: entrepreneurial-minded learning.

Widely promoted by the Kern Entrepreneurial Engineering Network (KEEN), of which Florida Tech has been a member since 2015, entrepreneurial-minded learning takes the more recognized project-based learning principles to another level, adapting traditional, technical instruction to encourage curiosity, develop insight and create value.

"So, it takes something that may just be project-based, but then adds these concepts of fostering creativity and making connections to create value—whether it's economic or societal or financial value," says Robert Weaver, ocean engineering associate professor and member of Florida Tech's KEEN leader team, charged with training faculty to implement entrepreneurial-minded learning concepts in their classrooms.

So, for Weaver, traditional instruction would be lecturing students about how seaports are designed.

Project-based learning would have him ask students to design a seaport themselves.

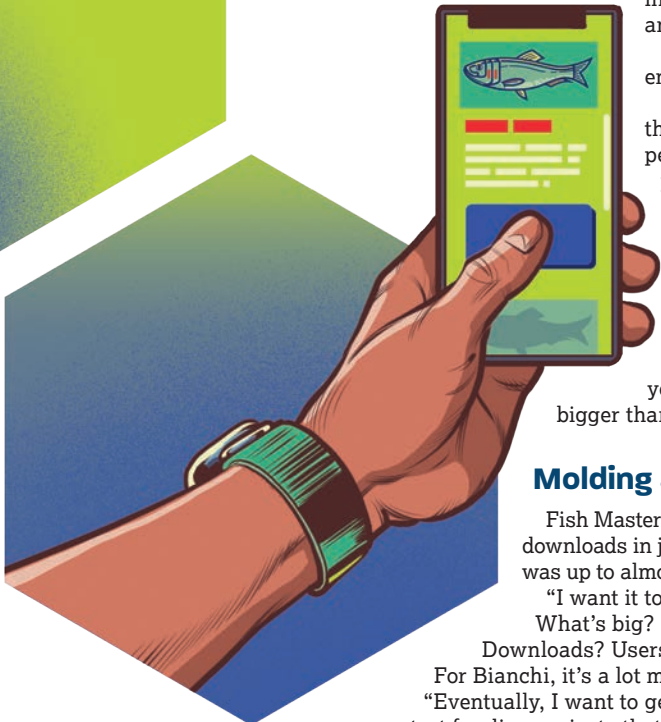
Entrepreneurial-minded learning, then, requires they analyze their port's feasibility and impact.

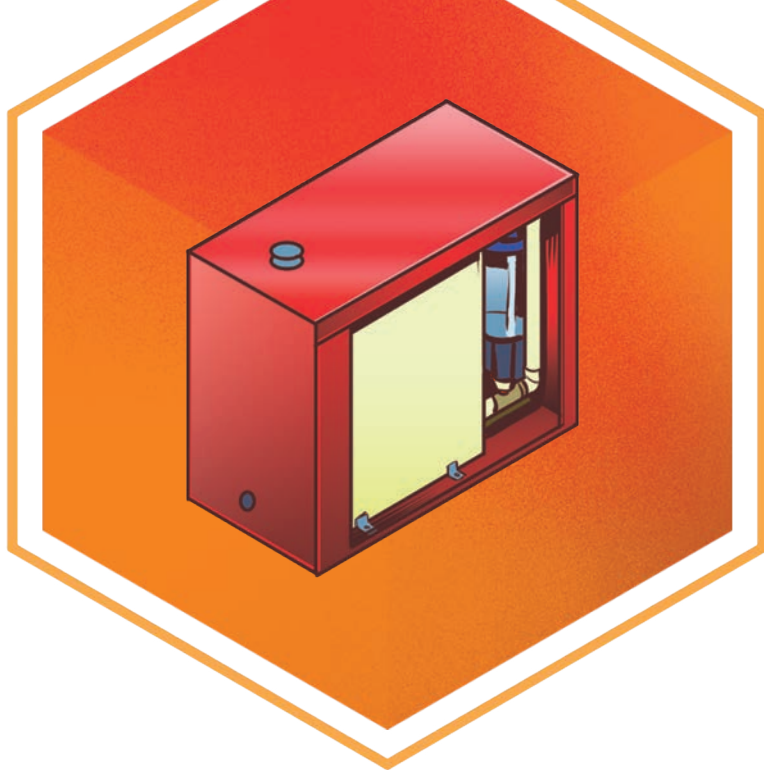
"Would someone actually build a port there? What's the economics behind that? Ports are expensive; how can you justify building that port in a community? What will sustain that facility into the future?" Weaver says. "So, you really have the students focus on that in addition to the logistics."

While the term "entrepreneurial-minded learning" may be relatively new at Florida Tech, the practice isn't.

Paul Cosentino, a mechanical and civil engineering professor, has been implementing projects and critical-thinking elements into his courses since he started teaching nearly 40 years ago. While his students are frequently found building balsa wood structures or engineering barium titanate traffic sensors in class, Cosentino doesn't confine hands-on education to the classroom.

As the faculty advisor for Florida Tech's American Society of Civil Engineers (ASCE)





student chapter, Cosentino oversees a group of about 30 students, who every year, complete 15 major projects, including the renowned concrete canoe competition.

For the competition, members design, construct and race canoes made of concrete. They problem-solve. They collaborate. They learn—and not just about the principles of civil engineering.

“The biggest lesson I learned is that your purpose should always be people. Asking yourself how someone will benefit from what you are doing, what you, yourself, are learning from it or how it might impact others in the future will keep you humble, but also on task,” says **LEXI MILLER** '15, '19 M.S., an ASCE alumna and project manager for the City of Satellite Beach. “Nobody gets behind an idea that doesn’t somehow positively impact those around them.”

Lessons like these make a difference, Cosentino says. Having taught at another university less focused on hands-on education, he’s seen that difference.

“I noticed the students’ self-esteem, when we weren’t doing this stuff, wasn’t where it should be,” Cosentino says. “It’s super valuable for them to get their confidence by doing things their own way.”

Especially when that way is applicable to the real world—whether that’s through a documentary published, a strategy implemented or, in the case of **ANNIE PANJWANI** '19, a life saved.

In 2019, Panjwani and her senior design teammates redesigned the user interface for Sun Nuclear Corp.’s water-pumping reservoir used with its 3D scanner to calibrate hospitals’ radiation therapy machines.

While the description is complicated, the results are simple: The machine now services twice as many patients per hour, and Sun Nuclear, a worldwide market leader in radiation oncology quality assurance, rolled out Panjwani and team’s design in August 2019.

“During the process, you learn more than you intended to learn in the first place, and it increased my confidence during that time,” Panjwani says. “It almost felt like an honor that our design actually made it into the company’s new upgrade—they were actually taking ideas from our design, and I think that was a very exciting part.”

Proof in the Product

Projects aren’t just for engineers.

In the Bisk College of Business, instructor Tim Muth’s international business students participate in X-Culture, which groups 5,000-plus students from more than 100 universities in 45 countries into teams tasked with developing business strategies for actual global companies.

In the School of Arts and Communication, associate head Heidi Hatfield Edwards and her colleagues have helped students produce countless documentaries, strategic communication plans and published news stories—once even interviewing an astronaut on the International Space Station for a *Florida Today* series on the health impacts of going to space.

In the College of Aeronautics, professor **DEBBIE CARSTENS** '96 MBA assisted students in developing an airport runway and corrosion prevention system so impressive, it won the University Design Competition for Addressing Airport Needs from the Transportation Research Board’s Airport Cooperative Research Program.

“It’s really, really hard to do—to craft the right projects,” says Muth, whose freshman Creativity, Innovation and Entrepreneurship course is known on campus for its “Shark Tank” style project that immerses students in experiential learning from day one. “It’s much easier for me to get up there and lecture, but without interaction, they’ll blow right through it.”

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“
The biggest lesson I learned is that your purpose should always be people.”

LEXI MILLER '15, '19 M.S.

“Project-based learning avoids the passivity of understanding a concept in the abstract. Instead, the concept has to be understood and correctly applied for the project to be a success. The interest in the end result increases attention, and research supports that increased attention improves retention skills.”

JULIE COSTOPOULOS

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The merits of project-based learning are many.

In Muth's experience, projects teach students to make decisions under pressure and help them to remember and learn from the mistakes they make in the process.

Edwards says that working on a project with real-world practicality results in a sense of ownership and pride that has lasting impacts.

Carstens thinks that, in addition to emphasizing important course concepts, projects develop students' soft skills, like communication, collaboration and time management.

According to psychology associate professor Julie Costopoulos, such outcomes have been well documented.

A 2014 study published in *Proceedings of the National Academy of Sciences* (PNAS) found that undergraduate students in classes with traditional stand-and-deliver lectures are 1.5 times more likely to fail than students in classes that use more stimulating, so-called “active learning” methods.

Results from the PNAS study, a meta-analysis of 228 lectures and active-learning strategies, widely favored active learning—so much so that some have questioned the ethicality of continuing to provide lecture-based courses, given their ineffectiveness.

“I feel strongly that project-based learning avoids the passivity of understanding a concept in the abstract,” Costopoulos says. “Instead, the concept has to be understood and correctly applied for the project to be a success. The interest in the end result increases attention, and research supports that increased attention improves retention skills.”

Thanks to ever-evolving technology, this rings particularly true for millennials and their successive “digital native” generations.

According to a study by education consultant and millennial expert Marc Prensky, the technology with which millennials have matured actually wires them to “think and process information fundamentally differently from their predecessors,” making it not “students' attention capabilities that have changed, but rather their tolerance and needs.”

Don't throw away your textbooks and notebooks yet, though.

While there is strong evidence supporting the implementation of projects, group work, discussion and other active-learning strategies to improve retention, it doesn't eradicate the need, in some instances, for traditional lectures, tests and quizzes.

“The theory and background information must still be learned before it can be applied,” Costopoulos says. “And often-times, lectures—interactive lectures that engage and involve students—are the most effective way to do that. A subsequent project, then, can put the lesson into context within the real world.”

And while incorporating a senior design-level project into every course may sound exciting and effective, it's simply not feasible. From full course loads to extracurricular activities to internships, both students' schedules and mental bandwidths are limited.

Likewise, while juggling their personal and professional responsibilities, professors must ensure that the university has resources—equipment, materials, facilitators—to accommodate every project assigned while mitigating what Costopoulos calls “social loafing”: when a student doesn't contribute equally to a group project.

“I would say it's more work, but it's more delightful work—when balanced,” Costopoulos says.

Fabricating a Future

Perhaps one of the greatest benefits of teaching through usable school projects with practical applications is just that—they're usable.

Florida Tech alumni like Bianchi, who turn their projects into real-world careers or side hustles, and Panjwani, whose designs are implemented by major corporations, are many.

Unfortunately, the number of those whose projects fizzle out after the deadline is even more.

TABITHA BEAVERS '15 attributes this to the “frustration barrier.”

“A lot of people have a really cool idea that'll just die because they don't know what to do with it,” Beavers says. “In order to lower that frustration barrier and get people to do their really cool ideas, the first step is knowing what's possible.”

To help them discover those possibilities, she created Space Coast FabLab.

Essentially a community maker-space equipped with the materials and resources necessary to turn concepts into tangible products, Space Coast FabLab was inspired in 2014, when as a student, Beavers shadowed Larry Boyce in the Electronic Support Center on campus.

“Students would bring projects in, and Larry would dig up really cool tech to solve all different problems,” she says. “I learned all the amazingly cool things you could do with really inexpensive pieces of equipment.”

She started the FabLab, then called Project-Based Learning Inc., on Florida Tech's campus that year with a half-dozen other students.

Since then, the FabLab has been home to countless projects—an inexpensive prosthetic arm that won the President's Cup at the 2016 student design showcase; a small multitool that was later manufactured in China and sold in Walmart; and many more—taught community classes, connected makers with local engineers in the industry, hosted hundreds of K-12 field trips and, when it moved to Rockledge, Florida, inspired the creation of Florida Tech's Makerspace.

“We found mentors for high school students and have had lots of people who got scholarships to go to Florida Tech,” Beavers says. “We've had a lot of really cool experiences, and there are a lot of success stories.”

One such story is Beavers' own.

The eye for innovation and ambitious, self-starter spirit she showcased in starting the FabLab while a full-time college student caught the attention of Northrop

Grumman Corp.'s director of innovation, who in 2016, hired her to establish internal fabrication labs, or fablabs, at Northrop Grumman campuses across the country.

In just three years, she and her team upstarted five fablabs in Florida and California, not only assembling the resources, but also training staff, setting up high school involvement programs and presenting about the endeavor to company leaders and at major events like the New York Maker Faire.

"It was quite the experience to see how much senior leadership and large companies truly do value the project-based and the hands-on," Beavers says. "When you're in a project, whether or not you have grit—the ability to stay mentally fortified, to push for an end—comes out.

Passion. That's what makes a project."

“Project-based learning helps people bond on a deeper level and gives them some kind of shared vision to push for.”

TABITHA BEAVERS '15



Student Design

While professors are constantly developing new and innovative hands-on experiences to underscore important classroom lessons, at Florida Tech, one has remained constant.

The engineering and science senior design program, the university's flagship capstone project and a Panther rite of passage, has existed in one form or another almost since the university's inception.

But it wasn't until 2009 that Northrop Grumman Corp.'s generous endowment officially established the Northrop Grumman Engineering and Science Student Design Showcase, the spring competition where students design and build original projects underwritten by the company, as we know it today.

That same year, Northrop Grumman presented its inaugural "Best in Show" award to a team for its pioneering satellite design. Today, a delegation from the company presents two of these awards, one each for science and engineering, alongside a panel of judges and university personnel who present two President's Cup awards, "Best of" awards for each category and awards for innovation, entrepreneurship and social impact.

In 2015, Harris Corp., now L3Harris Technologies Inc., donated \$1 million toward the creation of the L3Harris Student Design Center, a 12,000-square-foot building equipped with a variety of state-of-the-art design and manufacturing equipment, like virtual reality simulators, CNC machines, soldering stations, electronic programming tools, waterjets, plasma, laser cutters, engravers and more.

In 2017, the senior design program added a different kind of resource to its arsenal. Called "capstone coaches," notable industry and Florida Tech community members act as team mentors, offering their expertise and guidance to students throughout all project phases.

With this wealth of resources has come an increasingly impressive array of projects: a satellite that actually spent about 1 ½ minutes in space; a robot that could deposit and mine moon dirt for a NASA mining competition; an unobtrusive, battery-powered device used to treat lymphedema; an inexpensive water-harvesting device for use in South Africa; and many more.

Some project designs go on to compete—and win—in the statewide senior design showcase; some are

implemented by major corporations; and some provide the basis for entrepreneurial-minded students to launch their own businesses.

For spring 2020 seniors, however, things are different.

In response to the COVID-19 pandemic, all spring-semester classes went virtual, and the student design center closed, forcing students to pivot their projects accordingly. From building virtual prototypes and digital simulations to increasing focus on written research and analysis to testing electronics online, most projects looked a little different from how students had envisioned them at the beginning of the year. Unfortunately, the showcase, too, was canceled.

But of the lessons the senior design program was established to impart, the ability to adapt and overcome obstacles is foremost. And while the fallout of the COVID-19 pandemic has been a challenge, to say the least, it has certainly given students—and the rest of the world—experience doing just that.



IN DEEP WATER

After Hurricane Dorian, Nivea Mazzone '97 enlisted her Florida Tech family to quench her island's thirst for vital freshwater.

By Ryan Randall

After a hurricane ravages a region, news coverage and attention are focused on the area for a few weeks. But when the cameras and reporters leave and the attention fades, the people of the region are left to deal with the damage caused by the natural disaster.

This is the case for the citizens of Grand Bahama Island, who are still feeling the effects of Hurricane Dorian, which blasted the island in September 2019, killing 70 people and causing \$3.4 billion in damage.

Among the most concerning issues left in the storm's wake: damage to the region's freshwater lenses (FWLs), the thin, natural barriers between saltwater surrounding the island and freshwater underneath it that permit clean water for drinking, bathing and cooking.

These dire conditions spurred civil engineering alumna and Grand Bahama Island resident **NIVEA MAZZONI '97** to reach out to her alma mater.

After hearing about the situation, Florida Tech mechanical and civil engineering assistant professor Efthymios Nikolopoulos and California State University, Sacramento, assistant professor Zoi Dokou applied for and, in January, were awarded a \$49,104 National Science Foundation grant to fund research regarding the island's FWLs.

Since Hurricane Dorian's 20-foot storm surge breached the FWLs, saltwater infiltrated the groundwater, flooding the island's aquifer and making the water unusable.

The team will examine how the rate of recovery of FWLs impacted by this storm-induced saltwater intrusion is connected to climatological characteristics, such as storm intensity, duration and frequency of precipitation.

Nikolopoulos and the other researchers will also examine how FWLs will be affected by future elevated sea levels and extended periods of drought induced by climate change. They will then study the human response to these events, such as excessive pumping activity that can induce "upconing," a process when freshwater is discharged and saltwater moves upward toward the well.

Vice president at Davies Associates, a construction and project management company, Mazzone initiated this project, reaching out to her former professor, Paul Cosentino, for help on the island. Cosentino then put Mazzone in touch with other faculty members, eventually connecting her with Nikolopoulos, who initiated the plan for conducting research on the flooding.

"I didn't even have a second thought when I sent the message to Dr. Cosentino. That's just

how close and in contact we've remained since I've graduated," Mazzone says. "Florida Tech has always been family for us; my brother also graduated from there, so we've loved it. It's great to know, in a situation, especially with what happened with this, I was able to reach out and get in contact with tons of other different professors and get in touch with Dr. Nikolopoulos, who was able to get this grant in place."

Nikolopoulos, Dokou, Florida Tech Ph.D. student **ZIMEENA RASHEED '18, '19 M.S.**, and Florida Tech master's student **RACHAEL MCMAHON '20** comprised the team that flew to Grand Bahama Island Feb. 9.

Although the trip was for only one week, Nikolopoulos said the research will carry on over an eight- to nine-month period and will include taking groundwater and soil samples and monitoring some flooded areas. The team hopes to return this summer to analyze the sampled areas for changes.

The goal of the first round of research is to develop a system for local officials, as they assess what steps should be taken in dealing with the problems caused by saltwater intrusion. The team is also looking at other factors, such as the unusual dry season that came after Hurricane Dorian, the frequency of these seasons and how groundwater will be affected.

Most recently, researchers agreed upon a six- to seven-month monitoring plan with the stakeholders of Grand Bahama Port Authority and Grand Bahama Utility Company. They also established a partnership with a University of The Grand Bahamas faculty member, who, with his students, will help with soil sample data collection and analysis.

Nikolopoulos' motivation for conducting the research is a mix of passion, academic curiosity and desire to help others. He is not being paid for the research, as all funds go toward the project.

"It's part of why I'm doing what I do," he says. "There's an opportunity for me to do research that has a social impact, so hopefully, down the road, we will help those communities improve resilience to weather and climate extremes."

There is plenty of work to be done on Grand Bahama Island. The airport is not functioning at full capacity. People are still missing. Sections of neighborhoods are completely gone. However, the resiliency of the island's citizens—and the help of organizations like Florida Tech—has both researchers and locals hopeful for a safer future.



The research team, pictured bottom left, is composed of Rachael McMahon '20, master's student, Florida Tech; Zoi Dokou, civil engineering assistant professor, California State University, Sacramento; Efthymios Nikolopoulos, mechanical and civil engineering assistant professor, Florida Tech; Geron Turnquest, general manager, Grand Bahama Utility Company; Nivea Mazzone '97, vice president, Davies Associates; Zimeena Rasheed, mechanical and civil engineering Ph.D. student, Florida Tech; Tara Mackey, Ph.D. student, University of the West Indies; and Remington Wilchcombe, engineering manager, Grand Bahama Utility Company. In February, the team collected groundwater and soil samples from Grand Bahama Island.



Going the [Social] Distance



Despite coronavirus-induced isolation, with new-age technology and old-fashioned creativity, the campus community has never been closer.

By Adam Lowenstein

— — — — — □ On the screen, the Infinity-class supercarrier and the much smaller Vulcan science vessel are headed directly at each other.

“This will not end well,” the unseen narrator says.

And in fact, as the two vehicles collide, a small, fiery explosion erupts.



Thusly damaged, the vehicles head to the side of the screen, which now displays a hand, busy drafting equations denoting momentum, velocity and mass, as our narrator asks how many initial momenta are needed to solve the problem just illustrated.

As you may have determined, this is not the latest sci-fi blockbuster, though it has already generated many positive reviews.

It is one of 34 video lessons created by David Harris, an assistant teaching professor in the department of aerospace, physics and space

sciences at Florida Tech, for his Introductory Physics 1 course.

Like his hundreds of faculty colleagues, Harris has had to quickly adapt to teaching in the age of the coronavirus. And like those colleagues, Harris brought to bear the creativity, intelligence and sense of humor that good teachers have in abundance.

Oh, and special effects.

“When I included the special effects, I wasn’t thinking about any particular educational benefits. I just thought it would be fun,” Harris says.

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“However, once students started watching, I got dozens of emails complimenting me for my work. Now, I think the special effects do have a real benefit: Students are more engaged with the material when they know the person making the videos is a person just like them, with quirks and hobbies. I hope my students can see that I’m having fun with this, and I hope they can have as much fun as I am.”

As with big-screen special effects, there is much more going on behind the scenes of Florida Tech’s pandemic-fueled transition to online classes than meets the eye.

For starters, deans and their faculty members, working closely with the provost’s office, had to reimagine vast swaths of curricula and retool classes for online teaching.

“The faculty stepped up to the plate and delivered—a testament to their dedication to their profession, to their students and to this institution,” says Marc Baarmand, vice president for academic administration. “The administration, along with the deans and the department heads, smoothed out some rough edges, but the heroes are the faculty.”

Among them is Moti Mizrahi, an associate professor of philosophy in the School of Arts and Communication. Understanding that two areas—flexibility and instructor availability—are key to successful online learning in this new environment, he tailored his classes to emphasize those needs.

“Asynchronous online learning is ideal because, instead of requiring students to



Assistant teaching professor David Harris incorporates special effects into his Introductory Physics 1 course to keep students interested in and engaged with his now virtual lessons.

be online at a set time, it gives students the flexibility they need, especially in these uncertain times, to review course materials and do their coursework at their own convenience,” Mizrahi says.

Mizrahi structured his course content to guide students through each unit, creating a module for each and dividing content into weeklong chunks. Within each module, he makes course materials—videos, slides, readings and more—available to students, who can log in to Canvas, the university’s primary learning management system, anytime to review the content and complete their assignments.

Despite his offering this bounty of necessary information, Mizrahi

does not assume students will read everything he provides.

So, he posts announcements at least three times a week, sends reminders about assignments, participates in chats on discussion boards and gives students feedback on their work—all while encouraging students to reach out via email, phone or Zoom.

“It helps students learn by letting them know that we are always there, just like in the classroom,” he says.

Mizrahi, Baarmand and many others were also eager to praise a particularly essential part of this transition: the information technology (IT) department and its instructional technology team.

A university grounded in technology since its founding at the dawn of the

As the pandemic unfolds ...



March 1:
First two Floridians test positive for the coronavirus.

March 12:
University suspends all in-person classes for remainder of the spring semester.

March 15:
Disney World and Universal Orlando Resort theme parks close indefinitely.
...
Annual Chopper Dropper event goes virtual, streaming online without the in-person reception.

March 17:
Brevard County identifies its first coronavirus case.

March 10:
University announces spring commencement ceremonies will be closed to guests.

March 13:
Amid season cancellations, NCAA announces extra year of eligibility for spring student-athletes.

March 16:
Education Centers’ face-to-face classes begin online synchronous instruction via Zoom.

March 20:
University cancels Northrop Grumman Engineering and Science Student Design Showcase.



space race, Florida Tech, in the past few months, has had to rely on technology in ways never experienced.

Scores of IT and instructional technology staffers wrangled programs like Zoom, Canvas and Panopto into wider use than ever before and developed online training on the fly to ensure everyone knew how to maximize the critical tools.

Within about a week, staffers, including IT instructional technology director John Meyer, **JARED CAMPBELL** '16 M.S., Jason Griggs, Amy Sullivan, **ERIC DONATH** '11 M.S., **THOMAS COUPERTHWAIT** '03, Nathaniel Ashton, Lee Storey and Zen Campbell, had assembled in-person and webinar training courses for the various programs and tools, built several websites, created multiple videos, developed a list of faculty mentors who could offer guidance and participated in many, many meetings and brainstorming sessions.

"I don't know if I've ever been so tired," Meyer says of days that often started at 6 a.m. and continued until 10 p.m. "It was not easy."

But the effort was certainly appreciated.

"Faculty have been very gracious," Meyer says, noting all of the thank-you emails the team has received.

"Our instructional technology team were key in their continuous efforts training our faculty in the tools needed to teach online," says IT Vice President Daniel Flores. "They really did a phenomenal job and were a key component to our success."

Florida Tech was already well prepared to make the transition, with wide bandwidth, broad wireless access and strong cybersecurity protection, Flores says.

The transition was truly a universitywide effort. The final arbiters, of course, are students.

Patient with some initial hiccups, students have noticed and appreciated the university's fairly nimble pivot to online instruction.

"In general, we have found students to be exceptionally supportive and engaged," says College of Psychology and Liberal Arts Dean Lisa Steelman. "They have been a shining light for us and made a difficult situation much easier than expected."

Sarah Cameron, a first-year mechanical engineering student, is enrolled in Harris' class. She knew the switch to online classes would require more self-discipline on her part, but his approach made that easier, she said.

"Dr. Harris has essentially given us an easy way to stay on track and make sure we're keeping to a schedule.

I use the daily quizzes and videos to see if I grasped the topic for the day, and I'm really enjoying it," Cameron says. "[Overall,] I think the transition to distance learning has been positive."

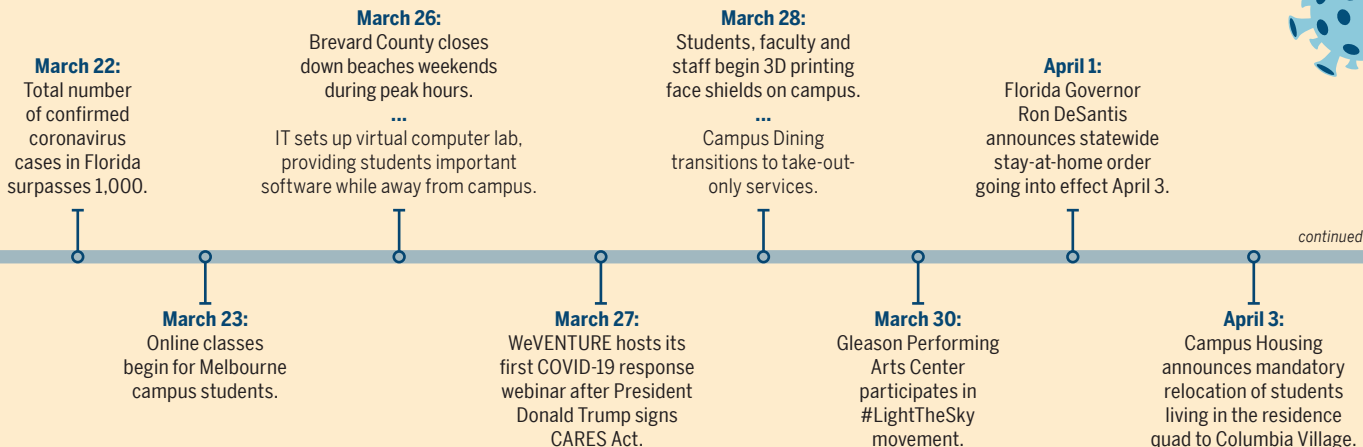
And students aren't the only ones who have been learning.

The experience has allowed Harris to better understand his teaching style, as he thinks more deeply



about how students learn inside and outside of the classroom, he said.

"One thing I emphasize in class is the conceptual understanding of everything that is going on. That works well, but I always said I didn't have enough time to also teach problem-solving ability," he says. "Now, I realize I can do both."



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Research for the Benefit of Humankind

Never has the significance of this Florida Tech core value been more essential—or evident. When disaster strikes, we adapt and overcome. While this is surely a low point in the history of humanity, it will give birth to a renaissance of new technology, resources and a pool of research that’s breadth only our posterity will truly comprehend.

By Karly Horn, Adam Lowenstein and Ryan Randall

Clarity Through Machine Learning

In the uncertainty presented by the COVID-19 pandemic, Florida Tech researchers and partners are turning to machine learning to provide insight and clarity on multiple fronts.

For one, while working toward her doctorate, **NANDINI RAKALA** '20 Ph.D. and her research advisors, Munevver Mine Subasi and Ersoy Subasi, confirmed several key factors associated with COVID-19.

Using the Johns Hopkins University Center for Systems Science and Engineering’s publicly available data, which included daily level information on the number of affected patients, deaths and recovery from coronavirus and other patient characteristics from Jan. 22 to March 31, Rakala found that:

- » 50% of those who have COVID-19 had a combination of one or more of these diseases: hypertension, diabetes, asthma and chronic kidney disease, highlighting how a weakened immune system is a major gateway.
- » The average number of days from severe symptom onset to confirmed diagnosis for people who died from COVID-19 was 1.5. It was an average of 3.5 for those with mild symptoms who ended up recovering.
- » COVID-19 cases in the United States tended to afflict those above 50 years old, whereas in China, the range was between 19 and 80 years old.
- » Latitude and longitude played a key role. A large number of confirmed COVID-19 cases in the studied outcomes were found in locations with low latitude and high longitude, like China, the Philippines, Singapore, the U.S. and Vietnam.

Similarly, faculty and students from Florida Tech’s Center for Advanced Data Analytics and Systems (CADAS) are working with a team from the U.S. Air Force Air Combat Command/Intelligence Data/Tech Futures Division (ACC/A29) and the Air Force Research Lab/Multi-Domain Sensing Autonomy Division (AFRL/RYA) to use machine learning and artificial intelligence to strengthen understanding of the effects COVID-19 has on Air Force missions and operations.

The CADAS team, which includes computer engineering and science assistant professors Carlos Otero, Adrian Peter and Anthony Smith and is supported by a group of seven students, has developed capabilities to rapidly gain situational awareness and support seamless integration of data-driven artificial intelligence/machine learning models for forecasting.

Situational awareness is provided through a scalable, cloud-hosted visualization application that allows users to drill through daily national-, state- and county-published COVID-19 data. The team is helping to augment the application with additional geospatial-aware COVID-19 advanced analytics and resource management forecasts to estimate hospital utilizations, ICU admissions and ventilator usage.

“This task provides invaluable experience to our students while helping in the critical mission to better understand and utilize COVID-19-related data that ultimately can help the Air Force manage and move beyond this challenging situation,” Otero says.

April 6: University announces that all Panther Fund donations through May 31 will assist students experiencing financial hardship due to the pandemic.

...
The Scott Center transfers services to telehealth platform.

...
University announces pass/no-credit grading for spring 2020 semester.

April 8: F.I.T. Aviation suspends flight training indefinitely.

April 15: Florida Tech director of residence life **JACQUELINE HETHERINGTON** '14 M.Ed., '17 Ed.S., and her mother sew and donate 50 cloth face masks for Florida Tech Campus Dining staff.

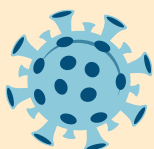
April 21: Phung Tran, a Panther parent in Vietnam, donates nearly 2,000 cloth face masks to campus community.

April 7: Brevard County announces its first two deaths related to the coronavirus.

April 10: University announces virtual commencement ceremony.
...
University Archives announces community documentation project, requesting university members share their pandemic experiences.

April 20: Florida Tech launches “From the Front Line,” a series of Q&As highlighting campus community members and their roles in combating the pandemic.

continued from page 27



Voice-Only Virus Defense

Receiving services and conducting interactions under social distancing regulations have become some of the more pressing challenges in the age of COVID-19.

Enter Veton Kepuska, a Florida Tech researcher hoping to apply his decade of studies in speech recognition and related technologies to society's present-day challenges.

Kepuska, a Florida Tech computer engineering and sciences assistant professor, has proposed the development of a voice-only system, aided by speech recognition, to substitute for physical interaction and help prevent potential disease contamination and spread.

Spurred by the COVID-19 pandemic, Kepuska is seeking federal funding to develop a prototype system, which he

would then install into a humanoid robot that could communicate and perform tasks with potentially infected individuals at places like hospitals and supermarkets.

While it may not be feasible to develop robots that recognize speech and interact with humans during the peak of this pandemic, the research and development conducted now may potentially fuel a future aided by advanced, voice-only systems.

"I wish this research was happening under better circumstances, but this is what the scientists are here for—so the next generation has the knowledge to produce the technology," Kepuska says.

“I wish this research was happening under better circumstances, but this is what the scientists are here for—so the next generation has the knowledge to produce the technology.”

VETON KEPUSKA

PPE Sanitization Device Promises Potential

Since the outbreak of the novel coronavirus, people and businesses around the world have rallied to develop new and innovative ways to manufacture vital health care resources.

Breweries are making hand sanitizer. Vehicle manufacturers are building ventilators. And in southern Maryland, technology think tank TechPort is developing a sanitization appliance that will enable medical professionals to reuse personal protective equipment (PPE).

Led by Florida Tech Doctor of Business Administration (DBA) student Tommy Luginbill, TechPort is an unmanned aircraft system (UAS) business incubator operated by the University of Maryland College Park that is typically focused on drone and airplane technology.

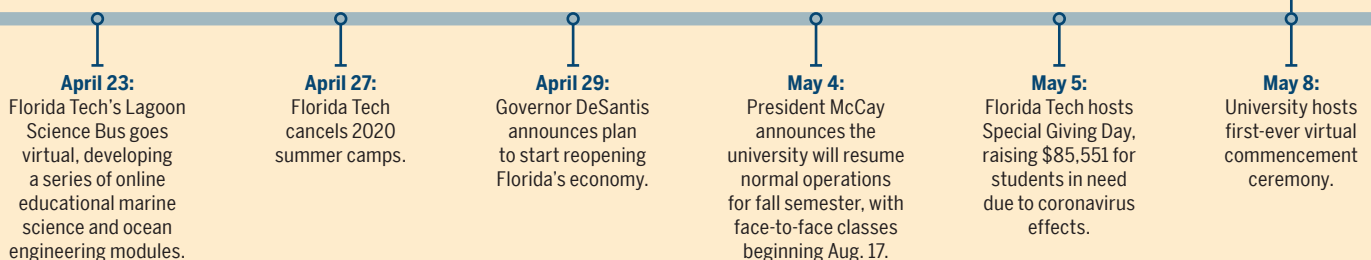
After the virus reached the U.S., however, TechPort started 3D printing necessities like face masks, gloves, hospital gowns and more and established a virtual network of hundreds of engineers who began developing new products, like breast pump ventilators.

Due to the overwhelming participation, TechPort created a nonprofit, Southern Maryland (SoMd) Loves You, which has produced thousands of units for local homes, hospitals and nursing homes.

One of the most promising creations to come out of the nonprofit is a large device that uses heat to sanitize PPE. The device, which has undergone weeks of testing at a local hospital and is being evaluated for FDA certification, would make PPE reusable, saving hospitals large sums of money and greatly decreasing its biowaste output, benefiting the environment.

“This is a commencement we're all going to remember, partly because of what we lost, what we missed, what we wanted but didn't get. But mostly, we're all going to remember the class of 2020 commencement because of what we have, what we've shared and how we all got through it, together, triumphantly.”

PRESIDENT DWAYNE MCCAY





Remembering Julius

**A pioneer. An advocate. A legend.
Quiet but brave, Julius Montgomery claimed his place
in the annals of history and the hearts of Panthers.**

By Richard Paul

When an astronaut says, “You’re the bravest man I’ve ever met,” you know he is talking to someone special.

Leland Melvin made that declaration at the National Air and Space Museum in 2010 to one of Florida Tech’s first graduates, **JULIUS MONTGOMERY**.

A treasured advocate for and friend of the university in the many years that followed his graduation, Montgomery passed away Jan. 22 at age 90.

“Florida Tech is a better institution because of this brave and compassionate man, whose impact, thankfully, went well beyond our campus,” says Florida Tech President Dwayne McCay. “We will miss Julius dearly.”

In life, Montgomery didn’t sit on top of a giant Roman candle as it hurdled into space. What he did was face down the Ku Klux Klan and win a place of equality for African Americans at Cape Canaveral.

Montgomery was the first African American technical professional at the Cape, but he shouldered a burden other racial pioneers did not. Unlike Jackie Robinson, Guy Bluford and Mae Jemison, as Montgomery made his way to the building that housed the RCA Development Lab, there were no columnists from the black press cheering and urging progress, no one from the NAACP to offer legal or moral support.

Julius Montgomery was utterly alone.

Reaching the lab on his first day, he opened the door to face a roomful of angry white men—many of them Klansmen—in the state with the highest lynching rate per capita.

“Nobody would shake my hand,” he remembered. “I got to the last fellow, and I said, ‘Hello, I’m Julius Montgomery.’ He said, ‘Look, boy, that’s no way to talk to a white man!’ And I said—I said, ‘Ah, forgive me, oh great white bastard. What should I call you?’ I really did say that! And I laughed, and he laughed, and he shook my hand.”

Montgomery was a pioneer not just at Cape Canaveral. Every year, at its Martin Luther King Jr. Day commemoration, Florida Tech presents the Julius Montgomery Pioneer Award.

The award exists because at a pivotal time in the history of the country and our school, Montgomery allowed Florida Tech to remain segregated, at harm to himself but to the benefit of the institution.

His sacrifice and generosity were so significant that without it, the school would have been closed down.

“Tossed out on the street,” in the words of Florida Tech founder Jerome P. Keuper.

Florida Tech started as Brevard Engineering College (BEC) when Keuper, then a senior engineer in the U.S. Air Force Missile Test Project, told his bosses at RCA that he wanted to open a school to

keep workers up to date on the state of the art in engineering.

BEC originated in three rented classrooms at Eau Gallie Junior High School. Not too long after opening, the school found itself in the midst of a controversy started inadvertently by Montgomery.

Keuper had put up on an RCA bulletin board a notice asking people to enroll at his his new school. It also asked them to list where they had done their undergraduate work.

“I signed it,” Montgomery said. “I put down Tuskegee.”

Within days, the Brevard County superintendent of schools was on the phone to Keuper, telling him the school system was canceling BEC’s contract to rent the classrooms. The superintendent said he was worried about traffic jams “and other things.”

According to Montgomery, he was one of those “other things.” As he told it, the superintendent said, “I’m sorry, but this fellow, here, is from Tuskegee, so he must be black. He cannot come to this classroom.”

The ultimatum was clear: Expel this black man, or close the school.

The next day, Montgomery said, while he was at his workbench, there was a message over the intercom: “Julius Montgomery, come to the office, please.”

There, he was introduced to Keuper.



Photo by Eric Long, Smithsonian National Air and Space Museum (NASM 2009-30619)



Clockwise from top left: 1. Julius Montgomery's passport photo from 1966. 2. Montgomery (in sunglasses) speaks on a panel at the National Air and Space Museum with Morgan Watson, NASA's first African American engineer, and astronauts Leland Melvin and Mae Jemison in February 2010. 3. Montgomery speaks in the Florida Tech Hartley Room circa 2007 during the university's annual awards ceremony named in his honor. 4. Dwayne McCay presents Montgomery with an honorary doctorate in 2020.



"I said, 'Yes, Dr. Keuper, what can I do for you?' He said, 'Well, I need your help.' And the help they needed was for me to take my name off of that list so that he could start his new college."

It would only be for a short time, Keuper promised. As Montgomery remembered, Keuper said, "As soon as I get my own buildings, you are welcome."

That was 1959—five years after Brown v. Board of Education, four years after Rosa Parks stayed in her seat and said "No," and just a few months before young men would sit down at a segregated lunch counter in Greensboro, North Carolina.

Montgomery sat and thought for a minute.

"I said, 'Well, OK.' For the better good of everybody, I took my name off the list."

The school could stay segregated. He would drop out and not cause a fuss.

That Florida Tech created an award in Montgomery's honor speaks to the existential nature of his decision. After that decision, the superintendent dropped his threat, and several years later, after BEC got its own buildings, Keuper kept his word: The school desegregated, and Montgomery re-enrolled.

Montgomery's is one of many stories of the space program's African American pioneers that are different from the civil rights stories that you read in the standard high school textbook.

Not everyone marched or said, "No." Many did, of course, but others, like Montgomery, applied the principles of patience and, often, accommodation to reach the same ends.

Montgomery went on to have a successful career doing top-secret electronics work for the Air Force and shuttle support at NASA. He also became a politician, standing for elections beginning in 1956 and, finally, prevailing 13 years later, when he became the first African American to win a seat on the Melbourne City Council.

It's easy to see all of that success as Montgomery's legacy, but legacy is a difficult thing to nail down. It can establish itself in so many unimaginable ways.

MELANIE TOLBERT '19 M.S. wasn't born when Montgomery opened the doors to African Americans at Florida Tech. Her parents weren't even born. Montgomery didn't know her, never knew her and couldn't have imagined that she would follow the exact same trail that he blazed almost 60 years earlier.

In 2015, the year Montgomery's story was first published, Tolbert received her undergraduate degree, like Montgomery, from Tuskegee University. Then, like Montgomery, she left Alabama for eastern Florida, where, like Montgomery, she began a master's program in engineering at Florida Tech.

On Jan. 13, a few days after Tolbert received her degree, she was in Gleason Performing Arts Center, where Montgomery received an honorary doctorate degree.

"I literally turned to the person sitting next to me, and I said, 'Wow!' We went to the same schools, and both of us for an engineering degree. There were no words," she said. "It resonated with me emotionally. Had he not said, 'OK, I'm going to bow out gracefully,' who knows when the first black student would have integrated Florida Tech? It was exciting to know that we'd both attended the same undergrad and graduate schools, but it was also very emotional to know what he had to go through so that others, like me—a black woman—could have the opportunity to freely attend a school like Florida Tech."

Montgomery died a few days after that ceremony, and it's fair to say that Tolbert's realization is a touching and fitting coda to a remarkable life and career.

"His legacy, as far as being a pioneer in his field, really has inspired me to not only go to work and fulfill the requirements that are placed in front of me, but to make an impact there and in my community—to also leave a legacy behind to say, 'OK, I was there, and things are different now because Melanie was there.' That's what his legacy has inspired me to do."



News from the desk of
Kim Bozik '87

Florida Tech
Alumni Association President

I hope you are all staying well, both physically and mentally, as we navigate these uncertain times in the face of COVID-19 together. While the pandemic has required we all change work, home and life habits, our relentless Panther spirit enables us to learn, share and grow during these challenging times.

As illustrated in the story on page 30, Julius Montgomery embodied that relentless Panther spirit his whole life. His grace and sacrifice facilitated the continuance of Florida Tech in its earliest days. As we mourn his passing, we celebrate his life and legacy, renewing our gratitude and appreciation for his sacrifices and the great work he did within the community.

Construction is near complete on the new Alumni Center. A great many Florida Tech alumni and friends have donated much time, talent and treasure to bring the center to fruition, and we look forward to both the many gatherings that it will host and the wealth of educational opportunities it will provide students, researchers and the community.

I hope you are as delighted by the broad spectrum of university happenings, student endeavors and alumni achievements covered in each issue of this magazine as I am. I encourage you to share your own accomplishments and experiences with the Office of Alumni Affairs and the magazine's editorial board at magazine@fit.edu—don't be shy!

In closing, I wish you a healthy and safe summer.

Go Panthers!

YOUR ALUMNI ASSOCIATION OFFICERS

- Kim Bozik '87 | President | Chandler, AZ | kim.bozik@reagan.com
- Fin Bonset '96, '99 | Vice President | Indialantic, FL | fbonset@vhb.com
- Warren Pittorie '15, '18 M.S. | Secretary | Melbourne, FL | wpittorie2012@fit.edu
- Sherry Acanfora-Ruohomaki '93, '00, '05 M.S. | Treasurer | Melbourne, FL | sherry@k9kampus.com
- Federico Arocena '93 | Member-at-Large | Melbourne, FL | fjarocena@yahoo.com
- Jody Palmer '07 | Member-at-Large | Melbourne, FL | jpalmr@brevardzoo.org



Concert Series

Trisha Yearwood



Steve Martin & Martin Short



San Diego



MLK Celebration



More reception photos: floridatech.edu/alumni



1



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SUBMIT YOUR NEWS TO
alumni@fit.edu

1970s

1 JOHN CHIANIS '76, '81 M.S., and his wife, Dianna, recently completed a 35-day, 550-mile Camino de Santiago walk across Spain.

with Cherry Capital Airport in Traverse City, Michigan.

JOHN JANSEN '89 M.S., '90 MBA, was named director of contracts for Engineering & Computer Simulations Inc. Prior to this role, Jansen held positions with Quality Builders and Harris Corp., now L3Harris Technologies Inc.

1980s

2 CORY LOGAN '80, **KATHY (MCDEVITT) WOJTAS** '87, **MEGAN (MCDEVITT) MELLINGER** '89 and **MICHAEL MCDEVITT** '93 MBA, who all rowed for Florida Tech as students, won the mixed four competition at the Sarasota Invitational Regatta in February.

SUHAIL SYED '89 M.S. has been appointed executive advisor of the strategic initiatives office at the California Department of Rehabilitation (DOR). Prior to this role, Syed was a policy analyst for both the California Public Employees' Retirement System and the California DOR, and he has held multiple positions at Intel Corp. and Hewlett-Packard Co.

1990s

3 CLIFF ANNIS JR. '86 M.S., a senior consultant at Parexel, published his first book, *Magic In a Bottle: The Untold Story of Arnie Esterer and Markko Vineyard*. His work has taken him all over the world, enabling him to taste wine from different regions.

PAULA BARTGIS '90 was named senior vice president and chief information officer at Sun Life Financial U.S. Bartgis previously held roles with Voya Financial, Massachusetts Mutual Life Insurance Co. and The Travelers Companies Inc.

4 JEFF VOLOSIN '86, who has spent the past five years as project manager for NASA's Transiting Exoplanet Survey Satellite, work for which he received the agency's Outstanding Leadership Medal, was named deputy director for astrophysics on NASA's senior executive team in Washington, D.C. He is also entering his 17th year as an adjunct professor at Capitol Technology University, where he teaches undergraduate courses in spacecraft design and system engineering.

FIEAN LIEM '90, an engineer turned entrepreneur, owns and operates four restaurants in El Paso, Texas. An Indonesia native who grew up in Singapore, Liem loves to meld ethnic cuisines and flavors.

5 PABLO NUESCH '87, who has more than 30 years' experience in airport law, policy and administration, working for or on behalf of airports throughout the U.S., was named general counsel for Airport Council International—North America.

6 LAURA ODELL '90 M.S., '95 M.S., received the Institute for Defense Analyses' (IDA's) 2019 Andrew J. Goodpaster Award for Excellence in Research, presented annually to an individual who has demonstrated exceptional analytic achievement within the IDA research community. Also, her IDA research team received an honorable mention award in the Government Effectiveness Advanced Research Center challenge, hosted by the U.S. General Services Administration and the Office of Management and Budget.

JEFF NAGEL '88, who served as airport manager at MBS International Airport in Freeland, Michigan, retired in February. Nagel guided MBS through a \$55 million passenger terminal project in 2012, and his prior roles were

RON PORT '90 M.S. was promoted to vice president and chief commercial officer at Kennametal. Prior



APRYL ALEXANDER '09 M.S., '12 Psy.D., is many things: a clinical assistant professor at University of Denver (DU), co-founder of the DU Prison Arts Initiative, a TEDx speaker, a first-generation black college student, a proud Panther and, most recently, one of *Diverse: Issues in Higher Education* magazine's 2020 "Emerging Scholars."

In December 2018, she presented to a 5,000-person audience at TEDxMileHigh. A few months later, she provided legislative testimony that helped pass a bill requiring consent education for schools that have sex education.

In the last year, she has been featured on local news channels, was interviewed by Colorado Public Radio, had an op-ed published in *The Denver Post* and was interviewed by and featured in *The New York Times*.

Despite all of this recent, well-deserved coverage, being recognized as an Emerging Scholar by *Diverse*, a publication that seeks to build "educational, cultural, social and economic structures that will allow every individual to achieve his or her full human potential," hits particularly close to home for Alexander.

"Being a first-generation college student, this mission means a lot to me. *Diverse* provides a platform that emphasizes the importance of diversity and inclusivity in academia," she says. "My scholarship aims to help aid individuals, communities—particularly historically marginalized communities—and systems. In sum, my personal and professional goals align quite well with the mission of *Diverse*."

YOUR HERO: Shonda Rhimes, especially after reading *Year of Yes*

SURPRISE US: I was a competitive bowler from elementary school through college.

to Kennametal, Port served as vice president of marketing and business development at SPX Corp. Combined, he has nearly 25 years of experience across general management, sales and marketing, strategy and corporate business development.

7 GREG KAROL '91 MBA was appointed Lockheed Martin Corp.'s senior vice president of human resources, also serving as a corporate officer. Karol joined the corporation in 1986 as a production supervisor supporting the Patriot and Pershing II missile programs and, most recently, was the vice president of human resources in the company's largest business area, aeronautics.

REBECCA HUPP '92 was named one of Idaho Business Review's 2020 Women of the Year. Before taking her current position leading the Boise Airport in 2012, Hupp held positions at airports in Missouri, South Dakota and Maine. She serves on the board of directors for the American Association of Airport Executives and is president of its Northwest chapter.

GINGER CARROLL '93 M.S. was named CEO of Citrus Memorial Hospital, a 204-bed hospital

in Inverness, Florida. Carroll began with Ocala Health in 2003 as its chief nursing officer and was promoted to West Marion Community Hospital CEO in 2007. She has spearheaded both the physical expansion and addition of new programs, growing the breadth and depth of clinical services in the area.

BRIAN SULLIVAN '93 M.S., '94 Psy.D., a licensed clinical psychologist with over 25 years of experience, launched Lifeworks counseling services in Charleston, South Carolina.

BARRY HORNE JR. '96 completed a Ph.D. in genetics and genomics at Boston University School of Medicine. While earning his Ph.D., he completed a two-year academic predoctoral fellowship in immunology.

ERIC JO '96 M.S., '01 Ph.D., who has previously held executive roles with Samsung and SkyCross, has been named president of Taoglas Asia, a leading provider of next-generation "internet of things" solutions.

MOHAMMAD SAMARAH '99 M.S., '03 Ph.D., was named chief technology officer for Carroll University in Waukesha,

Wisconsin. Previously an advisor and co-founder of EnMedical Systems, a medical software company that also offers a range of information technology consulting services, Samarah has also worked as an assistant professor of computer science and big data analytics at Florida Polytechnic University, where he was a founding member of the graduate program for the College of Engineering and College of Innovation and Technology.

KRISTIN WHITE '99, '04, has been appointed operations manager for the California-Great Basin region's Central Valley Operations (CVO) office in the Bureau of Reclamation in Sacramento, California. White is a registered professional engineer in Texas and serves as the chair of the River Basin Planning, Policy and Operations Committee in the American Society of Civil Engineers.

2000s

8 Col. GAIL ATKINS '03 M.S. was appointed commander of the Corpus Christi Army Depot. Atkins is the first woman to hold the commander position in the

depot's nearly 60-year history. Before assuming the role, she was the force support division chief at the Pentagon.

9 RENEE KNOLL '05, '16 MBA, welcomed her son, Giovanni Knoll Silvio, to a strong Panther family as nephew to **MELISSA KNOLL** '04, '07 M.S., grandson of professor **CECILIA KNOLL** '80 M.S., '88 Ed.S., '90 Ph.D., and first cousin of current student Nathan Knoll-Rothe.

JACLYN LANIER '05 M.S., '07 Ph.D., an industrial-organizational psychologist with more than 15 years of experience assessing leaders and potential leaders, was hired by Psychological Associates. Lanier previously served as a consultant and corporate psychologist at Wells Fargo, SHL, PreVisor and Select International Inc.

10 RICHARD BOOTON '06 M.S. was named Rochester Engineering Society's 2019 engineer of distinction. In 2005, Booton began his career at L3Harris Technologies Inc., where he is currently a senior scientist in systems engineering and the chief systems engineer for its nanoSVDL line.

continued on page 36



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 to share in the magazine.

For details: alumni@fit.edu

SUBMIT YOUR NEWS TO
alumni@fit.edu

KATE BRODERICK

'10, '14 M.S., is associate counsel with the corporate governance and transactions group at American International Group Inc. (AIG) in New York City. A necessary element in a global company with hundreds of subsidiaries, Broderick's corporate governance team works on complex intercompany agreements and transactions, such as mergers and acquisitions, resolutions and board consents.



"Corporate governance is a very niche, but important, area of law," Broderick says. "Almost any major lawsuit against a company trickles back to improper corporate governance."

While earning her bachelor's degree in humanities and master's degree in global strategic communication at Florida Tech, Broderick developed a true love of learning and learned to be a creative innovator and proactive problem-solver.

"The 'global' emphasis has been instrumentally helpful, as I interface with teams across the globe on a daily basis," she says. "Having the intercultural competencies developed at Florida Tech has informed my project management process to help further multijurisdictional transactions."

In her downtime, Broderick paints, enjoys classes in screenwriting, fiction and improv and delves into the evolving cybersecurity area of law.

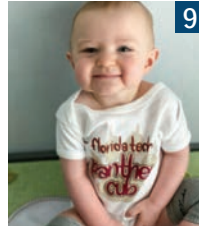
FAVORITE '90S JAM: "Bitter Sweet Symphony"

MESSY OR TIDY?: Tidy at work, messy at home

USELESS TALENT: I can tell if something is real gold or silver, or plated, by touch.

FICTIONAL CHARACTER YOU WISH WERE REAL: Mr. Darcy

FAVORITE FLORIDA TECH MEMORY: Walking through "the Jungle"



continued from page 35

11 Maj. **ASHLEY LUNDRY** '06, who has dreamed of becoming a hurricane hunter since her helicopter pilot father told her they existed, today, is an aerial reconnaissance weather officer for the Air Force Reserves 53rd Weather Reconnaissance Squadron and serves as a flight director for the National Oceanic and Atmospheric Administration hurricane hunters.

12 **JOSHUA GOULD** '07 graduated with a Master of Science degree in systems engineering from the U.S. Naval Postgraduate School in Monterey, California.

13 **JOSH BROLINE** '08 MBA, the director of marketing and applications for space/hi-rel products at Renesas Electronics America Inc., published an article about the effects of various space radiation environments and their impact on spaceflight mission profiles.

14 **LAURA CANHAM** '08 and her husband, Steve, and son, Julian, are excited to welcome their newest member, Emily, to the family.

15 **KATHERINE (SACHS) HENRY** '08 and her husband, Noel, welcomed baby Owen (right) to

their family, which includes his new cousin, also named Owen (left), born to **CATHERINE (THIELE) MCCARRELL** '10 and **IAN MCCARRELL** '10.

2010s

16 **CLAY MYERS** '13, '14 MBA, who started helping his mother and grandparents in the family business at a young age, is the third-generation owner of Bikini Co., which has three locations in Volusia County, Florida.

MARLON DAYES '14, a Jamaica-born pilot whose main goal for 2020 was to fly to his homeland for the first time, achieved his goal, assisting with landing a Boeing 737 aircraft at the same airport where, at age 5, his dreams of flying took shape.

MARY KATE MILLER '15 M.S., '18 Psy.D., joined the staff at UMass Memorial Medical Group in Worcester, Massachusetts. Miller completed her clinical psychology fellowship at Henry Ford Health System in Michigan, and she specialized in health psychology at UMass Memorial Medical Center's University and Memorial campuses.



16 ALEXANDRIA (BODDY) TOMASINI '15 and Justin Tomasini were married Oct. 12, 2019, at the Star Barn in Elizabethtown, Pennsylvania.

18 KELSIE (SAPP) MCGHEE '16 M.S. and her husband welcomed baby Jack Carter in March 2019.

RAFAELA NITA '16 Ph.D. was appointed lead scientist at Quantitative Scientific Solutions. As a science and technology consultant, she advises Department of Defense and intelligence community members. Previously, Nita was a scientific program manager at Uniformed Services University in Bethesda, Maryland.

19 SMIT SANGHRAJKA '17 gave a TEDx talk about additive manufacturing, or 3D printing, and how it is breaking barriers to a new industrial revolution. Due to his talk's viral nature, Sanghrajka was given the opportunity to speak about the venture that led to his role as senior business development manager at East Africa's largest injection molding company.

VERNON DENSLER '18 is a senior product manager at SiliconExpert Technologies Inc. and recently presented a webcast regarding cost management strategies and approved components lists for electronic parts management.

MORGAN JONES '19 M.S., a packaging engineer in manufacturing, supply chain and operations organization at Boeing Co. in Charleston, South Carolina, has received several awards recognizing her work, including the 2020 Modern-Day Technology Leader Award at the Black Engineer of the Year Awards Conference, the 2019 Environmental Leadership Award for Boeing and a 2018 Rising Star in Technology Award at the Women of Color in STEM Conference.



JASON HERKIMER '17 Ph.D. was featured in a *Forbes* article, "Pilots with PhDs." Herkimer flies for Spirit Airlines and operates an Airbus A-320. "Not only was earning a Ph.D. a practical insurance policy if I ever lost my ability to fly, it also expanded my knowledge base and my perspective on all matters of aviation. A professional pilot has a duty to continue to hone his craft, to mentor new pilots and to contribute to the overall knowledge of the field," he says in the article.



How, exactly, does one become a top leader at a Wild West theme park?

As go many of the best stories, **KIMBALL KELLER '91** has followed a circuitous path to get where he is today. While pursuing everything from law enforcement to aviation, the entertainment industry has always called his name.

"I have been in entertainment since age 5 and have always been involved in it, from being a professional clown, a circus ringmaster and in television shows, commercials and industrial films," Keller says. "I have even been on 'America's Most Wanted' four times as a police officer."

Having worked for several large production shows, like the Ringling Bros. and Barnum & Bailey Circus and the Hatfield & McCoy Dinner Feud in Tennessee, he is now the general manager of Tweetsie Railroad, a Wild West adventure theme park in North Carolina, overseeing the entire amusement park operation. A self-professed "fun getter-doner," Keller enjoys the creative freedom the job offers and the amazing teams he supervises.

"I employ the leadership method of building others up and encouraging them to be awesome," Keller says. "I love getting right in the middle of the project and helping."

SPIRIT ANIMAL: Horse

WHAT WOULD YOU NAME YOUR BOAT IF YOU HAD ONE?: I do, and her name is Phatt Amiee.

USELESS TALENT: Clogging

YOUR PERFECT DAY: One where everything goes right!

RANDY ALFORD, a School of Arts and Communication (SAC) professor who has served in various other roles throughout his 37-year tenure at the university, passed away May 8.

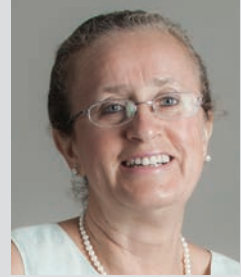


Hired in 1983, Alford was named director of the Language Institute and associate professor in 1992. His other positions included chair of languages and linguistics, assistant provost for international academic programs, senior vice provost, full professor and vice president for student affairs, among other executive positions. To many, Alford is best known for his recurring role reading graduates' names at commencement with linguistic panache and pronunciation perfection.

In 2005, Alford received the Presidential Award for University Excellence, honoring faculty and staff who went beyond their regular responsibilities in contributing to Florida Tech life.

"Dr. Alford was a quality teacher and a dedicated professional," said Robert Taylor, SAC head and associate dean. "He was totally committed to Florida Tech, its mission and its students, as well as being a kind and thoughtful colleague."

SEMEN KOKSAL '92 Ph.D., who was a beloved member of the Florida Tech community, having served as a professor, department head and vice president for academic affairs, passed away March 16 in her homeland, Turkey.



A tireless and curious scholar who published extensively in the areas of nonlinear analysis, neural networks and biomathematics, Koksall never failed to realize that students came first. Her involvement included advising students on award-winning senior design projects, encouraging young women to study and pursue careers in math, participating in mentorship activities with the Association of Women in Mathematics, starting the biomathematics bachelor's degree program and establishing both the Math Advancement Center and the Computational Mathematics Lab.

"The mathematical sciences department and the entire Florida Tech community benefited from her vision and dedication to her profession and her students," said colleague and friend Munevver Subasi, associate professor and interim mathematical sciences department head. "We have lost a friend with a kind heart, a great colleague and a leader."

THOMAS R. RANSOM '69 M.S., who served as a range safety officer in the U.S. Air Force at the Missile Test Center and, later, worked for General Electric Co. and A.H. Robins Company, passed away Dec. 16, 2019.

PAUL FRANCHINA '83 MBA, who served in the U.S. Navy during the Vietnam War era and made several major engineering contributions to U.S. military defense programs, died March 1 at age 71.

HILARY SLAVIN '83 Psy.D., who enjoyed a 40-year career as a clinical psychologist and neuropsychologist, passed away April 30, 2019.

GARY LINDSEY '84 MBA of Woodbridge, Virginia, passed away Sept. 18, 2019, at age 69 while vacationing with his family in New York City.

DIANE TIPPETT '91, who spent her career as a water chemistry analyst at various environmental labs, died Dec. 31, 2019, at age 52.

AMY BROOK MIDDLETON '94 MBA, a certified public accountant who worked as a software consultant and traveled extensively, died after a valiant battle with cancer March 19 at age 53.

CHARLES P. WENTZ '07 M.S., a retired Northrop Grumman flight test engineer, passed away March 2.

NANCY BROWN '14, a retired vice president for Ingenico Group North America, passed away Dec. 28, 2019, at age 62.

NORMAN BENEFIELD, student service coordinator for education center administration since 2007, passed away April 23.

FLORIDA TECH

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Wired for Success:

JOHN RUSSO '95 MBA TARGETS NARROW NICHE IN BROADBAND

Before he became the telecommunications consulting giant he is today, **JOHN RUSSO** '95 MBA worked on his father's farm, planting corn, picking okra and milking cows.

Then, he fried doughnuts in the Publix bakery.

While he was earning his bachelor's degree in marketing from the University of Central Florida, he worked in the school's admissions office.

He worked as a restaurant server, an assistant manager at Walmart Inc. and a salesman for AT&T Inc.

Through the varying positions in multiple industries, there was one constant: He worked.

"There are all these books written out there that say, 'You've got to do this to be good in sales,' or, 'You've got to do that to be good in sales.' I say, 'bull crap'—all you've got to do is work," Russo says. "If you want to be good at anything, you've got to have a work ethic."

It is with that work ethic that Russo founded Broadband Consulting Group (BBCG), today, the largest

telecommunications consulting company in the U.S.—essentially, by accident.

For about two years, Russo was a door-to-door salesman for a startup cable company, where although the internet didn't yet exist, he learned the ins and outs of telecommunications. From managing the door-to-door salespeople to pursuing the business of apartment developers, he wore many hats. He earned his MBA through Florida Tech's Orlando Education Center and was promoted within the company several times before it was purchased by AT&T.

Eventually, he left AT&T to work for a fledgling dot-com company that, unfortunately, filed for bankruptcy after about one year.

Russo reached out to one of his apartment developer connections, asking to represent him in his cable and internet contract negotiations while he looked for full-time employment.

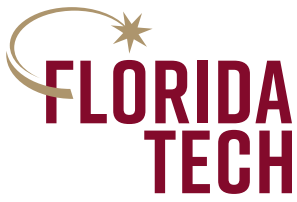
Not only did he agree, but he told his other developer friends—who told their friends, who told their friends ...

"I kept growing and growing the business by default through referrals, and I said, 'Well, forget it. I'm going to make a run with this,'" Russo says.

Nineteen years later, BBCG is still entirely referral-based. Doing what, exactly? In short, technology advising.

Essentially, Russo and his team of eight keep up with the advancements of the telecommunications industry so that their clients don't have to—advising developers on how to best outfit their buildings for the cable, internet and phone services residents desire; consulting on how to retroactively update older buildings; and negotiating contracts with major cable and internet companies.

Ready to share his lessons learned with the new generation of businesspeople, Russo recently joined Florida Tech's College of Business Advisory Board and even spoke to a global business class in the spring semester. The takeaway: "I think any one of you in here can do what I did. Just learn."



**Office of Marketing and
Communications**

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#LightTheSky

On March 30, Gleason Performing Arts Center participated in #LightTheSky, an entertainment industry movement aiming to send a message of hope to people affected by COVID-19 and appreciation to the brave medical professionals fighting it on the front line. Projecting LED lights into the sky and forming a heart on the lawn, Gleason joined countless participating companies, venues and individuals from across the globe.

