LIFE IN **ORBIT**

HIKING THE APPALACHIAN TRAIL
A CAMPUS WITHOUT BOUNDARIES

FROM DIPLOMA **TO DIPLOMAT**

**2ND ACTS** FOR TECH PROS

# GEORGIA TECH

ALUMNI MAGAZINE

VOLUME 94 NO.1 SPRING 2018

## ADVENTUROUS SPIRITS

Ramblin' Wrecks live to take on new challenges, push their limits and explore the world.

## “We know our commitment will help provide the Institute with resources for continued growth and success.”

— Niles, ARCH 1968, and Kathy Bolton

When Niles Bolton, ARCH 1968, was ready for college, he applied to one school only — Georgia Tech. His father was an alumnus, as was his older brother, and he was determined to follow their lead. To his dismay, he was waitlisted, and when he and his father inquired as to why, the registrar said, “I’m not sure you can cut it here.”

The gauntlet thrown, Bolton not only “cut it,” he went on after graduation to found an award-winning architecture firm, Niles Bolton Associates Inc. He started his company in 1975 — after first serving in Vietnam with the Army Corps of Engineers and putting in a few years at architecture firms — with only $500 in business on the books. His firm was well established by the time it was chosen to design housing for the 1996 Olympic Village — now Georgia Tech’s North Avenue Residence Hall — which he cites as one of his proudest professional achievements.

On the family front, Bolton has been married to his wife, Kathy, for 46 years and has two grown children – one of them also a Georgia Tech alumnus — and one grandchild. For fun, he enjoys bird hunting, fishing, and traveling.

Over the years, Georgia Tech has been like an extended family to Bolton. More relatives — including his younger brother — have graduated from the Institute, and many of his fraternity brothers are his friends to this day. He has made transformative gifts to the College of Design and Athletics, and his firm has been actively involved in Tech’s Co-op Program, offering mentorship and experience to generations of architecture students. He has served on the boards of the Alumni Association, the Alexander-Tharpe Fund, and the Georgia Tech Foundation, and is a member of Georgia Tech’s prestigious Hill Society.

Bolton’s most recent philanthropic support has come through a commitment to make the Georgia Tech Foundation a beneficiary of his retirement account.

All his gifts and service to Tech, he says, have given back. “I feel like we have always received a return on our investment. Every opportunity of meeting alumni, hiring recent graduates, presenting in the classroom, and participating on a committee or board has always been a continuing education about looking into the future.”

Georgia Tech Founders’ Council

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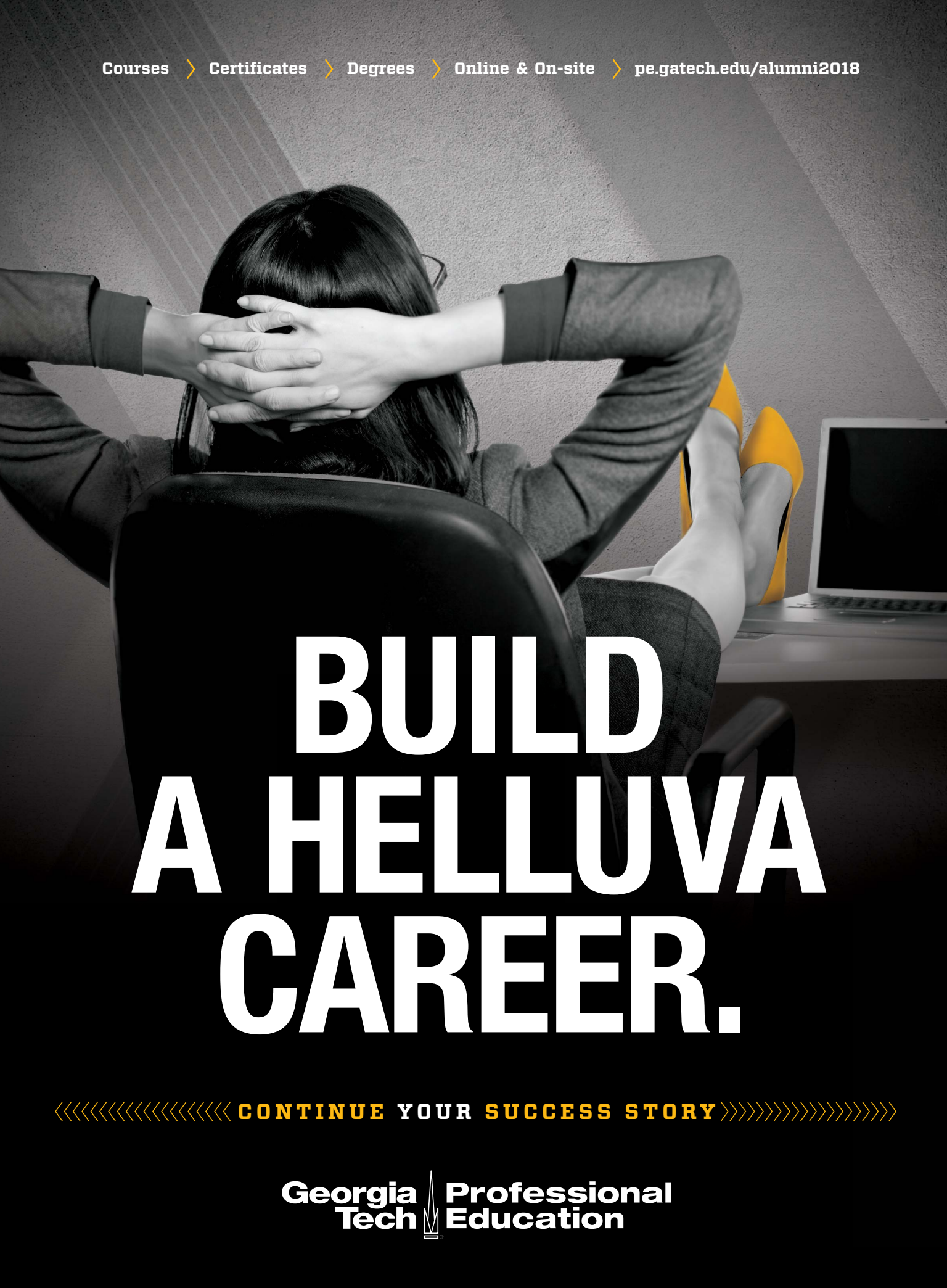

# BUILD A HELLUVA CAREER.

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Georgia Tech Professional Education

# PUBLISHER'S LETTER

# Tech Alumni—Ramblin' for Adventure

**WE RAMBLIN' WRECKS** have always been adventuresome types—driven by our trademark intense curiosity to learn and experience new things. After all, we Yellow Jackets "got out" of Tech because we're built differently. We're constantly at the ready to test ourselves and our surroundings, eager to live life more fully and committed to expanding our horizons.

In this issue of the *Georgia Tech Alumni Magazine*, we celebrate this adventurous spirit as we share some stories of Tech's intrepid explorers.

Along the way, we also memorialize two of our most adventuresome alumni who recently passed—legendary architect John Portman and NASA astronaut John Young. Portman revolutionized architecture with his design of soaring atria in modern-day skyscrapers and his desire to building communities, not just buildings (see page 100). Meanwhile, Young pushed into "space, the final frontier" (thanks, Gene Roddenberry) for more than three decades as part of the Gemini, Apollo and Space Shuttle missions (see page 88). Be sure to read two very different tales of Tech alumni who shared the same indefatigable, fearless spirit.

We'll also look at the career adventures of three young alumni: Sarah Cooper, MS DM 01, went from a comfortable career at Google to putting herself on stage as a comedian (page 34); Johnny Jones, IA 02, put his ideals and life on the line working in the foreign service abroad in the Middle East and France (page 38); and Abbey Wysocki, STC 14, turned a family experience into playing a genie for kids through Make-A-Wish Georgia (page 42).

Travel is at the core of a number of other stories, including a piece on Olivia Plumb, who hiked the Appalachian Trail solo during a gap year before starting her freshman year at Tech (page 18). Married couple Esther JuLee, Chem 06, and Jacob Fu, Mgt 05, meanwhile have found a way to make a living by

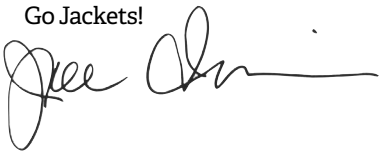
blogging about their travel adventures in their greater backyards and around the world (page 48). Tech faculty also often take their students abroad for new experiences, ranging from performing field research to offering humanitarian outreach to testing their mettle in international competitions (page 56).

Finally, Shane Kimbrough, MS OR 98, took the biggest journey of all—spending 173 days in space as commander of the International Space Station—and shares the details of what it's like to live in orbit in such tight quarters (page 62).

Much to my personal dismay, my daughter Jennifer Irwin, BA 13, (pictured above) has recently found her own adventurous nature and has taken up open-water distance swimming. Her first meet was a doozy—she jumped off a perfectly good boat, 100 yards off the southeast coast of Alcatraz Island (yes, that one), along with 50 other people, and then swam to San Francisco. More recently, to benefit the Navy SEALS Foundation, she swam across Tampa Bay with 100 other souls so inclined. Thank goodness for wet suits.

But in reality, all of our lives are adventures no matter the field. We only get one trip on this rock, and as Mark Twain said: "Give every day the chance to become the most beautiful of your life."

Go Jackets!



**JOSEPH P. IRWIN, IM 80**
**PRESIDENT & CEO**
**GEORGIA TECH ALUMNI ASSOCIATION**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**On the Cover:** Esther JuLee, Chem 06, hikes near Oregon's Wahclella Falls. Photo by Jacob Fu, Mgt 05.

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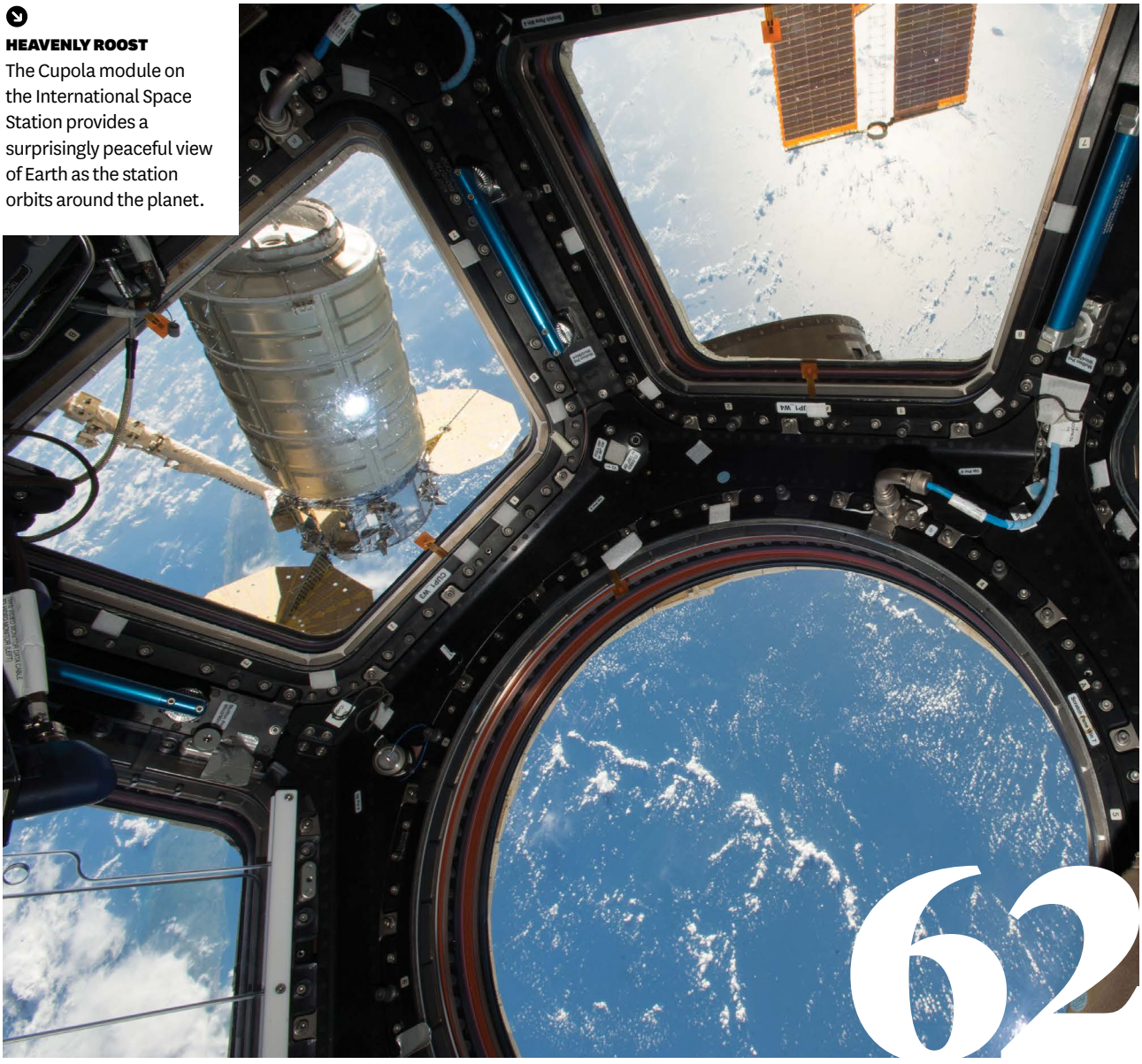

**HEAVENLY ROOST**
The Cupola module on the International Space Station provides a surprisingly peaceful view of Earth as the station orbits around the planet.

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**EXOTIC TASTES**
The Cloud Lounge in Arlington, Va., reminds Johnny Jones, IA 02, of his diplomatic tours in the Middle East.

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Ryan Donnell

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# FEEDBACK

## KEEPING ME PROUD

I thoroughly enjoy the *Georgia Tech Alumni Magazine*, reading most stories in each issue. In the Winter 2017 issue (Vol. 93 No. 4), I particularly appreciated the story on the 100th anniversary of ROTC at Tech.

My dad, Reuben Kyle, Jr., ME 24, was commissioned a 2nd Lieutenant in the U.S. Army Air Service in June 1924 after graduating from the Institute. I have the graduation program listing him and the dozen or so graduating ROTC cadets of that year. He retired from the U.S. Air Force after serving 32 years. One of his assignments in 1949 and 1950 was assisting with Air Force ROTC programs around the country.

Though I don't recall it, I feel sure that he would have been involved with the establishment of the program at Tech. Among his proudest achievements was his degree from Tech along with his military service.

In 1962, I was commissioned a 2nd Lieutenant in the U.S. Air Force when I completed my own degree at Tech. The ROTC program helped me in several ways to graduate and, along with degrees from two other universities, my Georgia Tech degree is one of my proudest accomplishments.

Reading all the stories in the *Alumni Magazine* and the ongoing successes of my fellow Ramblin' Wrecks every issue makes me prouder of my attendance at Tech.

**REUBEN KYLE, III, IM 62**
**MURFREESBORO, TENN.**

## HIDDEN EXPERTISE

I thoroughly enjoyed the article on the "hidden" underground cistern on Georgia Tech's campus in the last issue of the *Alumni Magazine*. I am working on a project for the University of Mississippi Medical Center (UMMC) in Jackson and I am looking for innovative ways UMMC can provide detention storage in


an urban environment. I think we can learn a thing or two about what Tech has done.

**BILLY E. COLSON, P.E., CE 63**
**CANTON, MISS.**

## A LESSON NO LONGER TAUGHT AT TECH

During the summer quarter of 1962, a scheduling quirk put around 20 of us freshmen in a single Physical Training class split pretty evenly between needing swimming, gym and track credits. Coach (Fred) Lanoue decided that we would have a combination swimming and track class, the latter taking place at Grant Field, and spiced it up so that if we ran a mile a day during the week we'd get an "A"—if we completed all the other routines he'd come up with for us.

I remember the run-a-mile/walk-a-mile/swim-a-quarter-of-a-mile challenge, all in less than 35 minutes, as the particularly testy one.

He also took us through staying afloat for 45 minutes with our hands tied behind us, going to the bottom of the deep end of the pool to read a message he had strapped to a block of rubber (it said "come up on the other side"), swimming two lengths of the pool underwater without surfacing and others that I cannot remember.

I learned a lot about myself during that summer under Coach Lanoue, and I regret that today's students at Tech no longer get the chance to undertake those same lessons.

**ROOKIE BRANAM, CHE 66**
**CHESTERFIELD, VA.**

## WHERE DID "MA TECH" COME FROM?

I've read in more than one issue of the *Alumni Magazine* where students and alumni refer to the Institute as "Ma Tech." Where did this "Ma Tech" stuff come from? I don't remember any mothering when I was there. It was more like "Drill Instructor Tech" then.

**JAMES MOSES, ME 59**
**HUNTSVILLE, ALA.**

*We asked the director of Georgia Tech Living History, Marilyn Somers, where "Ma Tech" might have originated, but she says there's no known specific time or reason for this personification of the Institute. It most likely started organically with students and alumni. Doing some quick research, we found a couple references to "Ma Tech" going back into the 1990s (as used by student writers in* The Technique*), but it's possible this term of endearment goes back much further. Do any of you recall using the term when you were students? Or as alumni? If so, please let us know when and on what occasion.—**The Editors***

**Want to get in touch?** Send letters to: Editor, Georgia Tech Alumni Magazine, 190 North Ave. N.W., Atlanta, GA 30313, or **editor@alumni.gatech.edu**. Share your personal news, birth and wedding announcements (with photos!), out-and-about snapshots and in memoriam notices at **gtalumni.org/magazine**.


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# Around Campus


Roger Slavens

## A BLOSSOMING CAMPUS

While Tech students, faculty and staff had to contend with a couple spurts of snow this winter, budding flowers and tree blossoms greeted them on campus by mid-February, thanks to some very welcome warm weather and sunny, blue skies.

# All Eyes on Georgia Tech

The Institute's increasing rankings and accolades showcase the prowess of our academics, innovativeness and much more.

BY ROGER SLAVENS

**ALUMNI WHO'VE STEPPED BACK** onto campus in recent years can't help but notice how much has changed at Tech—the facilities, the students, the steady growth across the Fifth Street Bridge into Midtown Atlanta—and how much has stayed the same.

The Institute is bigger, that's for sure. Enrollment used to be a few thousand young men training to become engineers. Now it's made up of nearly 27,000 diverse students committed to changing the world—from designing better ways to live to creating their own startups to leading the future of public policy.

Georgia Tech is better, too. And the rest of the world recognizes it. The Institute's accolades and rankings continue to grow, soundly entrenching Tech's place among the top research universities in the world. For instance, 12 of Georgia Tech's undergraduate programs rate among the Top 10 in the United States, according to the *U.S. News & World Report* (2017 rankings).

However, naming just one laurel at a time does Tech's steadily increasing reputation on the world stage something of an injustice. For the full effect, you have to look at a wider range of global acclaim.

## GEORGIA TECH: WE'RE NO. 1

**The Smartest Students**
#1 Smartest Public College in America (SAT Average of 1400)
*Source: Business Insider*

**The Best Value in Higher Education**
#1 Annual Return on Investment
*Source: PayScale.com*

**The Most Real-World Experiences**
#1 Largest Co-Op Program in the Nation (35 percent participation by Tech undergrads)

## THIS *DOES* COMPUTE

**#8 Best Computer Science Program in the World** (College of Computing)
*Source: 2018 Times Higher Education World University Rankings*

**#9 Best Graduate Computer Science Program in the U.S.**
Three programs of study ranked in the Top 10: #6 A.I., #6 Systems, #8 Theory
*Source: U.S. News & World Report*

**#1 National Outstanding Program:**
Online MS in Computer Science
*Awarded by the University Professional & Continuing Education Association*

## HELLUVA ENGINEERING COLLEGE

**#4 Best Undergraduate Engineering Program (U.S.)**

**#7 Best Graduate Engineering Program (U.S.)**

**100%** of Tech's undergraduate and graduate engineering degree programs rank in the **Top 10 nationally.**
*Source: U.S. News & World Report*

## the BASELINE

80% **PERCENT OF TECH STUDENTS** who graduate with job offers

3 **NUMBER OF TECH FACULTY MEMBERS** recently selected for the National Academy of Engineering

## WE MEAN BUSINESS

**#32 Best** Undergraduate Business Program in the U.S. (Scheller College of Business)
5 Programs Ranked in Top 20

**#6** Quantitative Analysis
**#9** Management Information Systems
**#12** Production/Operations Management
**#16** Supply Chain Management/Logistics
**#29** Best Full-Time MBA Program
**#30** Best Evening MBA Program
*Source: U.S. News & World Report*

**#15** Executive MBA Program in U.S.
*Source: Financial Times*

**#1** MBA Career Services in the World (Scheller Jones Career Services)
*Source: Financial Times*

## SPECIALIZED SUPERLATIVES

**#2** Best Graduate School for Public Affairs Information & Technology Management (Ivan Allen College of Liberal Arts)
*Source: U.S. News & World Report*

**#7** Top Graduate Program in Urban Planning (College of Design)
*Source: Planetizen*

**#14** Top School for Game Design (Ivan Allen College of Liberal Arts)
*Source: Animation Career Review*

**#28** Chemistry Program in the World (College of Sciences)
*Source: The Best Schools*

## INNOVATION & ENTREPRENEURIAL LEADERSHIP

Georgia Tech is the only higher ed institution named to *Fast Company*'s list of **"World's Most Innovative Companies"**

**#12** Most Innovative University Overall and **#6** Most Innovative Public University in U.S.
*Source: U.S. News & World Report*

Advanced Technology Development Center (ATDC) named one of the **Top 12 Incubators Changing the World** by *Forbes* magazine. **ATDC** is one of the longest-running and most successful university affiliated incubators in the U.S., with more than $3 billion raised by 170 graduates.

**Georgia Tech Research Corporation** ranks **#32** on the list of Worldwide Universities Granted U.S. Utility Patents.
*Source: National Academy of Inventors and Intellectual Property Owners Association*

## SUSTAINABILITY PIONEERS

**Georgia Tech campus** rated as Level II Arboretum, with more than 400 acres filled with nearly 12,000 trees of approximately 130 species. (Less than 25 universities worldwide earned this designation.)
*Source: ArbNet Arboretum Accreditation Program and the Morton Arboretum*

**Now Under Construction:** The Kendeda Building for Innovative Sustainable Design. It's the **First Living Building Challenge** 3.1-certified building of its size and function in the Southeast.

**1 of 33** Bee City USA campuses designated as such in the nation

## DIVERSE DEGREE HOLDERS

**#1 in Engineering Degrees** awarded to **Women** in the U.S.
*Source: American Society for Engineering Education*

**#1 in Engineering Degrees** Awarded to **All Minorities** in the U.S.
*Source: Diverse: Issues in Higher Education magazine*

**Top 10** in degrees awarded to **African Americans** in architecture & engineering
*Source: Diverse: Issues in Higher Education magazine*

## OVERALL EXCELLENCE

**#7** Public University in the U.S.
*Source: U.S. News & World Report*

**#33** University (Overall) in the World
*Source: 2018 Times Higher Education World University Rankings*

35,600 **RECORD-SETTING NUMBER** of students who applied to be part of Tech's next freshman class

4,677 **NUMBER OF STUDENTS** admitted through Early Action for the 2018-19 school year

# SpaceX Success Clears Way for Historic Georgia Tech Spacecraft

BY JASON MADERER

Next Falcon Heavy mission is expected to include Prox-1 satellite built by faculty and students on campus.

**THEY CLAPPED WHEN IT CLEARED THE LAUNCH PAD.** They oohed in awe as the booster rockets separated, then roared when the pair landed in synchronicity. And they howled with laughter when they saw a car in space.

"It was awesome! It was unbelievable to see something so historic," says Swapnil Pujari. He was one of 30 or so Georgia Tech aerospace engineering students crowded into a lab to watch a livestream of SpaceX's first test flight of the world's most powerful rocket — the Falcon Heavy.

From the sound in the room, the launch was an unquestionable success.

"I got goosebumps when I saw the two boosters land at the same time," says William Jun, a fourth-year undergraduate in the Daniel Guggenheim School of Aerospace Engineering. "I feel like I've witnessed the beginning of a new era."

It's hard to imagine what he'll feel the next time the Falcon Heavy launches.

Last month's launch only carried one piece of cargo—a red Tesla Roadster that is expected to orbit the sun for the next billion years. But the next Heavy rocket will be stuffed with satellites.

## the BASELINE

**20** **NUMBER OF CORPORATE INNOVATION CENTERS** now at Tech since adding Chick-fil-A

**10th** **CONSECUTIVE YEAR** of the InVenture Prize student innovation competition, which took place at Tech on March 16

One of them is scheduled to be Prox-1, a 154-pound, rectangular-shaped metal box that was built and tested by Jun, Pujari and other Tech students. It's the first spacecraft built on campus that will fly in space.

"This is the part of the space industry that we live for," says Professor Glenn Lightsey, who watched the launch with the students. "Ultimately, there is a day when you find out if the thing you've thought about and planned for actually works or not. Today it happened for SpaceX. Six months from now, it will happen for us at Georgia Tech."

Prox-1 is a 24-by-22-by-2-inch satellite that will deploy a smaller spacecraft, LightSail 2, which will attempt the first controlled solar sail flight in Earth orbit. As that sail unfurls, Prox-1 will move and observe LightSail from a short distance and acquire images of the glimmering structure in action. Georgia Tech will serve as mission control.

"Our students are going to have their hardware in space, making measurements and sending their data back to Earth," Lightsey says. "This is a really unique experience that wasn't even possible before this century. It's a new way of doing things in STEM [science, technology, engineering and mathematics] education."

Prox-1 is currently at the Air Force Research Lab in New Mexico, undergoing a series of tests to make sure the satellite can withstand the rugged, violent ride inside the Falcon Heavy. It's one of the final pre-flight steps for a six-year project that has included more than 400 Georgia Tech students. From there, it will be shipped to Florida and await an official launch date from SpaceX.

## INVENTURE PRIZE WINNERS EARN NSF GRANT

**RECENT GEORGIA TECH GRADUATES** were awarded a National Science Foundation (NSF) Small Business Innovation Research grant to continue working on a device to improve the safety of firefighters. While they were undergraduate students, Zack Braun, CE 17, and Tyler Sisk, EE 17, invented FireHUD as a real-time wearable system and heads-up display that provides biometric and environmental data to firefighters on the job and officials responding to a fire. The device measures heart rate, body temperature and external temperatures that can help predict fatigue and prevent injuries.

FireHUD won the 2016 InVenture Prize, an annual innovation competition for Tech undergraduates. Braun and Sisk also participated in CREATE-X, the Institute's specialized curriculum designed to enhance and support student entrepreneurship.

Another Georgia Tech graduate, Joseph


Boettcher, EE 17, also joined the company. All three are working on the device full time.

The NSF grant will fund the company for a full year, says Braun, who serves as FireHUD CEO. This spring FireHUD plans to launch pilot studies with local fire departments and hopes to deploy about 25 units. **—LAURA DIAMOND**

## A TRICK-SHOT MACHINE FOR THE HARLEM GLOBETROTTERS


**WHEN THE ATLANTA-BASED HARLEM GLOBETROTTERS** thought about doing something new, fun and complex for their unique showcase of hoops skills, they only had to look across town to get it done. Students in Georgia Tech's College of Design recently teamed up with the world-famous basketball team to make a shot like no other. They built a trick-shot machine in the Digital Fabrication Lab that takes a basketball through a series of 12 Rube Goldberg-esque stunts—including trampolines, a giant hamster wheel, boxing gloves and snare drums—and eventually shoots and scores a basket on its own. A video of the working machine, which was operated by Globetrotters star "Buckets" Blakes, will be played at four upcoming games in Atlanta, showing off Yellow Jacket design prowess (and sense of fun). See the video and learn more about how they built the contraption at **design.gatech.edu/feature/harlem-globetrotter-trick-shot-machine.**

2 **NUMBER OF MAJOR CONSTRUCTION PROJECTS** beginning this semester: the Campus Safety Building and The Kendeda Building for Innovative Sustainable Design

$70,000 **AVERAGE STARTING SALARY** for Tech undergraduates

# The Force is Strong

BY JASON MADERER

A robotic arm straight out of *Star Wars* allows amputee to control individual prosthetic fingers via ultrasound technology.

**LUKE SKYWALKER'S BIONIC HAND** is a step closer to reality for amputees in this galaxy. Researchers at Georgia Tech have created an ultrasonic sensor that allows amputees to control each of their prosthetic fingers individually. It provides fine-motor hand gestures that aren't possible with current commercially available devices.

The first amputee to use it, a musician who lost part of his right arm five years ago, is now able to play the piano for the first time since his accident. He can even strum the *Star Wars* theme song.

"Our prosthetic arm is powered by ultrasound signals," says Gil Weinberg, the College of Design professor who leads the project. "By using this new technology, the arm can detect which fingers an amputee wants to move, even if they don't have fingers."

Jason Barnes is the amputee working with Weinberg. The 28-year-old was electrocuted during a work accident in 2012, forcing doctors to amputate his right arm just below the elbow. Though Barnes is missing his hand and most of his forearm, he does have muscles in his residual limb that can control prosthetic fingers.

Barnes' everyday prosthesis is similar to the majority of devices on the market. It's controlled by electromyogram (EMG) sensors attached to his muscles. He switches the arm into various modes by pressing buttons on the arm. Each mode has two programmed moves, which are controlled by him either flexing or contracting his forearm muscles. For example, flexing allows his index finger and thumb to clamp together; contracting closes his fist.

Rob Felt

"EMG sensors aren't very accurate," says Weinberg, director of Tech's Center for Music Technology. "They can detect a muscle movement, but the signal is too noisy to infer which finger the person wants to move. We tried to improve the pattern detection from EMG for Jason but couldn't get finger-by-finger control."

But then the team looked around the lab and saw an ultrasound machine. They partnered with other Georgia Tech professors—Minoru Shinohara and Chris Fink in the College of Sciences and Levent Degertekin in the Woodruff School of Mechanical Engineering—and attached an ultrasound probe to the arm. The same kind of probe doctors use to see babies in the womb could watch how Barnes' muscles moved.

"That's when we had a eureka moment," Weinberg says.

When Barnes tries to activate the muscles that would have moved his amputated ring finger, the muscle movements differ from those seen when he tries to move any other digit. Weinberg and the team then fed each unique movement into an algorithm that can quickly determine which finger Barnes wants to move. The ultrasound signals, buoyed by machine learning, can detect continuous and simultaneous movements of each finger, as well as how much force he intends to use.

"It's completely mind-blowing," Barnes says. "This new [robotic] arm allows me to do whatever grip I want,

on the fly, without changing modes or pressing a button. I never thought we'd be able to do this."

This is the second device Weinberg's lab has built for Barnes. His first love is the drums, so the team fitted him with a prosthetic arm with two drumsticks in 2014. He controlled one of the sticks while the other moved on its own by listening to the music in the room and improvising.

The device gave him the chance to drum again. The robotic stick could play faster than any drummer in the world. Worldwide attention has sent Barnes and Weinberg's robots around the globe for concerts across four continents. They've also played at the Kennedy Center in Washington, D.C., and at Moogfest.

That success pushed Weinberg to take the next step and create something that gives Barnes the dexterity he's lacked since his accident in 2012.

"If this type of arm can work on music—something as subtle and expressive as playing the piano—this technology can also be used for many other types of fine motor activities such as bathing, grooming and feeding," Weinberg says. "I also envision able-bodied persons being able to remotely control robotic arms and hands by simply moving their fingers."

## ALEX POWELL, MS CS 05, WINS ACADEMY AWARD

**GEORGIA TECH NOW CAN CLAIM** three Academy Award winners in the past four years, all from the College of Computing. Alex Powell, MS CS 05, is the latest recipient of the Academy Award for Scientific and Technical Achievement. He took the honor home for his work on Premo, an animation system adopted by Dreamworks in 2013.

The system brought a revolutionary change in animation at the studio, one that allows for real-time manipulation of 3-D characters and gets the tools out of the way so the creative process can remain the focus. But Premo's future was not always predestined.

Powell and his team were still working to complete the software for use on *How to Train Your Dragon 2* as the movie went into production. The fantasy sequel was the studio's most ambitious film to date and called for dragon-filled skies and many large-scale set pieces on screen at the same time.

The studio committed to the untested software with a multimillion dollar franchise and the gamble paid off. Dreamworks now uses Premo on all its films.

Powell says that what caught the Academy of Motion Picture Arts and Sciences' attention was how the software turned animators' work from "fast enough" into "interactive."

"Instead of continuing to have animation software grow more sluggish along with much of the industry, my team and I re-focused on simplifying and building core technologies that would retain the quality but shift us towards a real-time, natural, direct pen- or touch-based interface," Powell says.

Powell shares a close connection with another Academy Award winner. He and Brian Whited, CS 03, MS CS 05, PhD CS 09, who was honored last year for his work at Disney Animation Studios, were roommates at Tech. They took many of the same classes, and worked on many graphics projects together.

Alumnus James O'Brien, PhD CS 00, won the same science and technical Academy Award in 2015. **—JOSHUA PRESTON**

## PETERSON SELECTED BY WHITE HOUSE FOR SPACE ADVISORY POSITION

**GEORGIA TECH PRESIDENT G.P. "BUD" PETERSON** has been named by the White House as a candidate for the National Space Council's Users Advisory Group. The announcement was made by Vice President Mike Pence, who chairs the council. The team met for the first time in February at the Kennedy Space Center in Cape Canaveral, Fla. Peterson is the only higher education candidate among the group of 29 advisors. He's joined by the CEOs of Boeing, Lockheed Martin and Northrop Grumman; the president of SpaceX; and five astronauts, including Buzz Aldrin; as well as other leaders.

"Georgia Tech has a long-standing culture of engaging and partnering with U.S. space and defense industries, and I am honored to serve along with these industry and government leaders," Peterson says. "Through partnerships with industry and the federal government, U.S. research institutions can support our nation's strategic space and security needs, helping the U.S. maintain its leadership position at the forefront of technological innovation."

Peterson's early career includes working as a research scientist at NASA's Johnson Space Center in Houston, as well as conducting independent research as a faculty researcher for both NASA and a number of aerospace companies. Throughout his career, Peterson has played an active role in helping to establish national education and research agendas with the likes of NASA, the Office of Naval Research, the Department of Energy, the National Research Council and the National Academy of Engineering. He is a member of the National Science Board.

The National Space Council and Users Advisory Group are expected to focus on regulatory reforms in the commercial spaceflight industry. According to the White House, Peterson and candidates await official appointment by the administrator of NASA. The advisory group is tasked to fulfill President Donald J. Trump's mandate to "foster close coordination, cooperation and technology and information exchange" across our nation's space enterprise. **—JASON MADERER**

# Go Take a Long Hike

BY KELLEY FREUND

Freshman Olivia Plumb indulged in a "gap year" to traverse the entire Appalachian Trail by herself before taking on Tech.

**WHEN SHE WAS YOUNGER,** Olivia Plumb remembers going on a two-day hike with a group of family and friends on the Benton MacKaye Trail, which shares a southern terminus with the famed Appalachian Trail near Blue Ridge, Ga.

When the group finished the hike, Plumb saw some people sitting in the parking lot. They looked skinny. And homeless.

Her father went up to them and asked if they needed help. "No! We're fine!" they answered. "We just hiked the Appalachian Trail."

At the time, Plumb thought to herself, "Why would anyone do that?" Years later, she would spend 142 days hiking from Georgia to Maine to find out.

### "THIS WAS A TERRIBLE IDEA"

The Appalachian Trail, often referred to simply as the "AT," extends over 2,000 miles between Springer Mountain in Georgia and Mount Katahdin in Maine, passing through 14 states along the way. More than 2 million people hike on part of the trail at least once each year. But far fewer take on the whole thing. Even fewer still actually succeed. And only a handful will conquer it primarily by themselves. Plumb was one of these rare adventurers.

The day Plumb ran into those AT hikers in the parking lot was the first time she heard of people attempting to complete the route in its entirety. She thought they were crazy.

But then, in high school, she pushed her hiking skills further by going on a two-week backpacking trip in New Mexico. When it was over, her friends were glad to be home—but Plumb wanted to keep hiking.

In 2016, two weeks before the deposit she had given to Georgia Tech became nonrefundable, the fiercely independent Plumb told her parents she wanted to take a gap year to hike the Appalachian Trail by herself. They gave her a resounding no. But Plumb was unflappable in her determination.

Despite her parents' concerns, she took the year off and worked to save up money for the trip—eventually setting off on her journey on Feb. 14, 2017.

That very first night on the trail (her dad traveled with her the first week on the AT), when it poured rain complete with thunder, lightning and high winds, Plumb had those same thoughts she had years ago when she met those thru-hikers. She did not sleep a wink huddled inside her small backpacking tent.

Plumb was just nine miles beyond Springer Mountain, Ga., as she thought to herself: "This was a terrible idea." The worst part? When she got up the next morning, she still had more than 2,180 miles to go.

*Tray Mountain Shelter, Georgia: "How I've learned to deal with hiking on wet rocks: approach them very slowly, hands in the air, and profess your inferiority to their power. Proceed with caution, and they may choose not to bite."*

### TICK TOCK: AN EYE ON THE CLOCK

The Appalachian Trail is definitely a physical feat. Plumb averaged about 20 miles per day carrying a 38-pound backpack, pushed through snowdrifts up past her knees, climbed 6,643 feet to the top of Clingman's Dome (the highest point on the AT) and traversed through Mahoosuc Notch, a stretch of boulders considered the hardest mile on the trail.

But more than anything, the hike proved to be a mental game. How do you keep going when you didn't sleep the night before and now you have to hike for hours on end over wet rocks?

Plumb did the opposite of what most hikers do: She kept an eye on the clock.

"I'm pretty anal retentive about time—and that's putting it lightly," Plumb says. "If I'm less than 10 minutes

**"I remembered that if I were not hiking, I'd be working in a retail store helping someone find underwear," Plumb says. "No matter how much the rain and cold sucked, it was better than the alternative."**



Courtesy of Olivia Plumb


Olivia Plumb, now a mechanical engineering student at Tech, was determined to hike the entire length of the Appalachian Trail, from Georgia to Maine.

early [to an appointment], I'm nervous."

While most of the people she met on the AT just woke up when they wanted to and then hiked until they were tired, Plumb carefully planned each day, from what time she would break camp to when she would eat lunch to how many miles she would hike. This mentality earned her the trail nickname Tick Tock.

"It helped to break this huge thing down into small chunks," Plumb says. "Plus, every time I thought there were other things I'd rather be doing, I remembered that if I were not hiking, I'd be working in a retail store helping someone find underwear. No matter how much the rain and cold sucked, it was better than the alternative."

*Damascus, Va.: "Some of my most rewarding moments were times spent with other people."*

### HELP ALONG THE WAY

They call it trail magic: It's a tradition of charity on the AT. Sometimes it's finding rice crispy treats left behind at a shelter for other hikers. Other times a temporary hiking partner buys you a burger when you get into town.

Plumb experienced both out on the trail, plus more "magic" after a particularly bad day when she crossed into Virginia. Her feet hurt. She hadn't been eating enough, plus she had run out of water. When Plumb reached a hostel in Damascus, she realized that somewhere in the last 20 miles, she had lost her $300 jacket. She told the hostel owner about it but doubted she would ever see the coat again.

**"I had a lot of faith in humanity restored on the trail," Plumb says. "There are people who don't even know you that are willing to help you."**

A few days later, however, the owner called her and said someone had brought it in. He then drove two hours to drop Plumb's jacket off at her next stop.

"I had a lot of faith in humanity restored on the trail," Plumb says. "There are people who don't even know you that are willing to help you. And I thought that was really awesome."

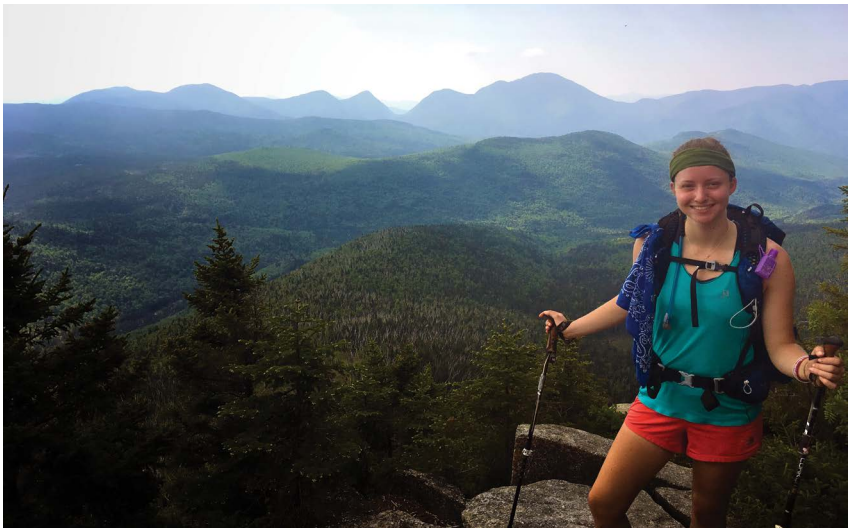
While Plumb hiked much of the AT by herself, she did make friends along the way and often they would travel together in a pack—both for company and safety. Also, her family and boyfriend met up with her a few times at some of the key stops to give her some support, lift her spirits and even carry her pack to take a bit of the burden off her for a spell.

*Vernon, N.J.: "My proudest moment on trail was eating 11 Taco Bell tacos followed by four scoops of ice cream and managing to not throw up on the following climb named Stairway to Heaven. It sure as hell didn't feel like heaven when I got there."*

### PUSHING THROUGH MISTAKES ...

The Appalachian Trail teaches you lessons—the most important being that sometimes you just have to keep smiling. Things will go wrong. You will walk in the wrong direction for two miles. You'll drop your toothbrush in the dirt. Or you'll suffer from heat exhaustion and spend the night making 14 trips to the bathroom, projectile vomiting all the way.

Yes. Plumb did all those things. But luckily, her sense of humor kept her going. "If something bad happens, you can either choose to laugh or cry, and I tried to laugh when I could," Plumb says. "There were moments when I sat down and cried, but the line between



The months-long journey was filled with triumphant highs and miserable woes for Plumb. In particular, she could have done without all the rain.

discontentment and a funny mistake is one that's easily crossed, at least for me. I think humor made all my stupid mistakes a whole lot easier to stomach."

*Somewhere in Vermont: "Knees, I just need you to get through today."*

### ... AND THE LONG GRIND

When you're on a 2,000-mile trail, at what point exactly do you ask yourself, "Hey, am I almost done?" While Plumb started to feel like she was getting over the hump as soon as she was out of Virginia (which is home to about a quarter of the entire trail), it wasn't until she had about 500 miles left to go that hikers she met along trail would tell her she was almost there.

Unfortunately, the hardest parts lay ahead. "The trails in New Hampshire and Maine will beat you down," Plumb says. "They take a lot of pride about keeping the wild, wild. Which I can respect. But it means that when they picked where to put trails, their thought process was, if we put it up rock slides, we don't have to clear vegetation. A lot of the trails are just rock scrambles—which is fun for half a mile."

Since the end of the AT is more difficult than the beginning, Plumb had heard stories about people getting injured very close to the finish line. She tried to rein in her excitement because she thought she would jinx herself and break an ankle so close to her goal. Meanwhile, every part of her body hurt. And although she considers herself very much an introvert, she couldn't wait to see her family and friends again. She was ready for the end.

*A few months out of the woods, at Georgia Tech: "I'm not worried about dying, so there's that."*

### A NOT-SO-CHANGED PERSON

The day Olivia Plumb emerged from the woods wasn't one of great hoopla. In fact, her parents were traveling out of the country and she wouldn't see them for another week and a half. And when she returned to Georgia, she wasn't this changed person who had discovered her true self along the hike.

If anything, Plumb says, her time on the Appalachian Trail made her more comfortable with who she already was. She still liked being a stickler for time—the trail did not beat that trait out of her, as some told her it would. And the parts of her body that she had trouble confronting in the mirror before she left, she was now OK with. Her legs may still not have looked the way she wanted after the trek, but they had propelled her up countless mountains.

But that's not to say that Plumb came out of the experience entirely unchanged. Today, if she makes a bad grade on a test, she can look past it and put it into perspective, remembering clearly the time she was hiking through North Carolina and frightened about freezing to death.

So, why did Plumb set out that day in February, when she knew she would face far greater risks than failing an exam? She says it was simply something that she really wanted for herself. In a world where she had always been told what to do—and where her only accomplishments had been academic ones—she longed to step back for a moment and go for a walk, and to test herself.

To her parents' relief, Plumb headed straight to college after she finished hiking the AT, as promised and on time, of course. In fact, after using her brain for counting the miles (as well as scoops of ice cream and tacos), she was excited to put it back to higher work at Georgia Tech.

Plumb now studies mechanical engineering, but she's getting herself ready to take on a long-distance trail again. In her mind's eye, she has her hiking shoes set for the Pacific Crest Trail about four years or so from now, as a graduation gift to herself. ▲

Courtesy of Olivia Plumb

# Asteroids May Hold Secret to Life on Earth

**IN POPULAR CULTURE,** asteroids play the role of apocalyptic threat, get blamed for wiping out the dinosaurs and offer an extraterrestrial source for mineral mining.

But for researcher Nicholas Hud, asteroids play an entirely different role: that of time capsules showing what molecules originally existed in our solar system. Having that information gives scientists the starting point they need to reconstruct the complex pathway that got life started on Earth.

As director of the NSF-NASA Center for Chemical Evolution at Georgia Tech, Hud says finding molecules in asteroids provides the strongest evidence that such compounds were present on the Earth before life formed. Knowing what molecules were present helps establish the initial conditions that led to the formation of amino acids and related compounds that, in turn, came together to form peptides, small protein-like molecules that may have kicked off life on this planet.

"We can look to the asteroids to help us understand what chemistry is possible in the universe," Hud says.

NASA scientists have been analyzing compounds found in asteroids and meteorites for decades, and their work provides a solid understanding for what might have been present when the Earth itself was formed.

"If you model a prebiotic chemical reaction in the laboratory, scientists can argue about whether or not you had the right starting materials," Hud says. "Detection of a molecule in an asteroid or meteorite is about the only evidence everyone will accept for that molecule being prebiotic. It's something we can really lean on."

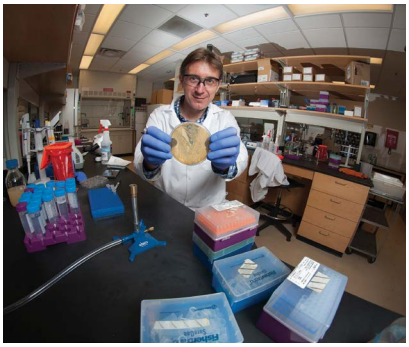
The Miller-Urey experiment, conducted in 1952 to simulate conditions believed to have existed on the early Earth, produced more than 20 different amino acids, organic compounds that are the building blocks for peptides. The experiment was kicked off by sparks inside a flask containing water, methane, ammonia and hydrogen, all materials believed to have existed in the atmosphere when the Earth was very young.

Since the Miller-Urey experiment, scientists have demonstrated the feasibility of other chemical pathways to amino acids and compounds necessary for life.

In Hud's laboratory, for instance, researchers have used cycles of alternating wet and dry conditions to create complex organic molecules over time. Under such conditions, amino acids and hydroxy acids—compounds that differ chemically by just a single atom—could have formed short peptides that led to the formation of larger and more complex molecules, ultimately exhibiting properties that we now associate with biological molecules.

"We now have a really good way to synthesize peptides with amino acids and hydroxy acids working together that could have been common on the early Earth," he said. "Even today, hydroxy acids are found with amino acids in living organisms—and in some meteorite samples that have been examined."**—JOHN TOON, RESEARCH NEWS**

## ANTIBIOTIC BATTLE: SORE THROATS VERSUS SUPER BUGS



**GOT A SORE THROAT?** The doctor may write a quick prescription for penicillin or amoxicillin, and with the stroke of a pen, help diminish public health and your own future health by encouraging bacteria to evolve resistance to antibiotics.

It's time to develop alternatives to antibiotics for small infections, say Georgia Tech experts. It's been widely reported that bacteria will evolve to render antibiotics mostly ineffective against them by 2050 or so, and current strategies to make up for the projected shortfalls haven't worked.

"Antibiotic prescriptions against smaller ailments account for about 90 percent of antibiotic use, and so are likely to be the major driver of resistance evolution," says Sam Brown, an associate professor in Tech's School of Biological Sciences. "It might make more sense to give antibiotics less often and preserve their effectiveness for when they're really needed. And develop alternate treatments for the small infections."

Drugmakers' focus on new treatments for extreme infections has bothered Brown and other researchers because the main arena for resistance evolution occurs is in small infections. "We felt like there was a disconnect going on here," he says. Brown and other Tech researchers propose a different approach: "Take the easier tasks, like sore throats, off of antibiotics and reserve antibiotics for these really serious conditions."

Developing non-antibiotic therapies for strep throat, bladder infections, and bronchitis could prove easier, thus encouraging pharmaceutical investment and research. Researchers believe if doctors had enough alternatives for the multitude of small infections they treat, they could help preserve antibiotic effectiveness longer for more serious infections. **—BEN BRUMFIELD, RESEARCH NEWS**

## THE POWER OF STICKY FEET

**A GECKO SCAMPERING UP A WALL** or across a ceiling has long fascinated scientists and encouraged them to investigate how to harness lizard's mysterious ability to defy gravity. While human-made devices inspired by gecko feet have emerged in recent years, enabling their wearers to slowly scale a glass wall, the possible applications of gecko-adhesion technology go far beyond Spiderman-esque antics.

Georgia Tech's Michael Varenberg, an assistant professor in the George W. Woodruff School of Mechanical Engineering, is looking into how the technology could be applied in a high-precision industrial setting, such as in robot arms used in manufacturing computer chips.

"There are numerous ways that gecko adhesion could be used in an industrial setting, especially in handling delicate materials like the silicon wafers used in manufacturing computer processors," Varenberg says.

The gecko gets its unique ability through the use of tiny hairs that interact with surfaces at an intermolecular level. It's a one-two process during which the tiny film-like hairs are pressed onto the surface and engaged with a shearing action. They then either hold to the surface or easily release when pulled away at different directions.

For that process to be replicated in a factory using man-made adhesive technology, researchers must determine the precise angles at which to apply a load to get or release the grip between the robotic arm and the silicon wafer.

Varenberg's team tested a wall-shaped microstructure surface molded out of polyvinylsiloxane and designed to mimic the gecko's attachment ability. Their tests showed that the optimum attachment angle varies between 60 and 90 degrees, while the microstructure detach at zero force when the pull-off angle reaches 140-160 degrees.

"That relatively wide range to control the attachment and pulling away for these wall-shaped microstructures will make it easier to build a mechanical process around that tolerance," Varenberg says.

That could hold promise for replacing a current method used during the processing and inspection of silicon wafers in computer processor production.

Robot arms employ ceramic chucks that use vacuum or electrostatic grippers to pick up and handle the wafers. Soon after installation, the ceramic contact posts start wearing down due to cyclic loading and release particles that can potentially contaminate the backside of the wafer leading to lithography defects on its front side.

"Using gecko adhesion microstructures instead would be better because they do not generate any damage to wafers and do not wear over time," Varenberg says. **—JOHN BROWN, RESEARCH NEWS**

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# On the Field




Danny Karnik/Georgia Tech Athletics


## DISPLAY OF POWER

Preseason All-American catcher Joey Bart (right) gets a congratulatory clank of the helmet from his teammate Justin English after Bart belted a home run. Loaded with talent, the Yellow Jackets men's baseball team hopes to make a resurgent push into postseason contention this spring and summer.

# Second Acts

BY BILL CHASTAIN, IM 79

How three former Tech star athletes—Mark Teixeira, Calvin Johnson and Aileen Morales—have moved on from the pro ranks to pursue new careers.

**ALL PROFESSIONAL SPORTS CAREERS** eventually come to an end, usually early enough so there are still productive decades left to pursue other passions. Some athletes go on to leverage their expert knowledge as coaches and broadcasters, while others use their stature to explore careers as philanthropists and business owners. The *Alumni Magazine* recently caught up with three of Georgia Tech's most acclaimed collegiate sports standouts—and successful pro athletes—who have recently embarked upon their second careers.

## MARK TEIXEIRA, CLS 02, BROADCASTER & REAL-ESTATE DEVELOPER

**FORMER MAJOR LEAGUE AND GEORGIA TECH SLUGGER** Mark Teixeira has had little trouble adjusting to life after baseball.

"Because of my injuries, I couldn't play at the level that I was accustomed to," says Teixeira, who retired from pro baseball following the 2016 season. "I had done everything I wanted to do in my career. It was the right time to go and do something else."

The Texas Rangers selected Teixeira out of Georgia Tech with the fifth pick of Major League Baseball's 2001 draft. In 14 seasons with the Rangers, Atlanta Braves, Los Angeles Angels of Anaheim and New York Yankees, he hit .268 with 409 home runs and 1,298 RBIs. In addition, he played in three All-Star Games, won five Gold Gloves, won three Silver Sluggers, and won a World Series title with the Yankees in 2009.

Being retired doesn't mean Teixeira likes being idle, which is why he now works at ESPN, sharing his valuable insights as a former star player as a baseball analyst and commentator. "I do half of their Sunday night baseball, the pregame telecasts, I do All-Star Game coverage, I do playoff game coverage, World Series coverage, the fun events," Teixeira says. "So, I've really enjoyed doing that from an analyst's perspective.

"ESPN pays me to tell it like it is. To see something and then analyze it. And if that ends up being critical, so be it. I haven't had any problems. I don't take cheap shots. I kind of call it how it is. And I think I'm respectful when I do that."

If that wasn't enough to keep him busy, Teixeira also

Mark Teixeira won a World Series championship with the New York Yankees and now leverages his baseball expertise as an ESPN radio and TV analyst.

*the* **BASELINE**

**6** **NUMBER OF SCHOOL RECORDS** beaten by the women's swim and dive team during the 2017-18 season so far

**2023** **PROJECTED COMPLETION** date for enhancements to Bobby Dodd Stadium

Megatron, aka Calvin Johnson, set numerous receiving records at Tech and in the NFL, but retired from the sport early and is focused on his charitable efforts.

owns a real estate company in Atlanta, called Urban Creek Partners.

"For me, real estate is tangible; it's something I can touch and feel, and it gives me a chance to make other people happy," Teixeira says. "It's really exciting because I can be outside and walking around and creating places. We have a huge mixed-use development in Northwest Atlanta that we'll be breaking ground on this year. To me it's one of the coolest projects that will hit the city of Atlanta for quite some time. Being able to create something from the ground up is very rewarding."

Teixeira will be in the Yankees camp as a special instructor during spring training, but don't look for any deeper involvement with a team. He's enjoying life too much, which includes spending time with his wife, Leigh, and their three children—Jack, Addison and William—at their home in Greenwich, Conn.

"One of the reasons I wanted to retire was to spend more time with my family and to do new things," Teixeira says. "Signing back up to be on the field isn't conducive to that. I really don't have any desire to do that right now. Ask me in 15 or 20 years and I might have a different answer. But right now, I'm happy with what I'm doing."

While Teixeira is content, there is one aspect of playing baseball that can't be replaced.

"Hitting home runs is something I'll miss until the day I die," Teixeira says. "To be able to run around the bases when the fans are cheering you, I think that's the coolest thing in sports."

**"ESPN pays me to tell it like it is," Teixeira says. "To see something and then analyze it. And if that ends up being critical, so be it. I haven't had any problems."**

## CALVIN JOHNSON, CLS 07, FORCE FOR SOCIAL GOOD

**LEGENDARY TECH WIDE RECEIVER** Calvin Johnson is staying busy these days. But playing football is no longer part of the equation for the former Georgia Tech standout.

Johnson retired from the Detroit Lions after the 2015 season at the relatively young age of 30. Hall of Fame numbers were already on the back of "Megatron's" football card—over 6-and-a-half miles of receiving yardage along with 83 career touchdowns in the NFL. Because he retired in his prime, speculation about a return to the pros has been rampant. But truth be known, Johnson really is

15 **NUMBER OF SEASONS** for Tech's winningest women's head basketball coach, MaChelle Joseph

8,600 **SEATS FILLED DURING** the sold-out men's basketball game between Georgia Tech and Duke

retired from football, even if the feelings derived from Sundays past can't be replicated.

"You really can't replace [playing the games]," Johnson says. "You can't go to a job outside the white lines and get that same feeling. Sunday is your reward for the grind."

Johnson says that being a participant on ABC's *Dancing with the Stars* reality competition last year brought him closest to the rush of competing in the NFL. As you might expect, Johnson went out with a bang on the popular TV show, receiving a perfect score in his finale—a choreographed performance to Little Richard's *Tutti Frutti*. That earned him a third-place finish and some attention in the entertainment world.

**"The biggest thing is to help make a positive impact on our society and help our youth break away from negative influences in their lives," Johnson says.**

More important, retirement has allowed him to get a charge from being able to spend more time with his wife, Brittany, and his son, Caleb. "It's really nice being with them," Johnson says. "I get to spend twice as much time with them than I did when I was playing."

Retirement from the NFL has also afforded Johnson a chance to devote more time to his work at the Calvin Johnson Foundation, which he created 10 years ago.

"The foundation is for children and families who are struggling and need empowerment and direction," Johnson says. "We help feed the homeless and work with domestic abuse victims, and we give scholarships every year. The biggest thing is to help make a positive impact on our society and help our youth break away from negative influences in their lives."

Through his foundation outreach, Johnson has also managed to squeeze in a little football. He personally has helped teach kids how to play the game and even catch like a pro, which has led to gigs for him as a wide-receiver consultant for high school, college and even NFL athletes. He's also started a consulting group to help players transition to life after football, which can mean anything from sharing life advice to helping them make connections to the business world.

Johnson recently was awarded the 2017 Walter Camp Man of the Year for his outstanding college football career and even more impressive social efforts, joining former college football standouts like Roger Staubach (Navy), Gale Sayers (Kansas), John Elway (Stanford) and Jerome Bettis (Notre Dame). "Calvin Johnson was a standout on the football field, worthy of his nickname Megatron," says Walter Camp Foundation president Michael Madera. "However, his work away from the field helping young people reach their goals on and off the field makes him a worthy Man of the Year recipient."

Meanwhile, he was just elected to the College Football Hall of Fame. "The Walter Camp Award was pretty cool," Johnson says. "That's a credit to the people in my family and my support system. My foundation, getting that going. And it's a true testament to the things we've done in the community. The College Football Hall of Fame came out of nowhere. I was surprised to get the letter because a very small percentage of players who played college football get in that fraternity. You can say that's an honor for sure."

If all this doesn't keep Johnson busy enough, he plans to get his real estate license and move from Detroit to Atlanta. Another goal on his radar is to come back to Georgia Tech to complete his degree in management.

## AILEEN MORALES, MGT 09, TECH HEAD SOFTBALL COACH

**AILEEN MORALES ARRIVED AT GEORGIA TECH** in January of 2005 wanting to be an architect. By the time she graduated, she wanted to be a coach. Now she has returned to her alma mater with her dream job and lofty expectations.

In June 2017, Morales was named the sixth women's softball coach in school history. As a player, she ranks as one of the Yellow Jackets' all-time greats. After earning ACC Co-Freshman of the Year honors, she became a three-time all-ACC honoree as a middle infielder. And she earned third-team All-America honors her junior year.

"Having had a great experience at Georgia Tech, once I started on the coaching path, it was always a dream to come back home," Morales says. "Being able to come back and be the leader of the softball program means a lot, because Georgia Tech has done so much for me and my career."

Following a stint as an assistant coach at Tech, she held head coaching jobs at Young Harris College and Radford University. Along the way, she also played two seasons with the Chicago Bandits of the National Pro Fastpitch league, helping them win the NPF championship in 2008. She also gained international experience as a player and a coach for the Puerto Rican national team.

Aileen Morales set numerous records as a player for the Yellow Jackets' softball team and recently returned to Tech to become the squad's sixth head coach.

**"We want to play the game hard," Morales says of her Yellow Jackets squad. "You hustle at every aspect of the game. It should never be an easy competition for anybody we face."**

At Tech, she inherits a team that went 80-125 the last four seasons, including a 19-34 mark in 2017. Those results are a far cry from those compiled during Morales' four-year playing career, when she helped the Yellow Jackets win 185 games, claim the 2005 ACC regular-season and tournament championships, and advance to the NCAA postseason four times.

"The style of softball that I want to play and the vision I have for the program are a little different than the previous coaching staff," Morales says. "We want to play the game hard. You hustle at every aspect of the game. It should never be an easy competition for anybody we face."

Morales has had her work cut out for her.

"Changing that identity, the way that the team carries itself on the field, those have been the biggest challenges, in creating a different atmosphere and demanding more from our players on the field," Morales says.

She also understands the demands of being a Tech student. She changed majors from architecture and graduated in 2009 with a degree in management. She doesn't believe being competitive in the classroom and competitive in athletics should be mutually exclusive.

"I think the players we have do an amazing job off the field," Morales says. "They do all the right things in the community and the classroom. So that's something I'm thankful for. But when you come here to be a part of the softball program, you need to see that level of commitment on the field as well. There's a standard and an expectation for where this program should be."

Long-term, Morales isn't looking any higher up the chain than being a coach, for now. "I love coaching," she says. "I think it's the closest I can get to being a part of the game without actually competing. I don't think there's anything, beyond physically playing, that matches that competitive environment. I love that I get to work with young people. We develop a relationship with them, and we prepare them for what's next."▲

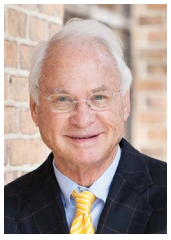
# ON THE FIELD

## JACK THOMPSON, HONORED FOR HIS 50 YEARS ON THE FLATS

**IN FEBRUARY,** Georgia Tech athletics celebrated the 50th anniversary of Jack Thompson's arrival on The Flats with a number of events, including honoring him during halftime at the sold-out Georgia Tech-Duke men's basketball game at McCamish Pavilion.

Thompson arrived at Tech in 1968 as director of football recruiting, a position that he carried out under Bud Carson (1968-71), Bill Fulcher (1972-73) and Pepper Rodgers (1974). He helped recruit the first African-American student-athletes to be awarded scholarships at Tech, including legendary quarterback Eddie McAshan.

Thompson then moved into administration under renowned Athletics Director Homer Rice, and specialized in development efforts. At the Alexander-Tharpe Fund, he spearheaded the fundraising efforts for the construction or major renovation of every athletics facility on Tech's campus. His efforts also provided scholarships for thousands of Tech student-athletes. The A-T Fund has raised more than $593 million since Thompson's appointment to associate AD in 1982.



Named a Tech honorary alumnus in 2004, Thompson was also named Fundraiser of the Year by the National Association of Athletic Development Directors in 2005 and received a lifetime achievement award from the National Association of Collegiate Directors of Athletics in 2011.

"Jack is a Georgia Tech institution," says Tech director of athletics Todd Stansbury. "Over the last half-century, there is not one student-athlete, coach or staff member that has come through The Flats who has not benefitted from Jack's hard work."

Danny Karnik/Georgia Tech Athletics

## 2018 YELLOW JACKETS FOOTBALL SCHEDULE ANNOUNCED

**THREE HOME GAMES IN SEPTEMBER** and two nationally televised, weeknight road contests in October highlight Georgia Tech's 2018 football schedule. The Yellow Jackets' slate this coming fall is balanced with six home games at Bobby Dodd Stadium and six road contests.

A least two of the team's games will be nationally televised: Louisville on Friday, Oct. 5 and Virginia Tech on Thursday, Oct. 25. Looking at the competition, eight of the Yellow Jackets' 12 opponents advanced to postseason play in 2017, including all four ACC teams that will visit Bobby Dodd Stadium.

Season tickets for Tech's exciting 2018 home slate went on sale in late February.

Kickoff times and TV arrangements for Georgia Tech's first three games will be announced this summer, and the contests at Louisville and Virginia Tech will be played in primetime (networks/kickoff times TBA). All other game times and TV arrangements will be determined 12 days prior to kickoff.

### 2018 FOOTBALL SCHEDULE (HOME GAMES IN BOLD)

| | | |
|---|---|---|
| **Sept. 1 vs. Alcorn State (Bobby Dodd Stadium)** | **Sept. 29 vs. Bowling Green (Bobby Dodd Stadium)** | Nov. 3 at North Carolina (Chapel Hill, N.C.) |
| Sept. 8 at USF (Tampa, Fla.) | Oct. 5 (Fri.) at Louisville (Louisville, Ky.) | **Nov. 10 vs. Miami (Bobby Dodd Stadium)** |
| Sept. 15 at Pitt (Pittsburgh, Pa.) | **Oct. 13 vs. Duke (Bobby Dodd Stadium)** | **Nov. 17 vs. Virginia (Bobby Dodd Stadium)** |
| **Sept. 22 vs. Clemson (Bobby Dodd Stadium)** | Oct. 25 (Thurs.) at Virginia Tech (Blacksburg, Va.) | Nov. 24 at Georgia (Athens, Ga.) |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# In the World

## BACKSTAGE BRAVERY

Stand-up comedian Sarah Cooper, MS DM 01, tries to calm her nerves as she waits for her turn to perform at the Laughing Skull Lounge, located in the rear of the Vortex restaurant in Midtown Atlanta.



Kaylinn Gilstrap


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# Then A Funny Thing Happened

BY MICHAEL PEARSON

How Sarah Cooper, MS DM 01, left a successful corporate career to take herself out of the comfort zone and into the scary world of comedy.

**SARAH COOPER IS UNCOMFORTABLE NOW,** in life and on stage. And that's a good thing. It means she's where she's supposed to be. Instead of being comfortable in a cushy corporate job, she prefers putting herself out there to use her wit and creativity to entertain others and to make them think.

Despite her nerves, you won't notice them as Cooper steps in front of an audience and starts shooting verbal spitballs that contain her biting observations of the tech world:

***"I heard a rumor that the software engineers who work at Google are so proud of working there that they have sex with their badges on. That's a joke. They do not have sex. My husband hates that joke. Because he's a software engineer at Google."***

You also won't see her anxiety in the writings and drawings she posts online or publishes in her humor books.

Still, that discomfort is there, lurking just under the surface. *Will anyone come to this show? Is anyone going to laugh at that joke? Will anyone read my book?*

This unease is a tool that propels Cooper away from what had been a very successful career, where she held user-experience design gigs with Yahoo! and Google. Meanwhile it draws her further along this new, still-unexplored path as a comedian, satirist and writer.

"I was very comfortable at Google," Cooper says. "Was I myself? No. But I was pleasing a lot of people and doing a good job."

Of her current vocation, she says: "This. Is. Extremely. Uncomfortable." Her words are drawn out to emphasize the point. "But at the same time, I'm just enticed by it."

### TWISTS AND TURNS ON THE PRACTICAL PATH

As a young girl, Cooper had always wanted to study theater. She even earned a theater scholarship to the University of Maryland. But her immigrant parents—she was born in Jamaica and came to the United States at the age of 3—wanted her to pursue a more practical path.

So she switched to economics. It seemed businesslike, she thought at the time, without all the schmoozing.

Then came another twist. Late in her undergraduate pursuits, she took a design class and fell in love with Photoshop. After college, she took a job at a graphic design firm, hoping to turn her newfound love of design, color and creating into a career. "I thought I could work my way up, and my bosses were like, 'You don't have a degree, so you're not going to be able to do that,'" she says.

Flipping through one of the agency's graphic design magazines one day, she saw an ad for the digital media program in Georgia Tech's School of Literature, Media and Communication.Suddenly, she found a practical path she could be passionate about.

**"It's weird being married to a software engineer," Cooper jokes. "Any time there's an issue in the relationship, he makes me file a bug. I thought we weren't spending enough time together so I filed a bug. He marked it: working as intended."**

**HUNGRY AND CONFIDENT**

Cooper applied to become a graduate student at Georgia Tech, but she didn't bother waiting to find out if she would get in. She came down anyway, in the yellow-pollen Atlanta spring, to meet with the professors she was sure would be teaching her. Nor did she have the internship she wanted at internet company MindSpring.

But she had told MindSpring that Georgia Tech had accepted her. She told Georgia Tech she had the internship.

She got both.

"I was very hungry and confident when I first arrived—I have always been like that with school, though," Cooper says. "I felt challenged by the classes and immediately had so many ideas about what I wanted to do. The theoretical side of things made me want to write a screenplay about the imperative of technology, and the hands-on practical side made me want to design interfaces, which ultimately won over because I loved design so much."

At the same time, she was endearing herself to fellow students and faculty alike.

Janet Murray, professor of digital media, still shows her students Cooper's graduate thesis, an interactive story called, "Reliving Last Night."

"It's particularly striking that she has made a career

Kaylinn Gilstrap

talking about how to be a lazy employee when in fact she is one of the most focused and productive people I've ever worked with," Murray says.

#### SUCCESS IN THE HIGH-TECH WORLD

After earning her master's degree in digital media, Cooper went on to successful work in design and technology, rising to creative director of an Atlanta design firm, then onto a job with Yahoo! in San Francisco.

Still, that impractical, artistic world kept tugging at her. So she left Yahoo! to try her hand at acting again, fulfilling that childhood dream. She got signed by an agency, had a small part here and there. Then a funny thing happened.

That little girl who always wanted to be an actor? Turns out she didn't like being in front of the camera.

Cooper found herself in another of life's seeming dead-ends, and broke to boot. She had to sell her car back home in Atlanta to pay rent in New York, where she had been studying acting. Something had to change.

Fortunately, her Georgia Tech connections paid off. Stevens, a digital media classmate, referred her for a job at Google. After surviving the infamously exhaustive interviews at the tech giant, she got hired on as a user-experience designer for the Google Docs team. She eventually became a manager there, too.

Cooper had found validation in her tech jobs and the praise of others— she'd always been a people pleaser, as she says.

But it wasn't really her, not the real Sarah Cooper, not all of her at least, sitting in those offices, "crushing" those projects, as she'd later satirize the tech "bros" for saying.

Something about it all seemed so absurd. And that would prove to be her ticket.

#### HOW A VENN DIAGRAM CAN CHANGE YOUR LIFE

Years before she took the job at Google, Cooper was in a meeting at Yahoo! when a co-worker stood up and scrawled something on the white-board. It was a Venn diagram, one of those charts showing a couple of intersecting circles with something important living in the space where the two circles overlap.

"It had nothing to do with what we were taking about," she says. "And everybody just thought it was amazing. I was blown away, so I wrote it down in my notebook: 'How to look smart in a meeting: Draw a Venn diagram.'"

Cooper didn't know it at the time, but she had finally found her niche.

She put that notebook away in a box, moved it from city to city, place to place, job to job. It wasn't until she started working at Google, and subsequently moved in with the Google engineer she would later marry, that she came across her doodle.

Flipping through that notebook, she came across the page with that "tip to look smart." A light bulb went off. She could do something with this.

She'd seen so many silly moments in meetings. The co-worker slowly repeating what the engineer said in a bid to steal some of the smartest guy's smarts. The contemplative nodding. The empty but ubiquitous question, "Will this scale?"

She turned her sly observations into a viral social media post on the web publishing platform Medium, "10 Tricks to Appear Smart in Meetings."

By this point, in 2014, she had already tried her hand at standup, and found she liked it— being in front of a live audience felt better than being on camera. But it was that first post that showed her a path to success outside technology. Within a day, the post had a few hundred thousand hits. Within a week, it was up to a million views.

**"I read one of those articles online that said you should follow your dreams and quit your job, so I quit my job," Cooper jokes. "But then I realized that those articles are written by people who want your job. So now I just sit at home writing articles like that, hoping someone bites."**

#### A CALLING IN COMEDY

Cooper had finally found her calling: not in acting, not in graphic design, not in digital media, but in comedy. Still, it took months for her to work up the nerve to tell her boss at Google that she was quitting.

"Everybody was just like, 'Wait a second. You're going to leave Google to do what?' You feel like a crazy person," she says.

Cooper found herself in an entirely new world to navigate, and she had to make her own map to find the way out.

"It's a whole different world from tech," Cooper says. "How do I get a literary agent? How do I get a publisher? Do

I self-publish? Scheduling. Sometimes just getting up in the morning. Sometimes you don't get out of bed and no one's going to tell you not to."

She kept churning forward. Slowly, things began to happen.

Her viral post eventually led to a book deal (*100 Tricks to Appear Smart in Meetings* and a humorous adult coloring book *Draw What Success Looks Like*), stand-up gigs, conference invitations and a successful website, The Cooper Review (thecooperreview.com), among other projects.

She still feels a little panicked before every performance. Ugly tweets and book reviews can be jarring. But she sees inspiration in that: *If I can push through that negativity, maybe I can inspire others to keep going as well.*

**NEW DIRECTIONS**

As she was getting started in comedy, Cooper heavily mined her experiences working in the tech industry for material. Today, three years later, she finds her comedy and writing are beginning to morph into new areas as she puts that former work life behind her.

Her next book, *How to Be Successful Without Hurting Men's Feelings*, still counts as humor, still is workplace-based, but there's a serious message behind it, too. It parodies "the oftentimes overwhelming and contradictory advice women get about how they should behave in the office," Cooper says.

"It's really about how ambitious women should forget these rules and stop tiptoeing around other people so they can show up in whatever way works for them," she says.

For Cooper, that means being out there, staying uncomfortable and following her conviction that following your heart is the best path to fulfillment. And she has advice for those still trying to figure out what path they want to take, or how to find a new one.

"You know, I always go back to that notebook," she says. "There was nothing telling me to write that, it's just something that came naturally. So I feel like there's a lot to be said for paying attention to what you're doodling in the margins and to what you're currently doing when you should be pursuing something else. My advice would be to just watch where your mind gravitates towards, because the things that come naturally for you are going to be the things that you are going to have the most fun doing." ▲

*Find out more about Georgia Tech alumna Sarah Cooper, read her humor blog and buy her books at* **thecooperreview.com** *and* **sarahcpr.com.**

# Ever the Diplomat

BY KELLEY FREUND

Johnny Jones, IA 02, has promoted U.S. foreign-policy goals and helped U.S. citizens in some of the world's trickiest locales.

**IF YOU ASK JOHNNY JONES WHAT CAIRO IS LIKE,** he'll tell you it's noisy, crowded, dirty, gritty and unpredictable. And he'll tell you it's everything he could want.

From Baghdad to Cairo to Islamabad, Jones has traveled the globe for over a decade, serving in some of the world's most challenging locales. He's spent his career meeting new people, speaking different languages, learning about other religions and, ultimately, focusing on the consequences of U.S. foreign policy objectives in the Middle East.

You might say his international adventures started with soccer.

As a kid growing up in Macon, Ga., Jones absolutely loved the sport. And the first time he traveled outside the United States was to play in an international tournament in France. He applied for a passport, learned a few words in French and met players from club teams all around Western Europe. It was then that he first could see himself growing up to live and work overseas.

When he wasn't playing soccer, Jones loved participating in his high school's Model United Nations program. It took his growing interest in geopolitics to new heights, and when he saw an advertisement about Georgia Tech's Sam Nunn School of International Affairs, he sent away to find out more about its academic opportunities.

Although he occasionally considered other top options out of state—mainly to give his parents a hard time—Tech remained a firm No. 1 on his list. After all, it provided a world-class education with the advantages of being able to cheer on Division I sports teams during his rare down time. While at the Institute, Jones found time outside his classes to continue working with the Model UN, serve on the Student Government Association, be named president of the International Affairs Student Organization and study abroad in Brussels, Belgium.

After "getting out" of Tech, Jones went on to earn his law degree from Georgia State University. And by the time he began his career in the U.S. Foreign Service in 2006, he had traveled around the world as a tourist to places like Europe, Kenya and Nepal. But being a diplomat in Iraq, followed by stints in Egypt and Pakistan in the aftermath of the 9/11 attacks, gave him a new perspective on global matters.

"What I enjoyed about the opportunity to serve in these places was that it was more than just the chance to sightsee or taste new foods," Jones says. "It was a chance to learn about the political implications for the relationships between those countries and the U.S."

Jones wasn't one to shy away from a challenge—he was proud to serve in parts of the world where it was extremely difficult for the U.S. to achieve its foreign policy objectives. "I knew that, by 2008, many experts disagreed on the way forward in Iraq, but I also knew that we needed people willing to serve there despite the disagreements on the issues," he says.

Foreign services officers like Jones aid American citizens in trouble overseas, coordinate counterterrorism programs and manage aid to distressed countries. They also draft policy documents, serve as advocates

**"What I enjoyed about the opportunity to serve in these places was that it was more than just the chance to sightsee or taste new foods," Jones says. "It was a chance to learn about the political implications for the relationships between those countries and the U.S."**



Ryan Donnell

for U.S. positions on a number of issues and build professional relationships with their foreign counterparts.

While serving as a diplomat in Iraq, his work focused on implementing strategies for transitioning from a U.S. military-led security to Iraqi-led security efforts throughout the country, as well as evaluating the importance of inclusive Iraqi national elections.

He went on to a new post in Cairo in 2010—a city with a rich history and plenty of mosques, museums, cafes and shops, but also with plenty of pollution, traffic, economic hardship and political unrest. Jones was unfazed.

"If there is more to experience and more to appreciate, then that is what I'm looking for regarding my work and the main reason I'm there in the first place," Jones says.

He came to Cairo just before the Egyptian revolution, and after only serving a few months at the embassy, he was instructed to move his Jeep from the parking lot to the underground garage inside the compound as protests began near Tahrir Square. Jones and a few other officers spent the first two weeks of the revolution sleeping at the embassy and using the gym to shower. After pulling U.S. personnel and their families from homes scattered around the city for an evacuation, Jones and his colleagues worked in shifts to cover daily changes and updates to the political conditions in the country.

Security was a top priority. "Most of my skills from my war-zone experience were beneficial," Jones says. "We had to make sure we were aware of our surroundings at all times and avoid large crowds and certain areas of the city. But otherwise, the job remained the same—trying to understand what was going on in the region and putting it in historical and cultural context."

Jones then built on his experiences in Iraq and Egypt with yet another assignment in Pakistan. He arrived at a time when the relationship between the United States and Pakistan was at a low point given disagreements over issues like counterterrorism policy and national elections. It was his job to clarify how some of these political dynamics would affect the implementation of U.S. foreign policy.

During his most recent foreign posting at the U.S. embassy in Paris, Jones and his colleagues received commendations for their work following the January 2015 Charlie Hebdo terrorist attacks. He and his colleagues improved communications with their French counterparts to understand how and why the attacks occurred, find out what the United States could do to help, and to share the lessons our own law enforcement agencies had learned from past attacks on U.S. soil.

"Although these attacks were unprecedented and unsettling," Jones says, "it was amazing to witness the unity and solidarity that French citizens and world leaders showed in response to the people who wanted to attack a democratic way of life in a free and open society."

Currently posted at the Department of State in Washington, D.C., Jones supports U.S. embassies in Amman, Jordan, and Beirut, Lebanon, by communicating with senior leadership abroad and preparing briefings for leaders based in our nation's capital. Understanding the Syrian crisis and the instability created by the Islamic State in Jordan and Lebanon are also critical aspects of his job.

Jones recently earned a selective, five-year position as a junior-term member on the Council on Foreign Relations, which offers promising young leaders across different fields the opportunity to participate in a sustained conversation on international affairs and U.S. foreign policy.

The stateside appointment gives Jones more opportunities to visit family and friends, volunteer at his church and to be involved with his local Georgia Tech alumni chapter. He even finds some time to play soccer.

Jones credits his parents and his time at Georgia Tech for encouraging him to explore the world. Indeed, his experiences abroad have made Jones appreciative of his life in his native country, where he not only gets to eat southern food and watch Georgia Tech football games, but he has the freedom to speak his own language and practice his own spiritual and political views in an open and inclusive society. These intrinsic values aren't a given everywhere across the globe, especially in many of the countries where Jones served. And this motivates him to share those values with others through his work.

"So many other countries follow the lead of the United States and want to embrace everything that our society has to offer our citizens," Jones says. "That means we have a great influence, but it also means we have a great responsibility to be a leader on the international stage and to remain engaged diplomatically at all levels."▲



Ryan Donnell

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# Genie for Kids in Need

BY BRIAN HUDGINS

Abbey Wysocki, STC 14, fulfills 70 to 80 wishes a year for critically ill children in her role with Make-A-Wish Georgia.

**ABBEY WYSOCKI DOESN'T CARE MUCH** about pro sports teams or all-terrain vehicles. But when a seriously ill child cares so much about such things that they become part of their most fervent wish, Wysocki leaps into action. As a Wish Coordinator for Make-A-Wish Georgia, she's become the human equivalent of a magic genie—one who does everything in her power to give children and their families a one-of-a-kind experience to help them forget, if just for a little while, their difficult ordeals.

Her desire to help these kids comes from a very personal place: She's seen the other side of the wish-granting process up close. When the Woodstock, Ga., native was a teenager, her brother Sam was diagnosed with acute lymphoblastic leukemia and her whole family's way of life was turned upside down during his lengthy and aggressive treatment.

Make-A-Wish reached out to help them by granting Sam a wish. He expressed his desire to take his family on vacation to Hawaii, where he could learn to surf and even see a volcano.

"Our family was split up a lot due to his frequent hospital stays, so having a week to be together, away from the stress of chemotherapy and treatment schedules, was refreshing," Wysocki says. "It gave Sam—all of us—something to look forward to and dream about. The wish gave him some control back over his life at a time when cancer had completely stripped that away from him."

Fortunately, Sam beat his serious illness and, today, is cancer-free at 18 years of age. He's also on track to attend Tech this fall as a freshman.

**Wysocki says that her job granting others' wishes is deeply fulfilling for her—both emotionally and professionally. "I have learned so much, from how to get building permits for treehouses to researching travel destinations around the world," she says. "Every wish is different and always presents a new challenge. That is the exciting part of the job."**

In addition to the obvious joy the Make-A-Wish trip brought the family, it had one unexpected effect: It so moved Wysocki that she knew she wanted to devote her life and her career to help others in need.

"The cool thing about being part of a Wish Family as a teenager was that I got to see how a family experienced the hope, strength and joy that a wish brings," Wysocki says. "Today, I get to give that same gift to Wish Kids and their families on a daily basis."

Wysocki first joined Make-A-Wish Georgia—one of 62 chapters located throughout the United States—as an intern while she pursued her undergraduate degree in science, technology and communication at Georgia Tech. Upon graduation, the organization granted her deepest desire: They hired her as a full-time Wish Coordinator.

Now, as it turns out, making wishes come true requires a lot more than mere magic. Figuring out travel logistics, medical restrictions, family needs and other, smaller details are all part of the equation. Her personal experience, internship and Tech education gives Wysocki a leg up when it comes to communicating and setting complex logistics with families, doctors, businesses, celebrities and other parties involved in the wish-fulfillment process.

To be granted a wish, a child must be between 2-and-a-half to 18 years old and have a critical illness—it does not have


to be terminal. The wishes range from meeting personal heroes (sports stars) to having an uncommon experience (appearing on a TV show) to traveling to a special location with their families (Hawaii).

Wysocki grants about 70 to 80 wishes a year. One boy she helped wanted to go to the insider's tour at the LEGO Factory in Denmark, and she jumped through all the hoops and set up all the travel arrangements to make it happen. Another child had a dream of being a real cowgirl for a day, and Wysocki got in touch with a local horse farm and equipped the girl with all the gear to give her a fun, unforgettable experience.

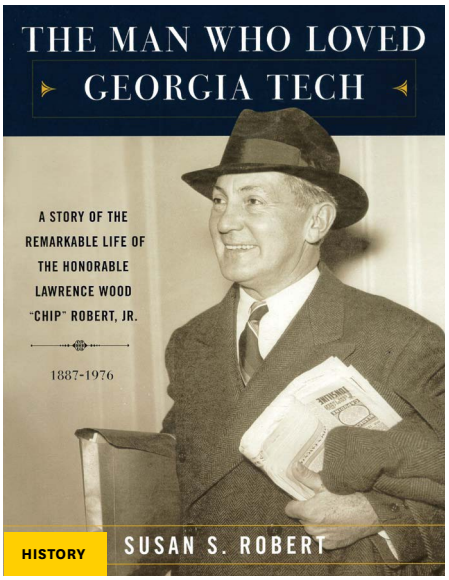
One special request kids have is to get a pet—a fairly simple wish in the scheme of things, but one that often has the greatest, longest-lasting impact on their outlook. "When you see a puppy run into a room and meet a child for the first time, you really feel their joy," Wysocki says. "It's such a great feeling to make their wishes come true and make a difference in their lives, especially with all they're going through."

A lot of wishes require the support of the entire community, Wysocki says. "It's not all done by our staff; we rely heavily on volunteers and donors, too," she says. "Right now, there are more than 800 kids in Georgia waiting for their wishes to come true, and we couldn't do it without all the support we receive."

Wysocki says that her job granting others' wishes is deeply fulfilling for her—both emotionally and professionally. "I have learned so much, from how to get building permits for treehouses to researching travel destinations around the world," Wysocki says. "Every wish is different and always presents a new challenge. That is the exciting part of the job."▲

Kaylinn Gilstrap

# Recently Published



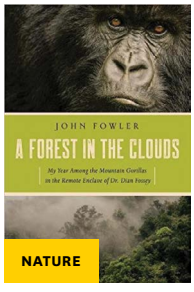

## THE MAN WHO LOVED GEORGIA TECH: A STORY OF THE REMARKABLE LIFE OF THE HONORABLE LAWRENCE WOOD "CHIP" ROBERT, JR.

**SUSAN S. ROBERT**

If you've ever visited the Alumni Association on campus, you may have noticed the formal name on the sign outside the building: The L.W. "Chip" Robert Jr. Alumni and Faculty House. Written by the wife of his grandson, Susan S. Robert, the book takes a look at the fascinating life and legacy of the building's namesake, who, at the time of his death, was described in newspapers as "Georgia Tech's greatest friend." The author presents the life story of Chip Robert Jr., often in his own words, through a collection of his personal and professional letters and papers.

The narrative spans Robert's 88-year life, from his early days building railroad tracks with his father, to his extraordinary academic and athletic achievements at Georgia Tech, to his successful career in industry and national politics. Though he never ran for office himself, Robert was a pillar of Democratic politics and served as a close adviser to U.S. presidents Franklin D. Roosevelt and Harry Truman.

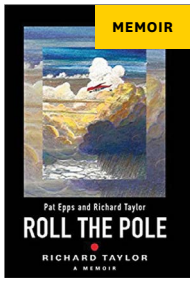
Illustrated throughout with an impressive collection of historical black and white photographs, the book captures the story of Robert's fascinating life and the historic era in which he lived.




## A FOREST IN THE CLOUDS: MY YEAR AMONG THE MOUNTAIN GORILLAS IN THE REMOTE ENCLAVE OF DIAN FOSSEY

**JOHN FOWLER, MS TSP 97**

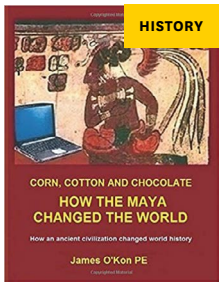
John Fowler provides readers with a unique firsthand perspective of the Karisoke Research Center, the remote mountain camp in Rwanda where Dian Fossey studied mountain gorillas. The author spent a year as the research assistant of the famed primatologist, who was murdered in 1986. He shares tales of his adventures living amongst the mountain gorillas and the tense environment within the beleaguered camp, where pressure to remove Fossey was mounting from conservation and research organizations, the Rwandan government and other detractors.




## ROLL THE POLE

**RICHARD TAYLOR, M ARCH 64**

In an account befitting the true spirit of a Ramblin' Wreck, Richard Taylor tells the tale of setting a big goal—and the adventure, failure and triumph along the way to achieving it. Taylor and his friend Pat Epps, ME 56, set out in 1978 to attempt an unusual feat: flying an airplane, upside down, over the North Pole in hopes of finding out what would happen to a compass in this situation. It took them three tries, and along the way this unconventional adventure surprisingly morphed into an 11-year arctic journey in search of the Lost Squadron, six P-38s and two B-17s that disappeared on the Greenland ice cap in 1942.




## CORN, COTTON AND CHOCOLATE: HOW THE MAYA CHANGED THE WORLD

**JAMES O'KON, CE 61**

The Maya's towering ruins are the most visible reminder of this powerful, ancient civilization. But you may not realize that the Maya were some of the world's greatest agronomists. Their crops—corn, cotton and chocolate—spread around the globe and changed the course of history. James O'Kon is an archaeoengineer who has investigated more than 50 Maya sites, including the Maya city of Yaxvhilan, where he discovered the longest bridge in the ancient world. In his book, O'Kon explains how the Maya legacy lives on and serves as a catalyst for world change.

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# Game-Changing Startups

## GRUBBLY FARMS

**WHAT IS IT?** Chicken feed made from "grubblies," or dried black soldier fly larvae.

**WHO MADE IT?** Co-founder and CEO Sean Warner, BC 15, began thinking about creating an insect-based food source during his senior year at Georgia Tech. In 2015, he started researching fly larvae and bred his first black soldier flies in his laundry room. He co-founded Grubbly Farms with his cousin Patrick Pittaluga, BA 14.

**HOW DOES IT WORK?** As an insect farm, Grubbly Farms uses pre-consumer food waste to feed black soldier flies. Their larvae are dried to produce a sustainable and healthy source of protein for animals. Many animal feeds in use today are made using fish meal as a source of protein. A majority of the fish used to produce fish meal are wild caught, contributing to the crisis of overfishing in the world's oceans. In the U.S., food waste leads to 52 million tons of food ending up in landfills each year. Decomposing food releases methane, a harmful greenhouse gas. Insects not only feed on food waste, but can then be used as a source of protein in animal feed, reducing the agriculture industry's impact on ocean ecosystems.


**WHY IS IT GAME CHANGING?** Grubbly works toward the goal of a closed-loop agricultural system by recycling pre-consumer food waste to produce a sustainable and healthy source of

## POINTIVO

**WHAT IS IT?** Pointivo is a 3-D intelligence platform that uses video from aerial drones and other devices to capture accurate measurements and automatically generate digital models and more from the data.

**HOW DOES IT WORK?** Machine learning and computer vision algorithms extract 3-D object intelligence from an imagery source. A unique semantic segmentation process automatically recognizes and identifies 3-D objects in images, building models, and point clouds, without the need for human intervention. Pointivo is targeted for the construction, insurance, roofing, flooring and gaming industries.

**WHO MADE IT?** Habib Fathi, PhD CE 13, an expert in videogrammetry and computer vision, developed the algorithms behind Pointivo. The company was founded in 2014 to commercialize Fathi's PhD research on spatial data collection of large-scale structures. Fathi met his co-founder and CEO, Dan Ciprari, MS MSE 04, at Advanced Technology Development Center (ATDC) while Ciprari was working as an entrepreneur in residence.

**WHY IS IT GAME CHANGING?** Pointivo's cloud-based 3-D intelligence platform is the only automated solution for drone operators to service the roofing, insurance and solar industries. All the major drone platforms servicing those markets depend on Pointivo for critical data about the structures they fly.

## SMART GLADIATOR


**WHAT IS IT?** Smart Gladiator is a wearable, hands-free scan gun for warehouses and distribution centers that utilizes Android and Apple smartphones.

**WHO MADE IT?** Co-founders Puga Sankara, MBA 13, and Gopinath Kesavalu

**HOW DOES IT WORK?** Smart Gladiator is a smartphone app—one that can be used on most phones—combined with a laser scanner that users wear like a ring. After downloading the app, users then strap their smartphone into an armband they can wear as they work. The system features a soft overlay keyboard for easily typing in numbers, and it employs texting and video-chatting functionality to improve communication between operators and supervisors without interrupting productivity.


**WHY IS IT GAME CHANGING?** Because Smart Gladiator is wearable, users no longer need to pick up and put down a scanning gun. Smart Gladiator reports that its users were able to increase productivity and save time—30 minutes each shift—through the ability to communicate on their devices. While other wearable solutions use older, push-button devices, Smart Gladiator requires nearly no training because it is an intuitive smartphone app.

**Smart Gladiator reports its users increased productivity and saved time—30 minutes each shift—by using their devices to communicate. Since it's a smartphone app and not a new piece of equipment, little training is required.**

**Got a new product or startup business that's truly innovative?** Tell us all about it by sending an email to editor@gtalumni.org for a chance to have your idea or invention featured in a future issue of the Georgia Tech Alumni Magazine.

## MICRO C


**WHAT IS IT?** A hand-held X-ray and digital imaging device no heavier than a digital camera.

**WHO MADE IT?** Co-founder and chief medical officer Gregory Kolovich, EE 04, and chief executive officer and co-founder Evan Ruff, CmpE 03, MBA 07

**HOW DOES IT WORK?** Micro C is a device for performing fluoroscopy, a type of medical imaging in which a continuous X-ray image is displayed on a monitor, much like an X-ray movie. Micro C enables surgeons conducting operations on hands or other extremities to have greater accuracy, clarity, safety and speed. The lightweight, ergonomically designed, hand-held emitter brings X-ray together with still photos, video and infrared camera.

**WHY IS IT GAME CHANGING?** While performing reconstructive hand surgery at Harvard Medical School, Kolovich became frustrated with the limitations of the traditional imaging process. A typical C arm fluoroscopic device is about the same size as a hospital bed or wheel chair, making it cumbersome to move and difficult to fit through doorways. In contrast, the Micro C system is compact enough to be easily carried from room to room. The hand-held fluoroscopy device and separate, book-sized image receptor offer healthcare providers a greater degree of flexibility.

# TRAVEL TO LIVE, LIVE TO TRAVEL

Two young Georgia Tech alumni prove that you can give up your day job to pursue your dreams of adventure—and blog all about it.

**STORY AND PHOTOGRAPHY BY**
**ESTHER JULEE, CHEM 06, WITH JACOB FU, MGT 05**

**OUR NATIONAL PARKS/WHITE SANDS** One of our favorite things about the U.S. is the amazing National Park system. We have such beautiful and diverse lands all throughout the nation, but most of us have only seen a small part of them. We've been working our way through all 400-plus National Park locations (59 major sites), but we definitely have some of our favorites already. Joshua Tree National Park, convenient to Los Angeles, changes each time we visit—it reminds Jacob and I of a huge playground. Another, less-visited location is the stunning White Sands National Monument (pictured) we saw while visiting friends in New Mexico. We spent all afternoon trotting through the endless white dunes and even brought a sled with us. Can you even tell if it's snow or sand?

**Blog post:** localadventurer.com/list-of-us-national-parks-systems

**I STARED OUT MY APARTMENT WINDOW** watching the glow of the sunset behind Manhattan's skyline. As the last spatters of red in the sky disappeared, I turned back to my computer to continue my all-day editing session. Not the typical life you would imagine as a full-time travel blogger.

When people find out that my husband Jacob and I run an online blog—and actually make a decent living at it—some of the most common comments and questions we get are:

"Wow, you're living the dream!"

"It must be nice to vacation all the time."

"So how do you make money doing this?

"Wait, how can I do this, too?"

We realize we are very fortunate to be doing this as a profession, especially when not everyone has the luxury to travel. We wouldn't give it up for anything else, but it's not as glamorous as it seems.

The reality is that more than three quarters of our time on *Local Adventurer* is spent at our desks, in front of our computers, working on the site and our social media presence, writing content, editing photos and video, and corresponding with brands and clients. We don't always get to head out to a new destination every week, but we love the whole process and building something we can call our own.

If you had asked me five years ago what my life would look like now, I would've never guessed that I would be doing this. After graduating from Georgia Tech with a degree in chemistry, I spent a year working in a lab with a plan to go on to med school the following year.

But that's not what happened. Instead, like what happens with the best adventures, I took a detour. I turned my weekend shutterbug hobby into a full-on wedding photography business.

**HAVASUPAI FALLS** We also got the chance to join some friends on a backpacking trip to Havasupai Falls. It's located on an Indian Reservation in Arizona near the Grand Canyon, and the series of turquoise blue waterfalls is perfectly backdropped by the red rocks of the canyons. It has grown exponentially in popularity, which means it's always a race to get permits every February.

**Blog post:** localadventurer.com/havasupai-falls-reservations-permits-tips

## INSIDE LOCALADVENTURER.COM

**HUSBAND-AND-WIFE TEAM** Esther JuLee and Jacob Fu have been operating their travel blog, *Local Adventurer*, since 2013. The blog, which features lively and insightful travel stories, helpful how-to guides and tons of fantastic photography, focuses on uncovering amazing destinations right in your own backyard and seeing your hometown and region with fresh eyes.

The blog has grown in popularity over the past five years, reaching more than 8.8 million unique users since it launched, and averaging 270,000 visitors and 450,000 page views a month.

Today, it ranks as one of the top 10 travel blogs in the world.

**You can follow Esther and Jacob's adventures at:**

**Website:**
LocalAdventurer.com
**Instagram:**
instagram.com/estherjulee
instagram.com/jacobthefu
**YouTube:**
localadventurer.com/youtube

**WHALE SHARKS** On one of our warm-weather journeys, we traveled to the remote Derawan Islands in Indonesia to search for wild whale sharks. It was one of the most surreal and scary moments of my life. I still remember the moment when we spotted them: Jacob was in the water before I even had my fins on, while I had to muster up the courage to get in the ocean. Once I was in, I watched these majestic creatures glide past me. I looked over and Jacob was free diving with them, so I scrambled to snap a few photos with our camera. Every time I got close to the sharks, I felt so tiny and powerless next to them. I opted to spend most of my time capturing them from a distance.

**Blog post:** localadventurer.com/swimming-with-whale-sharks-at-derawan-island-indonesia

**"It's too easy to go through life and never explore your own backyard. But with Local Adventurer, I set off to practice finding adventure in the common and everyday. And to see the mundane with fresh eyes. Jacob was my partner in all these excursions."**

And then, after eight years, I decided to take yet another detour when we moved from Atlanta to Los Angeles.

Jacob took us there so he could ramp up his YouTube projects (which included creating original music videos and a kids' puppet show), and I was left with zero direction in my professional life. I didn't want to give up on photography altogether, so with my free time, I decided to start editing my endless folders of travel photos that I just never got around to—sound familiar to any of you?

And then I started posting the pictures on my wedding website, creating something of a travelogue of my adventures. As I delved deeper into the world of blogging, I soon discovered that people were doing it for a living, and it completely blew my mind that you could make a career out of it. It intrigued me enough to pursue it for a year while we were still in transition in L.A.

It turns out I can never keep a hobby just a hobby.

At the beginning, I blogged about anything and everything that interested me, but eventually I narrowed my focus to travel and rebranded the site to what it is now, *Local Adventurer*. The idea was hatched when we moved out west and found out we regretted not exploring more of Atlanta, the hometown we had lived in for most our lives.

We had gotten too comfortable with our daily routines and took where we lived for granted. The more people we discussed this with, we realized that many others felt the same way about the places they lived. It's too easy to go through life and never explore your own backyard. But with *Local Adventurer*, I set off to practice finding adventure in the common and everyday. And to see the mundane with fresh eyes. Jacob was my partner in all these excursions.

Fast-forward to present day, and we've spent the last five years living in five different cities. We since moved from L.A. to Las Vegas to San Diego to Portland to New York City, spending about a year in each of them. In every new location, we've explored iconic sights and out-of-the-way treasures.

But we also made some time for more exotic journeys, too.

We've traveled abroad and hiked mountains in Patagonia, the Andes and Kyrgyzstan. I learned to rock climb to conquer my fear of heights and got dive-certified to get over my fear of fish. We even spent three months living in an Airstream trailer, driving all over the United States.

**ICELAND** Although our preferred passion is exploring our own backyard and country, we still do travel internationally a few times a year. One of our most memorable overseas trips in the past couple of years was to Iceland. We went in search of the Northern Lights, but while there we explored the beautifully icy winter wonderland. We visited many waterfalls, and even climbed into some ice caves. I still get cold just seeing photos of it.

**Blog post:** localadventurer.com/things-no-one-tells-you-about-visiting-iceland

**THE WAVE** During our time living in an Airstream trailer, one of our goals was to get a permit to see the Wave—beautiful rock formations that look like waves—located in the Coyote Buttes near Arizona's northern border with Utah. To protect the site, only 20 permits are given out to visitors per day. Jacob and I eagerly lined up with nearly 100 other people each day hoping we were the chosen ones. Fortunately, we got lucky enough to win the permit lottery on just our second day. We left in the morning and hiked in, following the map provided us until we found the Wave. It had rained the day before, so we were even lucky enough to have a pool of water to get reflection shots. The two of us spent hours exploring the terrain and found so many amazing spots—all without crowds of people.

**Blog post:** localadventurer.com/the-wave-permits-coyote-buttes-north-vermillion-cliffs

When Jacob saw potential for more growth in *Local Adventurer*, he quit YouTube and fully joined me in 2015 to help with the business side. In 2017, the blog brought in over six figures, and we continue to grow the readership and partnerships every day.

We have more than 8.8 million unique visitors to the blog, and average 450,000 page views a month. On social media, we bring in 7 million views a month on Pinterest alone (from nearly 28,000 followers), and we have strong presences on Instagram, Twitter, YouTube and Facebook.

We've worked with travel companies and consumer brands like Airstream, Toyota, REI and Patagonia, creating revenue through advertising, sponsored posts, reviews and product giveaways. Such corporate relationships are one of the key ways bloggers can monetize their sites, but you have to make sure you follow FTC guidelines (which of course we do).

The good stuff, however, is sharing our travel and experiences with our readers. We aim to both entertain and educate. We hope you've enjoyed seeing some of the amazing places we've visited on the the preceding pages.

Be sure to read more about our expeditions at **LocalAdventurer.com.** ▲

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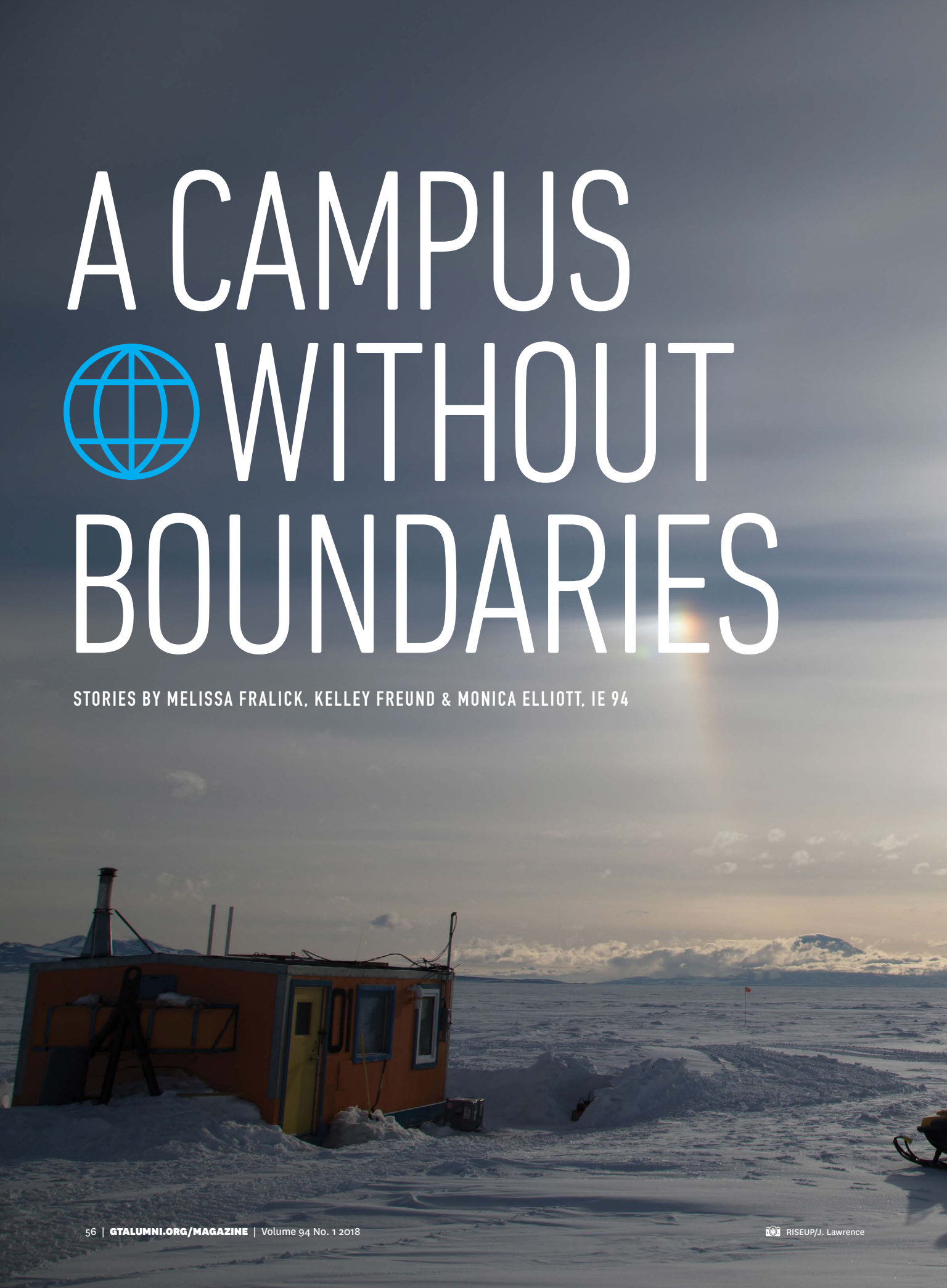
# A CAMPUS WITHOUT BOUNDARIES

STORIES BY MELISSA FRALICK, KELLEY FREUND & MONICA ELLIOTT, IE 94





RISEUP/J. Lawrence

Some lessons are best taught outside traditional classrooms and labs. Here are three stories of how Georgia Tech faculty have taken their students—ranging from freshmen to PhD candidates—into the field in far-flung destinations around the globe. They conduct revolutionary research, provide a humanitarian helping hand and test their skills in international competitions.

# UNDER ICE

## A TEAM OF GEORGIA TECH RESEARCHERS AND GRAD STUDENTS ARE EXPLORING ANTARCTICA'S DEPTHS FOR CLUES TO WHAT MIGHT BE FOUND ON EUROPA.

**IF THERE IS LIFE ANYWHERE ELSE IN OUR SOLAR SYSTEM,** Britney Schmidt knows it's likely to be found on Europa, one of Jupiter's largest moons.

Europa has a lot in common with our planet. Like the Earth, it has an iron core, a rocky mantle, and a salt water ocean—though Europa's ocean is encased under an ice shell up to 15 miles thick.

But as of yet, no spacecraft has explored beneath the icy surface.

Schmidt, who is an assistant professor in the School of Earth and Atmospheric Sciences, hopes to change that. She and her team of Tech students and researchers are testing a modular autonomous vehicle, called Icefin, which they hope will one day lead to driving vehicles under Europa's ice.

But before they're able to launch Icefin into space and land on Europa, they're working here on Earth's iciest region: Antarctica. Antarctica provides the perfect environment for testing, because it mimics many of the conditions expected to be found on Europa.

Vast ice shelves? Check. A deep, salty ocean below? Check. Challenging to navigate? Check.

"Astronauts go out and learn geology on Earth before they go to the moon or before they'll go operate on Mars," Schmidt says. "So that's kind of what we're doing here—a spacecraft mission under the ice before we go and attempt that on Europa."

Schmidt and a team of researchers, including graduate students Justin Lawrence, Dan Dichek, Ben Hurwitz and Chad Ramey, along with research engineer Matt Meister, ME 15,

returned to campus this January following a three-month field season, during which they successfully operated a new version of Icefin under Antarctica's McMurdo Ice Shelf for the first time. The missile-shaped vehicle, which is 12 feet in length and 9 inches in diameter, was designed to be small and modular enough to transport onto remote ice shelves, but sophisticated enough to carry a variety of scientific instruments and sensors. It can be driven under the ice remotely, like a remote-controlled car, or programmed to drive autonomously.

The team includes students from various disciplines who bring their expertise to the project. For example, Lawrence is working toward a PhD in planetary science, while Hurwitz is part of a new PhD program at Tech in ocean sciences and engineering.

"The engineers and scientists work really closely, which is fantastic for field work," Lawrence says.

Before their recent fieldwork with Icefin, all scientific data from the massive Ross Ice Shelf, which is roughly the size of France, came from just three drill holes.

"We know more about the surface of Mars than we do about under the Ross Ice Shelf," Hurwitz says.

Schmidt says that over the course of this Icefin project—a collaboration with a New Zealand research team—exploring through three additional holes drilled into the Ross Ice Shelf will more than double the data previously available.

"And with the vehicle, it's a type of data that we've never been able to get, which is driving around and mapping what's going on under there for a few kilometers on either side of the access point," Schmidt says.

While their field work in Antarctica serves as a dry run for a future mission to Europa, Schmidt and her students are also advancing science here on Earth by exploring uncharted territory deep under the ice.

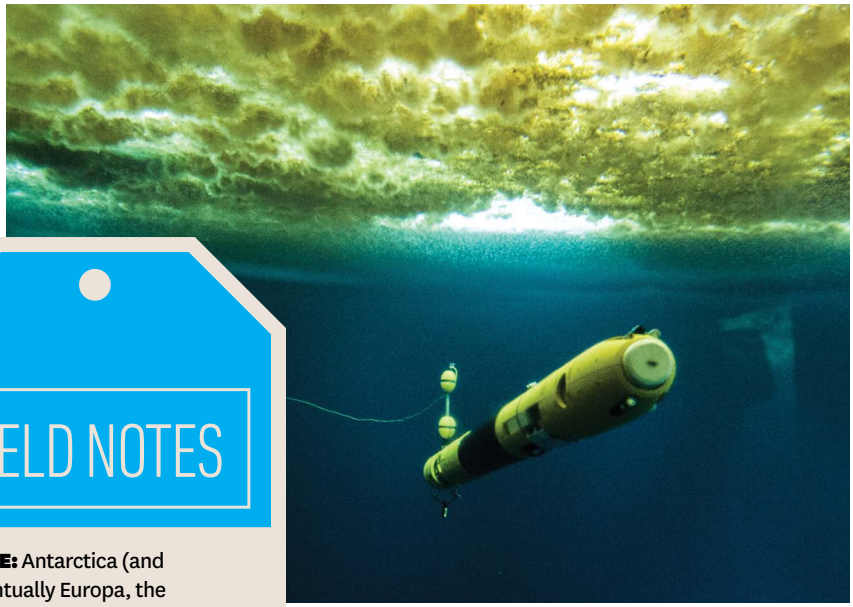
## FIELD NOTES

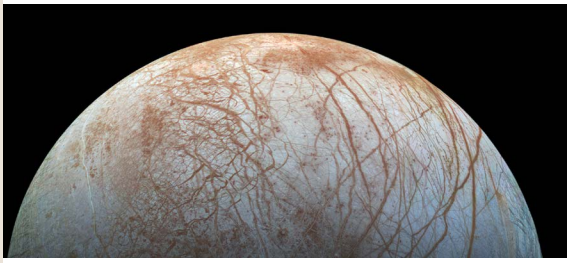
**WHERE:** Antarctica (and eventually Europa, the ice-encrusted moon of Jupiter)

**WHAT:** Icefin, an autonomous underwater vehicle built for exploring below ice

**WHO:** A team of Georgia Tech student and faculty researchers, led by assistant professor Britney Schmidt

**WHEN:** Icefin had its first successful underwater drive in 2017, and testing in Antarctica is ongoing.





**Top:** The Icefin submarine, deployed under the sea ice in Antarctica near McMurdo Station. *Credit: RISEUP/D.Dichek* **Middle:** Jupiter's moon Europa, where one day Icefin may be used. *Credit: NASA* **Bottom:** Georgia Tech faculty and students who conducted Icefin's field testing: (standing, left to right) Chad Ramey, Matt Meister, Jade Lawrence, Justin Lawrence and Britney Schmidt; (kneeling) Dan Dichek; (on the A-frame) Josh Lutz and Ben Hurwitz. Taken at Erebus Glacier Tongue site. *Credit: RISEUP/D.Dichek*

"This field season was spectacularly successful from an engineering standpoint," Hurwitz says. "But we also got much more science data than we could have expected."

During their recent trip, Icefin's footage revealed a surprising diversity of life deep under the ice , Schmidt says. A seal bumped into the vehicle at a depth of 200 to 250 meters. The craft also encountered a rare, giant Antarctic fish called a toothfish.

Icefin was able to travel to the sea floor at a depth of almost 800 meters. Plus, the team was able to navigate the vehicle under a rift in the ice shelf and discovered ice caves that were likely formed by cold water flowing down the rift.

"Much of what we saw this time around no one has ever seen before," Schmidt says. "It's cool because the vehicle has gone deeper than, as far as we know, any other vehicle in the area has ever gone and way deeper than divers can go. So all this work is really, really new."

Lawrence, who's been working with Schmidt since 2015, was excited to view the ocean floor.

"It was incredible to see it for the first time with a vehicle that we built," he says.

This was Schmidt's fifth season in Antarctica, and she's already planning next year's trip, when the team will focus on Icefin's automated process and gathering much more science data. She refers to the trips as seasons, because the team typically spends around three months each year in the field during the Antarctic spring and summer.

"It's a weird way to live," she says. "You're spending a quarter of your life down there, and then you're spending the other three quarters of it planning to be down there. I'm always in the field, whether it's physical or mental."

Schmidt's graduate students say they feel fortunate to be part of such groundbreaking research.

"It's not a common thing and I'm grateful for the opportunity. I'm thankful that there is so much support for this kind of work," Lawrence says.

Humans may never step foot on the surface of Europa, and an unmanned mission to the icy moon likely won't happen for another few decades. But until then, Schmidt says she feels lucky to be able to spend her time working in Antarctica to advance the search for life in the cosmos.

"Antarctica is the most beautiful, most inspiring, and hardest place to work that I have ever been," Schmidt says. "You just feel so small and insignificant and like you're so lucky to be there in that minute. That is how I feel every day that I walk out there. And I imagine that's what it would be like if you were standing on the surface of Europa." **—MELISSA FRALICK**

Georgia Tech students traveled to Budapest, Hungary, and a number of other locations abroad as part of Georgia Tech's Leadership for Social Good Study Abroad Program.

# LEARNING TO BE SOCIAL LEADERS

## A STUDY-ABROAD PROGRAM IN CENTRAL EUROPE TEACHES STUDENTS FIRST-HAND HOW BUSINESSES AND NONPROFITS CAN CHANGE THE WORLD.

**CARL TERNS GOT OFF A TRAM IN BUDAPEST** at the end of a long day and lingered to watch the sunset over the Danube River. He had been to class that morning, where the CEO of a Hungarian nonprofit gave a presentation on microfinance. He then spent the afternoon cooking for a group of kids at Domino Tanoda, an after-school care center.

This was a typical day for Terns this summer: learning, working and experiencing life in Budapest as part of Georgia Tech's Leadership for Social Good Study Abroad Program, a nine-week experience focused on nonprofits and social entrepreneurship.

Terns and 16 other students began the program in Atlanta, then traveled to the Czech Republic and Poland before beginning internships in Hungary. Classes and guest speakers gave the students a theoretical base for understanding civil society, leadership styles in the social sector, and the rewards and challenges of running these types of organizations. But students also had the opportunity to see how they operate in real life by working directly with a nonprofit.

The organizations that partner with the program include traditional nonprofits as well as social enterprises with a defined business component to support a nonprofit mission. With these companies, students have the chance to do everything from public relations work and grant proposals to creating social media campaigns.

At his internship with Domino Tanoda, which serves families from a low-income area of Budapest, Terns was responsible for cooking, cleaning and organizing activities for kids. He also taught guitar lessons.

Margaret Royal, another participant in last year's program, performed social media marketing for CEEweb, a group of environmental think tank organizations working to improve biodiversity by promoting sustainable development.

One of the ways Tech students explored social organizations was teaching music lessons to youth from low-income areas of Budapest.

Royal's experiences with CEEweb taught her the role of business in solving the world's pressing problems, as well as the strategies these types of organizations use to make the biggest impact.

"Any study abroad is a great way for students to gain independence and a greater understanding of the world through travel," says Royal, who plans to use her engineering degree to work for a nonprofit upon graduation. "But what made this program in particular so great is we were learning about today's issues."

Program Director Dori Pap with the Scheller College of Business says the central and eastern area of Europe was chosen for a specific reason.

"We take a look at the nonprofit sector in the U.S. and how it compares to this very different part of the world, that has a much younger civil society since the fall of the Iron Curtain," Pap says. "The issues are the same. But when you have a different political system, when you have a different volunteer culture, when funding comes from different sources, the response to these issues is not the same.

"Looking into this topic, combined with the fact that students are actually making an impact by working hand in hand with nonprofit organizations, makes this program very unique."

Pap says the lessons students take away from their international experience will set them apart in their next interview. Lessons like learning to run an organization with a very small staff. Or the kind of leadership it takes to inspire employees in the nonprofit world, where money can't be a motivating factor.

"I feel that there are many people in the world trying to do good," Terns says. "But I've discovered that those intentions must be paired with knowledge in order to actually achieve that good. I think it is necessary for people to participate in programs like this and get the hands-on experience that it provides in the social sector."

The bonus? Gaining that knowledge in a place where you can watch the sun set on the Danube. "From taking public transportation two stops to the gym to taking weekend flights to places like Croatia, this experience was the most incredible adventure I have ever been on," Terns says. "I was thrown into a new world with a new culture and a new society over and over again. I constantly had to adapt, assimilate and grow, and I loved every minute of it."

**—KELLEY FREUND**

## FIELD NOTES

**WHERE:** Czech Republic, Poland, Austria and Hungary

**WHAT:** Georgia Tech's Leadership for Social Good Study Abroad Program

**WHO:** Program Director Dori Pap and 90 Georgia Tech undergraduates to date

**WHEN:** The 9-week program has run each summer since 2011.

# STRUCTURAL SOJOURN

**A TEAM OF TECH FRESHMEN EXPLORED CULTURE AND ARCHITECTURE AFTER EARNING A RARE INVITATION TO A DESIGN COMPETITION IN CHINA.**

**MANY COLLEGE STUDENTS** spend the summer after freshman year on vacation, taking a break from their challenging studies. But five College of Design freshmen plunged head first into a challenge when they decided to combine their summer break with a prestigious international design competition at Tongji University in China.

Sydney Anderson, Emma Chasteen, Yebin (Alice) Choi, Heewon (Eden) Jeong and Anna McCuan represented Georgia Tech in the 2017 "Fengyuzhu" Plastic Polypropylene Design and Construction Competition, part of the annual Tongji International Construction Festival, which was held last June in Shanghai.

The competition provided a rare opportunity for the first-year architecture students to build a full-scale structure.

It was also a special opportunity for Chasteen, who returned to China for the first time since she was adopted by a Griffin, Ga., family at six months old. Chasteen says she was excited not only to participate in the design competition, but about experiencing the culture where she was born.

"We all were first-year architecture students and had not yet taken Construction Tech or Structures [classes], so we learned a lot about how to make something that actually stands up," Chasteen says. "It gave me a new perspective between designing something on paper and actually building it. It was a bonus that

it happened to be an amazing international competition [taking place] where I was adopted."

Michelle Rinehart, the College of Design's associate dean for academic affairs and outreach, led the trip to China as the team's faculty adviser. She says Georgia Tech was one of just two architecture programs in the United States invited to participate, along with a team from the University of Hawaii.

"The competition involves all of the freshmen in architecture at Tongji [University], but they also invite other architecture programs in China to participate. Then they invite 11 international teams," Rinehart says.

Each team was given four days to design and build a pavilion made out of polypropylene, a type of plastic also known as PPL.

The team spent the first two days vetting and streamlining design ideas, which required factoring in the rain showers in the weather forecast.

"Our structure was based off the idea that we thought we were going to be building in the rain," Chasteen explains. "We ended up being moved inside to build, but we kept with our original idea of creating a system of panels that would shed the water down and away from the inhabitants. From the exterior perspective, it was to look like an artificial waterfall of sorts, with water flowing down identical consecutive panels that were strategically angled to create an arc for the water to flow down."

Although they didn't place in the competition, the participants gained the invaluable experience of building a structure as well as getting to know each other and meeting people from around the world.

"They had done design work and built small models, but they'd never built anything full-scale," Rinehart says. "And it happened to be an all-female team. I think we were the only all-female team out of the 11 international teams to participate."

After the competition, Choi and Jeong traveled to their homes in South Korea, while Chasteen, McCuan, Anderson and Rinehart remained in China for another week of sightseeing in places like Beijing and the Great Wall of China.

"The opportunity for a faculty member to travel with a small group of students and do this type of project is really rewarding," Rinehart says. "You learn a lot more about them. You get to engage in deeper conversations with them, get to know them personally, and learn more about what they are passionate about."

**—MONICA ELLIOTT, IE 94**

The College of Design's Michelle Rinehart (left in both photos) took a team of freshmen architecture students to China last summer to participate in an international design competition.

## FIELD NOTES

**WHERE:** Shanghai, China, at Tongji University

**WHAT:** The 2017 "Fengyuzhu" Plastic Polypropylene Design and Construction Competition

**WHO:** Tech freshman Sydney Anderson, Emma Chasteen, Yebin (Alice) Choi, Heewon (Eden) Jeong and Anna McCuan, along with Michelle Rinehart, the College of Design associate dean for academic affairs and outreach

**WHEN:** June 2017

СОЮЗ
МИШЕНЬ
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# INTO ORBIT

Youthful dreams of donning spacesuits and piloting rocket ships propelled most astronauts into their professions. But it's their grown-up expertise in science and engineering that allows them to punch their tickets out of this world. Just ask NASA astronaut and Georgia Tech alumnus Shane Kimbrough, MS OR 98, who recently spent six months as commander of the International Space Station. He shares what living and working in space is really like—and what it took for him to get there.

STORY BY ROGER SLAVENS  IMAGES BY NASA

**RIGHT NOW, SOME 250 MILES ABOVE EARTH,** the International Space Station (ISS) hurtles through the heavens at nearly 17,500 miles per hour—just as it has for nearly two decades. It's hard for most of us to fathom that traveling at such a breakneck speed could result in anything short of disaster. Yet the station's motion is relative, and the crew members onboard float along in microgravity unfazed, going about their daily routines as the ISS continues its ceaseless, frictionless orbit around our planet.

Shane Kimbrough believes the station is the most peaceful place he's ever visited. Serving as the commander of the ISS for a recent six-month mission, Kimbrough found himself drawn frequently to the observation module known as the Cupola, where he could marvel at the 360-degree panoramic views outside the station, especially its constant vigil on the Earth below.

The Cupola hasn't always been a fixture of the ISS. For more than a decade, inhabitants of the station were afforded a rather poor glimpse of their celestial surroundings. The smattering of portholes and small windows throughout the station's modules provided astronauts little perspective on their trajectory through space. To fix this design flaw, the Cupola was added in 2010, giving the ISS seven new windows on the cosmos.

"It's a spectacular place to sit and think," Kimbrough says of the Cupola. "Looking down upon the Earth is mesmerizing. Our planet is just so serene and strikingly beautiful. And if I sat there long enough, I could see virtually all of it, from the ice shelves of the Arctic Circle to the deserts of Africa to the reefs of Australia."

But it's what Kimbrough couldn't see from this perfect perch that truly resonated with him. "From this vantage point, I couldn't see the wars going on," he says. "I couldn't see any signs of conflict even though I knew it was there. It made me wish everyone else could see our world like this and realize what a gift we have and need to protect."

**MANY OF US GREW UP** dreaming of becoming astronauts, setting out to escape the bounds of Earth and explore the depths of space in high-powered rockets. However, except for a determined, lucky few, we inevitably gave up this flight of fancy for more practical pursuits—namely because we thought the opportunity to launch into the heavens was completely out of our reach.

For Kimbrough, however, the dream was closer at hand. Much closer.

He was born in 1967, right in the middle of the great space race between the United States and the Soviet Union—and just as mankind was reaching for the moon. "When the Apollo missions were launching, the whole country stopped whatever they were doing and watched," Kimbrough says. "It's different now, but I think everyone my age wanted to be an astronaut. I just had a little more of that desire in my blood."

Part of that interest and desire grew from his opportunity to watch numerous rocket launches up close and in person as a young child. His grandparents' house was located right across from the Kennedy Space Center in Florida, and Kimbrough even lived with them for a spell while his father, a career officer with the U.S. Army, served in Vietnam.

"When I was living there or visiting on vacation, my grandfather took me there to see everything that launched at Cape Canaveral—the Apollo rockets, satellites, everything," he says. "It was so exciting to be a kid and to see them all blast off."

He didn't know it at the time, but in just a few decades, it would be Kimbrough himself who would blast off into the cosmos as a NASA astronaut.

**ISS INSIGHT:** Manned missions to the ISS currently launch from Kazakhstan and employ incredibly reliable Russian Soyuz rocket systems.

He's since visited space twice: once on the Space Shuttle Endeavour mission STS-126 in 2008 (alongside fellow Tech alumni Eric Boe, MS EE 97, and Sandra Magnus, PhD MSE 96) and more recently via a Russian-built Soyuz spacecraft that launched in October 2016. Both times he was bound for the ISS.

**ALL ABOUT THE ISS**

The ISS is a joint project of five space agencies: NASA, Roscosmos (formerly the Russian Federal Space Agency), the Japan Aerospace Exploration Agency (JAXA), the European Space Agency (ESA) and the Canadian Space Agency (CSA). The station's

primary function is to serve as a microgravity (read: weightless) and space-environment research facility, as well as a place to test spacecraft systems and equipment for demanding future missions to places such as Mars.

Launch and assembly of the ISS began in 1998, and it took 10 years and more than 30 international missions to construct the modular station as it's configured today. The ISS was built in orbit, piece by piece, using robotic equipment and spacewalking astronauts from Soyuz ships and NASA shuttles, and eventually, once habitable, from the station itself. It's scheduled to get even larger, as two new modules—designed to accommodate larger crews and commercial spacecraft—are scheduled to be added by 2019.

The ISS measures roughly the length of an American football field, including end zones, and weighs more than 430 tons. It's composed of 16 different pressurized modules and connecting nodes that contain living quarters (sleeping cabins, a kitchen, a gym, two bathrooms) for the crew, as well as laboratories, power and life-support systems, the Cupola, docking ports and other facilities.

The first humans to reside on the station were NASA astronaut Bill Shepherd and Russian cosmonauts Yuri Gidzenko and Sergei Krikalev in 2000. The ISS now accommodates up to six full-time crew members at once.

Kimbrough affectionately calls his first visit to the ISS aboard the Space Shuttle Endeavour less than a decade ago the "home improvement" mission. "Our goal was to help expand the crew area, and we brought and installed a new bathroom, a new kitchen, a new gym, and new bedroom," he says. "Shuttle missions only last about two weeks, however, and we were only docked to the station for 10 days or so. We got a lot of it set up but not everything was functioning when we left. When I came back to the ISS some eight years later, it was neat to see all these areas working and also get a chance to use them for six months."

### TIME TO TRAIN

A few years after his Space Shuttle mission, Kimbrough was visiting the Kennedy Space Center when he got the call asking him if he wanted to go back into space and serve on ISS Expeditions 49 and 50. His answer was an instant and resounding "Yes!" Kimbrough's administrative duties at NASA were interesting and challenging, but spaceflight was the reason he became an astronaut.

That thrill quickly turned to resolve as his two-and-a-half years of mission training—much of it spent in Star City, Russia, home of the Yuri Gagarin Cosmonaut Training Center—began. "I had to travel to Star City four to five weeks at a time because the only vehicle we have to travel to the ISS right now is a Russian spacecraft," he says.

This new schedule proved to be a challenge for Kimbrough, his wife Robbie, and their three children. The family lived in the Houston area not far from the Johnson Space Center, but Star City was nearly 6,000 miles away.

"It took a while to get into the flow with my family of the here-a-month, gone-a-month, then-repeat routine," he says. "Luckily, they knew what a special opportunity this was for me and they were incredibly supportive. Robbie already knew full well what the life of a military officer and an astronaut demands of a family."

As you might suspect, training in Russia on Russian spaceflight systems requires a considerable command of the Russian language.

"Astronauts have to be at a certain fluency level before NASA will ever consider assigning you to a mission," Kimbrough says. "That's because once you're in that spacecraft, everything is in Russian—the displays, the computers, the checklists, the communications from mission control in Moscow. You're not learning how to ask 'Can I have a cup of coffee?' It's very challenging and technical, and it uses a completely different and difficult alphabet (Cyrillic), too."

In addition to learning the language, Kimbrough had to adapt to the Russian style of training. Safe to say, it was even more intimidating than earning his master's degree at Georgia Tech.

"You'd study and train on all the systems and equipment, and then they'd hit you with exams," he says. "They're particularly big on oral exams, and you have to be prepared to sit in front of a committee of experts who will hammer you with questions. It was scary

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## SHANE KIMBROUGH: A CAREER IN SPACE

**Full Name:** Robert Shane Kimbrough

**Birthdate/place:** June 4, 1967, in Killeen, Texas

**Family:** Married to Robbie Lynn (Nickels) Kimbrough; they have two daughters and a son.

**Education:** Graduated from The Lovett School in Atlanta in 1985; earned a bachelor's degree in aerospace engineering in 1989 from the United States Military Academy (West Point) and a master's degree in operations research in 1998 from the Georgia Institute of Technology.

**Military Experience:** Commissioned as Second Lieutenant in U.S. Army in 1989 and entered U.S. Army Aviation School; designated Army (helicopter) aviator in 1990; assigned to 24th Infantry Division in Fort Stewart, Ga., then deployed to Southwest Asia and served in Operation Desert Storm; in 1994 was assigned to the 229th Aviation Regiment at Fort Bragg, N.C.; after completing graduate school at Georgia Tech, became assistant professor of mathematical sciences at West Point. He retired as colonel in the U.S. Army.

**NASA Experience:** Joined Johnson Space Center in 2000 as a flight simulation engineer; selected as an astronaut candidate in 2004; completed astronaut candidate training in 2006; between missions has served in a variety of capacities, including chief of the Vehicle Integration Test Office, as well as chief of the Robotics Branch for the Astronaut Office.

**First Spaceflight:** 2008 Space Shuttle Endeavour mission STS-126 to International Space Station; helped expand living quarters to accommodate six-member crew on the ISS; logged nearly 16 days in space, including two spacewalks.

**Second Spaceflight:** Commander of ISS Expedition 49/50; launched into space on Oct. 19, 2016, returning six months later on April 10, 2017; completed four spacewalks (totaling 26 hours).

**Total Time in Space:** 189 days (so far)

at first. They like to yell a lot. But you get used to it. It's just the way they do things. And then after you've passed an exam, you're debriefed and you all go out to socialize together."

Final exams are particularly brutal, and Kimbrough had to go through them twice—the first time as a member of the backup crew for the preceding expedition and the second just weeks before his scheduled launch. "These last tests take two full days, back to back, one in the ISS trainer and then one in their Soyuz spacecraft," he says.

After Kimbrough and his fellow crew passed, then came the pomp and circumstance.

"They're really big on formal ceremonies here, so the next day we traveled down to Red Square in Moscow and visited the gravesite of the first man in space, cosmonaut Yuri Gagarin, and then we went to the Kremlin," Kimbrough says. "The Russians are a warm people and very proud of their space program, so it turned out to be an amazing, emotional experience that made me feel like I was part of the country's history."

#### THE ROAD TO LIFTOFF

After a few days off to relax, the time came to travel to the Baikonur Cosmodrome, the world's first and largest spaceport, located on the steppes of southern Kazakhstan. This is the place that the Soviets sent the first satellite, Sputnik, into space.

"We flew over on two of these giant, old-school military planes," Kimbrough says. "The planes were just full of people—all our trainers, engineers and support staff came with us. You can't take a commercial flight there to Baikonur. There's only one way in and one way out. To be safe, the prime crew flew on one airplane and the backup crew on the other."

Arriving two weeks before launch, Kimbrough and a great number of his teammates went straight into quarantine at the large complex. "Mission control didn't want us to get sick or injured and otherwise compromise the expedition," he says.

Eventually, the crew's families and other guests joined them in

Kazakhstan. "We each got to invite about 15 people to see the launch," Kimbrough says. "It's an expensive trip, so a lot of folks can't make it, but it's a treat for those who could. My wife and kids came over, of course. Everyone had to pass their medical screenings before they could get into the facilities. Even then, my interactions with my family were very limited."

Finally, launch day arrived—Oct. 19, 2016—a month later than planned due to technical difficulties. Considering all they went though and the added delays, it was none too soon for Kimbrough and his two cosmonaut compatriots, Sergey Ryzhikov and Andrey Borisenko.

"Launch day was a crazy day," Kimbrough says. "We got up, were put through a battery of unpleasant medical tests and ate breakfast. Then, once again, came the ceremonies. All the crew members gathered with their spouses, and we were joined by NASA and Russian officials for a series of toasts."

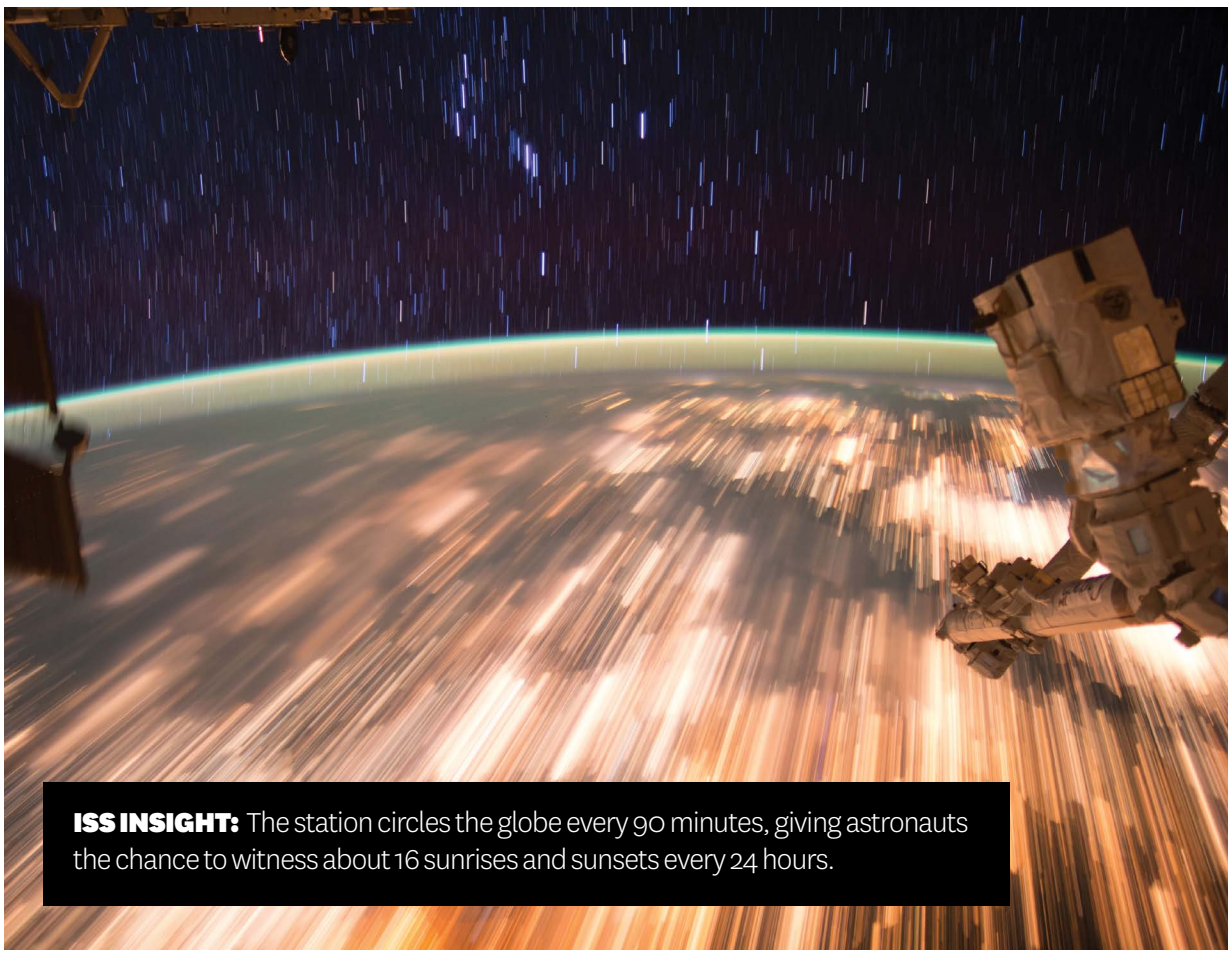
Kimbrough got a few minutes to be alone with Robbie, but he wasn't allowed to hug or kiss her—again for fear of picking up a bug and carrying it up into the closed environment of the ISS. "All the precautions were a little extreme, but I understood," says Kimbrough, who served as the expedition's de facto medical officer.

A few more ceremonial acts later, and the crew was taken from quarantine to facilities near the launch pad where they donned their spacesuits. Then the goodbyes continued.

"They sat us down at a table right across from our families—still separated by glass—and we got talk to them through microphones," Kimbrough says. "It lasted another 45 minutes, which was way too long. I just wanted to get on the vehicle and fly; we had already said our goodbyes several times."

Three hours before the scheduled liftoff, the prime flight crew was finally given the thumbs up and sent to the launch pad. "They took us by bus to the Soyuz rocket, where we rode up an elevator to the spacecraft, stepped aboard and got strapped in for the flight," Kimbrough says.

When the countdown came and the engines ignited, Kimbrough was surprised by how smooth the takeoff and ride turned out to be. "The Soyuz rocket and spacecraft are much smaller than the Space Shuttle's configuration and produced far less turbulence," he says. "It was super easy, super smooth, all the way up. And those nine-and-a-half minutes it took to get into space went by quickly."



**ISS INSIGHT:** The station circles the globe every 90 minutes, giving astronauts the chance to witness about 16 sunrises and sunsets every 24 hours.

**ARRIVAL AT THE ISS**

Normally, after reaching low-Earth orbit, it takes about six hours to travel to and dock with the International Space Station, Kimbrough says.

"Unfortunately, we had to take our time to get there," he says. "But we knew that going in. We were just the second flight of this upgraded [Soyuz MS series] spacecraft and Moscow Mission Control wanted to test all the new hardware and software changes. So we orbited the earth for a couple days before heading for the ISS—it was tough being cramped in there."

The docking process proved to be relatively fast, but despite their eagerness to board the ISS, Kimbrough and his crewmates couldn't leave their confines immediately. "We had to wait about two hours for the pressure to equalize before we could open the hatches and set foot on the station," he says.

The first half of ISS Expedition 49 was waiting for them. Russian cosmonaut Anatoli Ivanishin, NASA astronaut Kathleen Rubins and Japanese astronaut Takuya Onishi had arrived at the station in July 2016 as the second half of Expedition 48, and the trio had been on the ISS by themselves since early September.

"They threw us a party right off the bat," Kimbrough says. "They also had everything set up for us to conduct media interviews and talk to our families back in Moscow and Houston. Robbie and our kids had already returned home to the States and they got to see me from the Johnson Space Center."

The crew spends roughly half of each workday—about six hours—conducting scientific experiments for researchers back on Earth. "We're basically their glorified lab technicians," Kimbrough jokes.

**ISS INSIGHT:** Conducting scientific experiments takes up about half of the astronauts' daily working hours.

**DAY-TO-DAY LIFE IN SPACE**

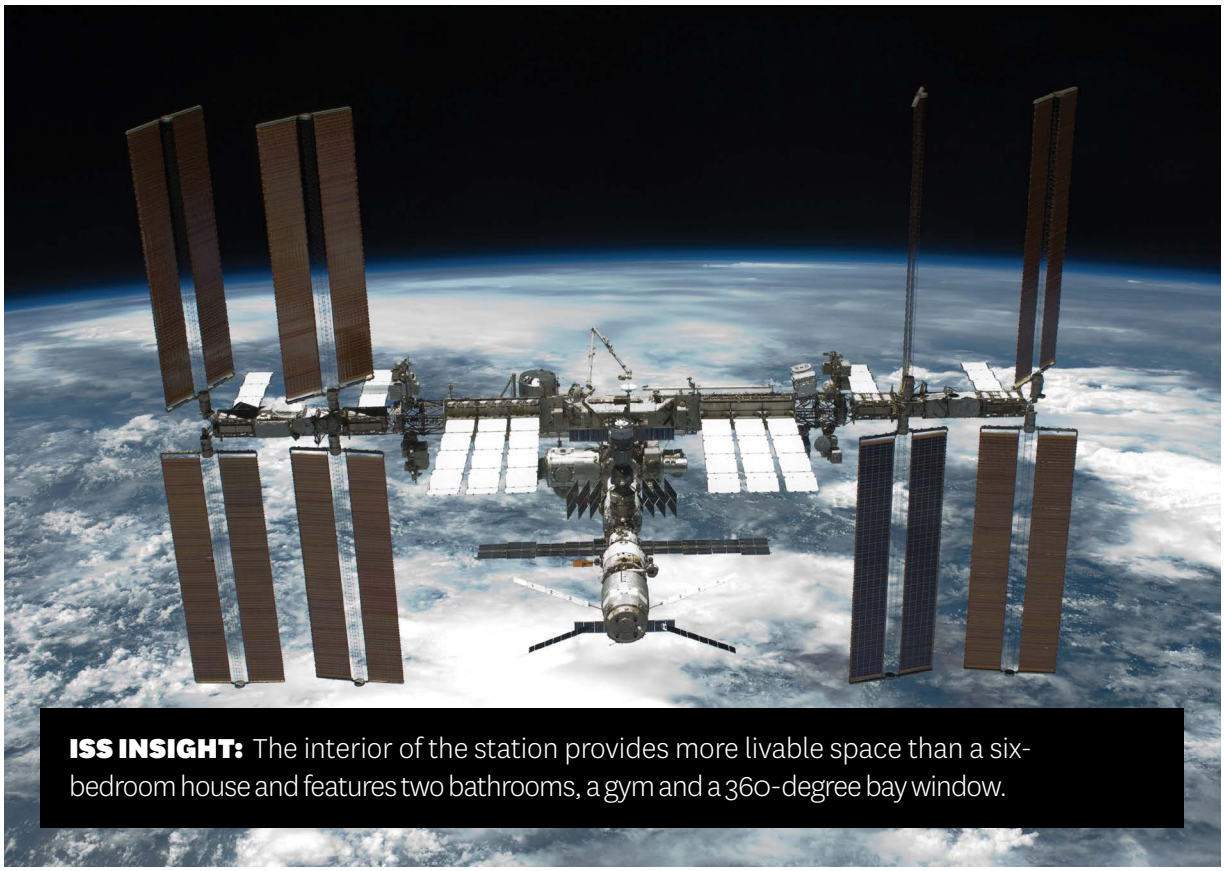
It took Kimbrough and his crewmates a little while to get into the swing of things onboard the ISS. The first step was adjusting to microgravity. "It takes time to orient yourself to the physics of weightlessness," Kimbrough says.

The new arrivals also had to get caught up to speed by the existing crew, who were already preparing for their return flight to Earth, which would take place about a week later on Oct. 30. And they had to adjust to the new regimen of daily duties and routines on the space station.

The workday on the ISS is 12 hours long, from 7:30 a.m. to 7:30 p.m., Kimbrough says. "And there's a stopwatch of sorts tracking your progress when you're working, a literal red line that you have to stay ahead of," he says.

Every morning, the alarm sounds at 6 a.m. "You have about an hour and a half to clean up, get breakfast and prepare yourself for the day," he says. "Then at 7:30 a.m., we'd usually start with a conference call with the various Mission Control centers located around the world to discuss the day's priorities and get any updates we needed. They'd last about 10-to-15 minutes unless something important had come up."

The crew spends roughly half of each workday—about six hours—conducting scientific experiments for researchers back on Earth. "We're



**ISS INSIGHT:** The interior of the station provides more livable space than a six-bedroom house and features two bathrooms, a gym and a 360-degree bay window.

basically their glorified lab technicians," Kimbrough jokes.

The rest of the time is split between maintaining the station and the equipment, conducting interviews with media, and exercising and eating. "On very special days, we might have a spacewalk or dock with a ship or satellite," he says.

After punching the clock at 7:30 p.m. at the end of the workday, the crew grabs dinner and enjoys some free time. Lights out is at 10 p.m.

"We all sleep at the same time," Kimbrough says. "There's no one up manning the station or taking the night shift, so to speak. Our Mission Control teams do that job for us, making sure all systems are fine while we rest. They'll wake us up if there's a problem, but there rarely is."

Every astronaut gets a bedroom, if you can call it that.

"The sleep stations are about the size of a phone booth, only not as tall," he says. "These cabins are laid out in kind of a circle, one on each sidewall, plus one on the ceiling and one on the floor. Remember, without gravity, there's no true up or down in space."

Because of that, crew members do tuck themselves tightly into their sleeping bags, which are attached to the walls. "You zip yourself up to keep from 'sleep-floating' around the ISS at night," Kimbrough says. "Some people like to put a bungee cord around their arms or knees to stay in a good sleeping position all night long."

Daily hygiene also takes some getting used to.

"We have two bathrooms on the station, one in the U.S. module and one in the Russian module, and you have to learn to share just like you would with family," he says. "But there are no showers. We haven't figured out how to do that one yet—water loose on the station would be a disaster—so we use washcloths to wipe down in the morning or after exercising. There's no dirt onboard so we're really just washing away our workout sweat for the sake of the other crew. Smell does travel in space, at least aboard the station."

There's an area outside each bathroom that is designed so that crew can brush their teeth, shave and wash their hair (with dry, rinseless shampoo, of course). "We have a wall with a bunch of Velcro stuck to it so each of us can stash our travel kits and all our personal hygiene gear," Kimbrough says. "To hold ourselves stable when we're shaving and getting ready, we stick our feet into some special anchored loops."

Special leg restraints also come handy when astronauts use the bathroom toilets, which work like vacuum cleaners that suck waste into the commode. Each crewmember even has their own personal urinal funnel that is attached to a hose system.

**EATING & EXERCISE**

Kimbrough admits that the food on the station was far better than he expected. "It's come a long way since my Space Shuttle mission," he says. "The variety is very good, and when you're cooped up for so long, that variety is key."

It helped that the crew members hail from different countries with very different cuisines.

"The Russian food, in particular was very tasty, very different than American food," he says. "I made a point to go down every Friday night to the Russian module to eat with them, and they often would come return the favor on Saturday night. I was also lucky enough to fly with Japanese and French astronauts, and their food was fantastic as well."

Dining on the ISS isn't far different from what you'd experience on a long-term camping trip. There's plenty of food onboard and most of it won't spoil. Some of it comes in dehydrated packages, with the food needing liquid to be added while it's cooked over heat. Meanwhile, other food is ready to eat, like cookies and fruit. The station has an oven, but no refrigerator. Spices are available, but primarily in liquid form since stray salt or pepper grains could wreak havoc with the station's sensitive systems.

Whenever a new supply ship docks at the ISS, it's the source of big excitement for the astronauts—because it means fresh food. (Shipments arrive every few months.) Once, Kimbrough got to supplement the fresh offerings with lettuce he grew for an experiment, though it amounted to just a small salad that was shared among the crew.

The crew cooks and eats three regular meals daily. And they're encouraged to take in the proper amount of calories to fuel their activities and keep their bodies healthy. "For me, I needed to try to consume 3,000 calories a day," Kimbrough says. "But the portions were so small that I had a problem getting enough, so I had to raid the pantry a lot. It felt like I was eating all the time."

Like maintaining a generous diet, getting daily exercise is critical for long-term stays in space. "In our early missions to the ISS, astronauts didn't exercise," he says. "They really didn't have any way to work out let alone any equipment. Now we understand that if you don't exercise, it really messes with the human body. In extended time in microgravity environments, you can lose a lot of bone density and muscle mass."

**ISS INSIGHT:** Astronauts need to exercise at least two hours a day to stave off muscle-mass and bone-density loss caused by extended living in microgravity.

For this reason, crew members must exercise for at least two hours a day. That includes cardio work on a treadmill or exercise bike, and resistance training on the NASA-designed Advanced Resistive Exercise Device (ARED). Kimbrough's Space Shuttle STS-126 mission delivered and installed the ARED, which provides enough resistance equivalent to simulate weight training. (Weight training is virtually impossible in microgravity; what weights 200 pounds on Earth would be no effort to lift on the ISS.)

"On the ARED, you can do dead lifts, squats, bench presses, curls, abs and whatever you could do on the ground in a normal gym back home," he says.

The absence of Earth's gravity also has other little-known effects on the human body. "For one, in space, the fluid in your body tends to shift toward your head rather than your feet," Kimbrough says. "That's why a

lot of astronauts look red and puffy-faced during interviews while we're up there. But it also does get rid of your wrinkles, which is a good thing, I guess."

Also, with no gravitational compression on his spine, Kimbrough and his colleagues grew taller in space. "My spine expanded a little bit and I finally hit my lifetime goal of topping 6 feet in height," he says. "Our support teams had to account for this growth when they sized us for our spacesuits back on Earth."

#### EXPERIMENTS & COMMUNICATIONS

The bulk of the astronauts' work duties on the ISS involves conducting scientific experiments. After all, the main reason the station exists is to investigate the effects of microgravity on a variety of scientific disciplines, from biology to physics to technology. The station also provides a unique vantage point for collecting data about the Earth and outer space.

What's somewhat surprising is that the crew members running this research usually know little about the experiments themselves.

"The projects that we test at the ISS have gone through an extensive vetting process before they make it to space, but it's impractical and impossible for us to be trained on all of them," Kimbrough says. "The experiments have been optimized so we can easily follow instructions to conduct them and record the results. Sometimes we get the researcher on the phone to walk us through the process if it's especially complicated.

"We try our hardest to get the research right, because we know scientists have spent years to get their experiments onto the station. We're very careful—sometimes things take a little longer than planned, but as long as we get the data they want, it's well worth it."

When the work is done each day, the crew enjoys a couple hours of downtime. As much as Kimbrough liked to visit the Cupola to gaze at the Earth, his favorite way to unwind was to connect with his family.

"I got to talk to my wife every day and my kids about three to four times a week," he says. "On Sunday afternoons, we'd do a video conference weekly. Even though I had two daughters in college and my wife and son at home, the technology allowed us all to interact with each other, almost like we were sitting in the same room together. It was just that mine was 250 miles up in the sky."

#### A WELCOME BUT BUMPY RIDE HOME

After six months in space, Kimbrough was ready to go home. "We had a great mission, but we couldn't wait to return to Earth," he says.

The day of disembarkment, April 10, 2017, started with a "fluid-loading" protocol where the astronauts drank a lot of liquids and took salt tablets to keep it in their systems. "It helps with your recovery coming back into gravity and you just feel better if you follow the process," he says.

Everything got packed up, including an official Ramblin' Wreck flag that Kimbrough had proudly flown on the station, and the crew members put on their spacesuits, got into their respective seats and strapped in to leave the ISS. About an hour later, after all systems were checked, the Soyuz MS-02 undocked from the station and started its controlled descent. It was going to take about three-and-a-half hours for the return trip to where it all started, the steppes of Kazakhstan. And, yes, that meant the landing would literally be a hard one.

"It was a really interesting ride home—very dynamic," Kimbrough says. "We weren't under constant stress, but we definitely felt the big events like the explosions that preceded the module separations and the opening of the parachute. Only the crew module survived re-entry into the Earth's atmosphere, with the other modules burning up along the way."

And then the trip abruptly came to an end.

"We crashed into the ground hard—really hard," Kimbrough says. "We actually rolled a couple times and then got dragged around a bit because the wind played with our parachute. But once all that settled out, the search and rescue forces only took about 10 minutes to find us. None of us were hurt except for some bumps and bruises, thankfully, but we didn't feel that great either because our bodies were readjusting to the forces of gravity."

And then the Russian technicians opened the module and helped the astronauts out of the spacecraft.

"It was so amazing to smell fresh air again and to feel the sun on my face," Kimbrough says. "We had spent six months on the ISS able to see the sun 24/7, but since we were separated from it by layers of glass and insulation and steel, we could never feel its warmth."

A helicopter ride to a major airfield, a jump on a NASA airplane, and 24 hours after putting his feet back down on solid ground, Kimbrough was back in Houston and in the arms of his wife and kids. He was already starting to feel like an earthling again. ▲

"In space, the fluid in your body tends to shift toward your head rather than your feet," Kimbrough says. "That's why a lot of astronauts look red and puffy-faced during interviews while we're up there. But it also does get rid of your wrinkles, which is a good thing, I guess."

# Alumni House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The 2018 Gold & White Honors Gala not only gave the Alumni Association the oportunity to recognize eight incredible members of the Georgia Tech community, but also to raise $479,975 to support our award-winning student organizations. Thanks to everyone who donated their time and money to make this an incredibly successful event.



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The Association is here to enrich your professional career and keep you connected with your alma mater and other alumni, no matter where life takes you. And if you're not taking full advantage of these offerings, then you're missing out on easy ways to leverage your Tech education and status as a Ramblin' Wreck.

Let us count the ways.

**1** **CONNECT WITH FELLOW YELLOW JACKETS.** Wherever you are across the country or around the world, chances are there is a loyal group of Yellow Jackets just around the corner. In fact, the Association boasts more than 100 Regional Networks that offer a wide range of programming, from professional networking to game-watching parties to volunteer events. Affinity Groups also provide similar opportunities, but instead of connecting locally, you're connecting with those who have similar interests or experiences, such as the Lacrosse Alumni Affinity Group or the Georgia Tech Women Alumnae Network (WAN). Visit **gtalumni.org/networksandgroups** to find the network or group that best suits you.

**2** **ATTEND ALUMNI ASSOCIATION EVENTS.** The Association staff helps plan an incredible slate of events each year, from the nostalgia of returning to campus for the annual Homecoming & Reunion Weekend every fall to competing in the fun Dean George Griffin Pi Mile 5K Road Race in the spring. Looking for something more formal? There's the Gold & White Honors Gala, where we recognize some of Tech's top alumni, to the President's Dinner, a swanky, exclusive event for those who donate to Roll Coll at the Leadership Circle level. To learn more about these signature events and others, and find out how to register for them online, visit **gtalumni.org/events.**


**3** **GET HELP WITH CAREER AND PROFESSIONAL DEVELOPMENT.** Networking with other Georgia Tech alumni is just one way the Association can help you advance your career. We also offer a wide range of workshops and seminars to help you learn new skills, make better career decisions and develop your leadership acumen. Our Alumni Career Conference and Job Fair annually draws scores of employers specifically looking to hire Tech graduates, and gives Yellow Jackets a chance to expand your professional contacts. Find out more at **gtalumni.org/career.**

**4** **TRAVEL THE WORLD WITH FELLOW ALUMNI.** You can ramble around the world with your fellow Yellow Jackets and bring your friends, too. Georgia Tech Alumni Travel offers more than 40 trips a year in partnership with world-class travel companies (such as AHI International, Odysseys Unlimited and more) to offer an exciting schedule of adventures (such as Costa Rica, featured on page 76). Discover the upcoming schedule of trips at **gtalumni.org/travel**, where you can also request tour brochures and reach out to our travel director for advice.

**5** **GIVE BACK THROUGH ROLL CALL.** Without Roll Call, Georgia Tech's Fund for Excellence, the Institute would be a much different place. There wouldn't be a Campus Recreation Center that rivals the best in the world. Technology Square would not exist. And, excellent students would not have received the scholarships needed for them to attend Tech. Last year, the Alumni Association raised nearly $10 million in unrestricted funds through Roll Call to support the Institute's academic mission. It's a source of pride for us and for the alumni who give; it's a way for alumni to increase the value of their degrees; and it's an investment that has shown a tremendous return—since 1947. Learn more about Roll Call at **gtalumni.org/rollcall** and consider making a donation today.

**6** **SUPPORT AWARD-WINNING STUDENT PROGRAMS.** The Alumni Association sponsors and funds three amazing student organizations that perennially rank among the best in the country, according to the national Council for the Advancement and Support of Education (CASE). In fact, for the past three years, Georgia Tech students have been named Outstanding Student Leader of the year in the national CASE Affiliated Student Advancement Program awards. These groups are: the Student Alumni Association, the largest student organization on Tech's campus, devoted to connecting students with alumni and teaching them about life after college; the Georgia Tech Student Foundation, which grew alumnus J. Erskine Love Jr.'s grant of $100,000 into an endowment totaling more than $1.2 million, and annually invests in campus organizations and projects; and the Georgia Tech Ambassadors, a group of top students that serves as hosts for the Institute.

**7** **VOLUNTEER YOUR TIME.** One of the Student Alumni Association's most successful programs is Mentor Jackets, which gives students a chance to learn one-on-one from alumni in their chosen fields. You don't even have to be close to campus to participate. Go to **gtmentorjackets.com** for more info. However, if you are close by, one way to connect with current Yellow Jackets is food. Through Dinner Jackets, alumni volunteers either cook them a meal at home or take them out for a nice meal to give them a break from their studies and a chance to interact with active Tech graduates. But there are many more ways you can volunteer to help students or serve the Alumni Association's mission—maybe even join the Board of Trustees. Visit **gtalumni.org/volunteer** to fill out an interest form so that we can match you up with the right opportunity.

**8** **CASH IN DISCOUNTS FROM GEORGIA TECH PARTNERS.** Many of the Alumni Association's partners offer exclusive discounts for Georgia Tech alumni, friends and family. Whether you are shopping for auto insurance or looking for legal advice, or simply want a discount on a hotel stay in Atlanta, we have companies that can meet those needs and more. You can also sign up for the Georgia Tech Rewards MasterCard, or check out the Tech Marketplace where you can support companies owned and operated by fellow alumni. Let the shopping commence at **gtalumni.org.**

**9** **RECEIVE ALL FOUR ISSUES OF THE ALUMNI MAGAZINE AND GET OTHER NEWS ABOUT TECH.** All Georgia Tech alumni receive two issues of the magazine a year—it's our gift to you. But, if you donate even a modest amount to Roll Call, you can receive all four editions. There's no better way to find out how other alumni are making an impact on the world, and to keep up with happenings on campus. Sign up for Buzzwords, our free monthly newsletter, and receive updates through your Regional Networks. You can also always read the magazine online at **gtalumni.org/magazine**.

## CONNECT WITH THE GTAA

**FOLLOW US ON SOCIAL MEDIA:** Learn about upcoming events and stay on top of the incredible things happening at Georgia Tech. Find us on Instagram and Twitter @gtalumni, and on Facebook @ georgiatechalumni.

**UPDATE YOUR ALUMNI PROFILE:** Keeping your contact information current ensures you're getting the information you need about Alumni Association programs and Tech news, makes registering for events easier and helps you stay in touch with classmates. Update your information at **GTALUMNI.ORG**.

# Discovering the Pura Vida

BY ROGER SLAVENS

A recent alumni tour of Costa Rica proved to be a perfect mix of adventure and relaxation, thanks to an expert guide.

**WE HAD BEEN CRUISING UP AND DOWN THE RIVER,** spotting a wide variety of birds and keeping a wary eye on all the sun-bathing crocodiles along the way. But what we wanted desperately to see was one of Costa Rica's iconic, white-faced capuchin monkeys. We could hear them, but they perched deeper in the woods than we could see from our boat.

That's when our tour director, Oliver Acosta, stepped up to the prow and did something we never thought possible. He cupped his hand to his mouth and called to the monkeys—a few shrill screech-chirps—and waited patiently. Sure enough, the leaves started rustling, and one of their troop emerged high up in the trees, scouting us to see if we were friend or foe.

Having a trained naturalist—and such a gifted vocalist—is a must on a small group tour like ours to Costa Rica. As we traveled across the country's different regions, Oliver always had his eagle eyes trained on the passing scenery, ready to point out sloths, agoutis (a large, blunt-nosed rodent), squirrels, coatis (or coatimundis, tropical raccoons), iguanas, butterflies and a seemingly endless array of native birds.

Costa Rica indeed proved to be a birder's (and photographer's) paradise. Oliver could name and describe every feathered creature we came across—from the obvious toucans and macaws and hummingbirds to species most of us had never heard of before. In fact, he could call out each bird's plate illustration number by memory in the well-worn field guide he carried and shared with us.

The white-faced capuchin monkey eluded us until our tour director, Oliver Acosta, called them.

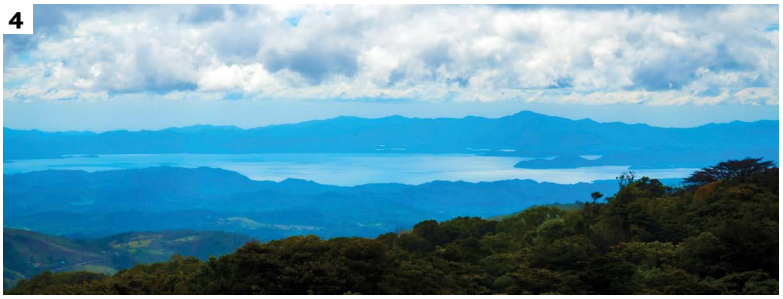
What's more, whether we were in the capital city of San Jose, or the eastern rainforest around the Arenal volcano, or the mountainous, central cloud forest near Monteverde, or the low-lying, sunny Pacific Coast region of Guanacaste, it became clear to us that Oliver—a Costa Rican native—knew everybody. Which meant he was in tune with all the local happenings. Not only was he able to steer us to the best roadside stops for the tastiest bites of food and the most stunning views, but he also steered us around traffic problems (with the expert help of our fearless bus driver, Julio, of course).

Our tour, scripted by Odysseys Unlimited, gave our small group (15 of us, to be exact) the perfect mix of adventure and relaxation. We hiked up volcanoes and across suspended bridges, strolled through butterfly and orchid gardens, lodged at a series of luxury hotels with breathtaking views, and partook of a veritable rolling buffet of glorious food.

This was my fourth Georgia Tech Alumni Travel tour, and I had never eaten better. In particular, I couldn't get enough of the simple, traditional Costa Rican meal called *casados*, which is



Roger Slavens



**1.** Red-eyed tree frog. **2.** A gorgeous, unexpected waterfall found in the distance on a roadside rest break. **3.** Costa Rica was a birder's paradise whether you were looking for toucans or lesser-known species. **4.** A dramatic view from our resort in the cloud forest.

a plated marriage of chicken, rice, plantains, salad and fresh tortillas. We also sampled an array of delicious, unusual fruit (water apple, sweet lemon, tamarind) and drank the freshest juices (soursop, watermelon, pineapple) that made us seriously question why we stick to the rather bland, staid options we find in our grocery stores at home.

Costa Ricans live by the motto *¡Pura Vida!*—which translates to "pure life." They use the phrase to say hello and goodbye, and to signal that everything's good. This sense of calm, easy happiness permeates virtually everything in the country, especially its warm, friendly people. Our group of Tech travelers agreed that we needed to take a bit of pura vida back to the United States with us, and that we needed to return to this special country someday soon. ▲

If you're itching to travel the world, who better to globe-hop with than your fellow Yellow Jackets? The Georgia Tech Alumni Association has a host of trips (like the ones listed below) scheduled for 2018 and beyond. For more information, or to register for an upcoming tour, visit **gtalumni.org/travel.**

### EXPLORING AUSTRALIA & NEW ZEALAND

*Sept. 19 – Oct. 10, Odysseys Unlimited*

On this trip, travelers spend three weeks fully exploring the Lands Down Under, from Cairns and the spectacular Great Barrier Reef to Ayers Rock and sophisticated Sydney. You'll also take an Aboriginal tour and explore New Zealand's Mt. Cook National Park, Milford Sound and Auckland.

### WONDERS OF PERU & AMAZON CRUISE

*Oct. 4 – 15, 2018, AHI Travel*

Visitors can tap their sense of adventure surrounded by Peru's wondrous scenery, from the Amazon region's unspoiled beauty to ethereal Machu Picchu. The trip includes a three-night cruise aboard the luxurious *Delfin III*, your perfect perch for appreciating the extraordinary sights and sounds along the rainforest.

### THE WOLVES OF YELLOWSTONE

*Jan. 21 – 27, 2019, Orbridge*

Yellowstone National Park serves as the backdrop for a very special wildlife expedition at the best time of year to see packs of wolves moving and hunting. You'll head out in safari vehicles to track and photograph them with the help of an expert guide, and then spend your evenings relaxing in atmospheric and authentic lodges.

# Save These Dates


**APRIL 12 — RAMBLIN' ON**

The Georgia Tech Alumni Association's annual graduation bash welcomes seniors to the ranks of Tech alumni in style with food, games and fireworks on the field in Bobby Dodd Stadium.

**APRIL 21 — PI MILE 5K ROAD RACE**

The 46th annual Pi Mile Road Race brings Yellow Jacket runners of all stripes together for a fun 5K race through Tech's blooming springtime campus.

**MAY 1 — 2018 ALUMNI CAREER CONFERENCE AND JOB FAIR**

If you're hunting for the perfect job, searching for new employees, or interested in networking and career development workshops, plan to attend this event exclusively for Tech alumni.

**JUNE 9 — PRESIDENT'S DINNER CELEBRATING ROLL CALL**

This black-tie event honors Tech's most generous Roll Call donors with an elegant evening of dinner and dancing with Institute President G.P. "Bud" Peterson.

**SEPT. 6 — STUDENT ALUMNI ASSOCIATION KICKOFF**

Help show students what it means to give back to Tech by supporting the Student Alumni Association's annual kickoff membership drive on campus.

**Visit gtalumni.org** to find more information and register for these and other upcoming Alumni Association events!

# Planning Your Next Career Step

BY MELISSA FRALICK

Whether you're looking for a new job, professional development or networking opportunities, you should check out the 2018 Alumni Career Conference and Job Fair.

**ACHIEVING ALL YOUR CAREER GOALS** doesn't happen magically when you land that great new job. You also have to continuously spend time investing in yourself.

The 2018 Alumni Career Conference and Job Fair is an exclusive recruiting event for Georgia Tech alumni and industry-leading organizations that also features professional development for people in all fields and career stages. This year, the Alumni Association is expanding the event to include a host of professional development seminars and networking opportunities.

"It's not just for people looking for a job, but people who are interested in gaining job skills as well," says Charlotte Anders, the Alumni Association's director of career and professional development.

Anders says that even if you are happy in your current position, it's important to take steps to continue learning and improving to achieve your long-term career goals. "Where do you want to be in 10 years and what do you need to do to get there?" Anders asks.

The answer to that question will be different for an engineer and a computer programmer and a consultant.

But strengthening skills like leadership, personal branding and communication will help you to stand out, no matter your field. "We want to provide a place our alumni can go and get some really good professional education in a short of period of time," Anders says.

At its core, the Alumni Career Conference and Job Fair brings together qualified Georgia Tech alumni with top companies who are ready to hire.

Donna Ahlrich, IE 82, says last year's career fair was exactly what she needed to get back into the engineering field. After taking time off to raise her children, Ahlrich later switched careers and worked as a media specialist for Gwinnett County Public Schools. But a helluva engineer at heart, she was ready to return to her industrial engineering roots.

She says she researched the companies that would be at the career fair ahead of time, and selected 12 companies with whom she planned to make a connection. While waiting to speak to a recruiter from one of those companies, she ended up having a great conversation with a representative from another company instead—a moment of career fair serendipity, if you will.

"The company that I am with now is not one of the ones that I had looked at," Ahlrich says.

Ahlrich now works as a continuous improvement industrial engineer for Atlanta Airlines Terminal Corporation at Hartsfield-Jackson Atlanta International Airport. "I love my job," Ahlrich says. "Working at the airport for an industrial engineer is like being at Disneyland. It's so cool." ▲

**The 2018 Alumni Career Conference and Job Fair** will take place at the Cobb Galleria Centre on May 1. The day-long event will include two professional development workshops, a job fair featuring more than 100 employers, and a networking happy hour. So whether you're in the market for your next job, or want to invest in your professional development, register for the Career Conference and Job Fair to stay on track for that next great opportunity. Find out more at **www.gtalumni.org/careerfair.**

# LEADERSHIP

## The Leadership Circle is the cornerstone of Roll Call - Georgia Tech's Fund for Excellence

**Georgia Tech's commitment to education has produced tremendous success and leadership giving plays a key role in academic programming, research, and student support such as our mentoring programs.**

*"The Georgia Tech experience became the foundation for my professional success and some of my greatest friends and memories. It is my privilege to invest in the institution and in current and future Yellow Jackets, to give back a little of what we gained."*

- Betsy Wallace, ARCH 96

Former GTAA Board Member

Mentor

*"Your gift to Roll Call makes a huge impact on the education that future generations of Yellow Jackets receive. Having donors who give back at the Leadership Circle level is crucial to helping Georgia Tech always stay one step ahead of the game."*

- Ria Banerjee, BA 16

Former SAA President

Mentee

ROLLCALL

| | |
|---|---|
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| **PHOENIX CLUB** | **$10,000 - $24,999** |
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| **CORNERSTONE CLUB** | **$1,000 - $2,499** |

**Please send your gift or pledge to:**
**ROLL CALL, GEORGIA TECH ALUMNI ASSOCIATION**
**190 North Avenue | Atlanta, Georgia 30313 or call (404) 894-0778**
**www.gtalumni.org/giving**

ROLLCALL
LEADERSHIP CIRCLE

# Lindsay Resnick Wins on Jeopardy!

**LINDSAY B. RESNICK, HTS 13,** fared well on the legendary TV game show *Jeopardy!* this January. She appeared on two episodes, winning her first game and then falling short on the next.

"My *Jeopardy!* experience was the greatest of my life," Resnick says. She had been waiting to get on *Jeopardy!* since shortly after she graduated from Tech in 2013.

The journey began with an online test in January 2014 and kicked into high gear in September 2017 when she got the call that she had been picked to be on the show.

Resnick works as an archivist at the William Breman Jewish Heritage Museum in Atlanta. In this role, she works to preserve the history of the Jewish community in Savannah, Ga., one of the oldest in the South. ▲

## 1970s

**Doug Diefenbach, Arch 76,** was promoted to vice president of design center development for Ethan Allen. In his expanded role, he will oversee and manage real estate objectives, in addition to the architecture and construction functions for the company. His responsibilities extend throughout North America and internationally. The company has more than 300 retail locations, in addition to roughly 100 manufacturing and distribution centers. He has been with the company for more than 39 years.

## 1980s

**Jacqueline Quinn, CE 89,** has been selected for induction into the National Inventors Hall of Fame for her leading, environmentally safe clean-up technology, the emulsified zero-valent iron. The 2018 National Inventors Hall of Fame Induction Ceremony will take place on May 3, at the National Building Museum in Washington, D.C.

**Alan Ramsey, IM 87,** competed at the Toastmasters International District 14–Area 33 Speech Evaluation Contest and received the first-place award. He also won second place at the Division C Evaluation Contest. Ramsey is president of Grace Masters Club, which empowers individuals to develop communication and leadership skills.

**Steve Richeson, EE 84,** has been appointed vice president of sales and marketing for Mission Microwave Technologies Inc. The company manufactures compact, highly efficient solid state power amplifiers and block upconverters.

**Valerie Montgomery Rice, Chem 83,** was elected to the National Academy of Medicine in 2016. Election to the Academy is considered one of the highest honors in the fields of health and medicine, and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service. Rice is the president and dean of Morehouse School of Medicine.

## 1990s

**Gabriel Rincón-Mora, MS EE 94, PhD EE 96,** was elected as a fellow of the National Academy of Inventors. Rincón-Mora is being recognized for his work in energy-harvesting and power-conditioning microchips. He is one of 155 renowned academic inventors who will be inducted into the 2017 class of NAI Fellows. Rincón-Mora is a professor in

## KING RECEIVES MEDAL FOR HEROISM

**NOAH KING, CLS 01,** was awarded a Carnegie Medal for outstanding civilian heroism.

King, who played offensive line for the Yellow Jackets football team from 1996-99, was one of 20 Carnegie Medal recipients. He received the honor in recognition of his extraordinary heroism in his hometown of Panama City, Fla.

On Oct. 25, 2016, King drove upon the scene of an accident involving a sport utility vehicle that had left the road, traveled down an embankment, struck a culvert and came to rest on its passenger side, its front end in flames.

King approached the driver's side of the vehicle and tried three times to break the window with his forearm. With the fire continuing to grow in the engine compartment, he broke the window, extended his upper body into the opening, pulled the driver from the vehicle and dragged him to safety before flames completely engulfed the car.

King sustained lacerations to his arm and was treated at the scene.

The Carnegie Medal is given to those in the United States and Canada who risk their lives to an extraordinary degree while saving or attempting to save the lives of others. The award dates back to 1904.

King was a four-year letter winner and two-year starter at guard and center for Georgia Tech. He started the final 17 games of his career, including two wins over Georgia and a 35-28 triumph over Notre Dame in the 1999 Gator Bowl, and helped lead the Yellow Jackets to a share of the 1998 Atlantic Coast Conference championship. In 1999, he was a key member of an offense that led the nation in total yards and ranked second nationally in scoring, en route to earning honorable-mention all-ACC recognition. King is now a financial advisor in Panama City.

Georgia Tech's School of Electrical and Computer Engineering.

**Lynley Sides, EE 90,** founder and CEO of REX Real Estate, raised a $15 million Series B funding round. REX uses big data, AI and machine learning to sell homes for a 2 percent fee instead of 5-6 percent.

# 2000s

**Ryan Malloy, MS ECE 00,** has been elected to partner at global law firm Morrison & Foerster. Malloy, a member of the Intellectual Property Group, represented plaintiffs and defendants in numerous high-profile IP cases. He is experienced with litigation in dozens of U.S. district courts, the International Trade Commission, the Federal Circuit, the Patent Trial and Appeal Board, and Japanese courts.

**Greg Popowitz, ME 02,** has been promoted to partner with Assouline & Berlowe P.A. in their Fort Lauderdale office. Popowitz is a registered patent attorney that handles patent/trademark prosecution, in addition to intellectual property and commercial litigation.

# 2010s

**Bettina Gardner, MS IA 12,** has been selected as a fellow for the Robert Bosch Foundation Fellowship program. Gardner is spending the fellowship year living and working in Berlin, Germany. The Robert Bosch Foundation Fellowship Program includes three main components: two high-level work phases, a series of professional seminars, and German language training. Fellows complete work phases in key German institutions such as the federal government and parliament, private corporations, and major German media and cultural organizations. This is the 34th cohort of the fellowship.

# Friends

**Colin Parker**, assistant professor in the School of Physics, received a $450,000 grant from the Air Force Office of Scientific Research to study ultracold Kondo impurities, which could lead to exotic materials for use in maglev trains, sensors, and quantum computing.

# BIRTHS


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**1. Aaron Weil, CE 05,** and wife Emily welcomed Lucas Andrew Weil on Dec. 27, 2017.

**2. Lisa (Connors) Townsend, IE 13,** and **Andrew Townsend, Econ 14,** welcomed son Judah Warren Townsend on Aug. 10, 2017. The family lives in Japan, where Andrew is stationed as an officer in the U.S. Marine Corps. Grandparents: Greg Connors, ME 79, and Debbie (Rowland) Connors, Math 80.

**3. Eden Smith Parks, IE 09,** and **Jonathan Parks, CmpE 07, MS ECE 09,** welcomed daughter Meredith Isla "Millie" Parks on Nov. 10, 2017. Eden is a product manager for Visa, and Jonathan is a software engineer at Airbnb. The family lives in San Francisco.

**4. Gail Littlewood Garcia, Mgt 00,** and husband Adrian, welcomed daughter Alexandra Elizabeth on Sept. 18. The family, including big brother Daniel, lives in Houston.

**5. Kristen Laquidara, Mgt 06,** and Jon Clausen welcomed son Jack Jose Clausen on July 17, 2017 in Atlanta. Kristen is an academic advisor in biomedical engineering at Georgia Tech.

**6. Robert Blair Heffern, AE 04,** and **Megan Kirk Heffern, IE 03, MS IE 06, MS IA 06,** welcomed Tate Howard Heffern on March 20, 2017. He joins big brother Kirk Alden Heffern. Both parents work for the Department of Defense, and the family lives in Maryland.

**7. Gary Long, EE 87,** and wife Cindy welcomed their first grandson, Connor Jason Long, on Aug. 1. The parents, Jessica and Matthew Long, reside in Locust Grove, Va.

**8. Harry Woodworth, PP 09,** and wife Annie welcomed their daughter Charlotte in September 2017.

**9. Damon P. Williams, PhD, IE 02,** and wife Khalia J. Williams welcomed their second son, Ethan Miles Williams, on Jan. 20. They live in Atlanta, where Damon teaches in Tech's School of Industrial and Systems Engineering.

**10. Mitchell McKay, MS CE 12,** and wife Erin welcomed their son Maddox Ross McKay on Oct. 19, 2017. Mitchell works as a structural engineer in Atlanta.

# WEDDINGS


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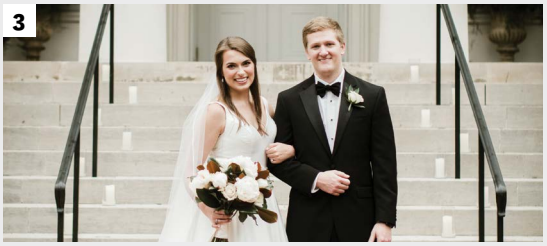
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**1. Sophia Voychehovski, ID 06,** and Luke Prater on July 15 in Atlanta. Sophia is the founder of Rewired UX, a user experience design consultancy in Atlanta. She also leads UX training at conferences and companies around the world.

**2. Rachel Collins, CE 14,** and **Tommy Martin, ME 11,** on July 30, 2016 in Baltimore, Md. Rachel is a project engineer on the Process Risk Team with Chevron. Tommy is a project engineering manager at BWAY Corporation. The couple lives in Houston, Texas.

**3. Merry Hunter Hipp, PP 13,** and **Dan Caudle, IE 12,** on Nov. 18 in Atlanta. Dan is a brewer for Sweetwater Brewing Company, and Merry Hunter is a program manager for economic development at Georgia Tech.

**4. Kathleen Carmen Bernhard BME12, MS ME 14,** and **Harrison Holmes Jones, ME 12,** on Sept. 16 in Atlanta. Kathleen is a senior global operations engineer with Dell Technologies Inc. Harrison is a SW engineer for Amazon. The couple lives in Austin, Texas.

**5. Sarah Erchull Walk, IE 16,** and **Eric Walk, EE 16,** on Dec. 30 in Tucson, Ariz. Sarah and Eric work for Raytheon and live in Tucson.

## TOEDT PROMOTED TO REAR ADMIRAL

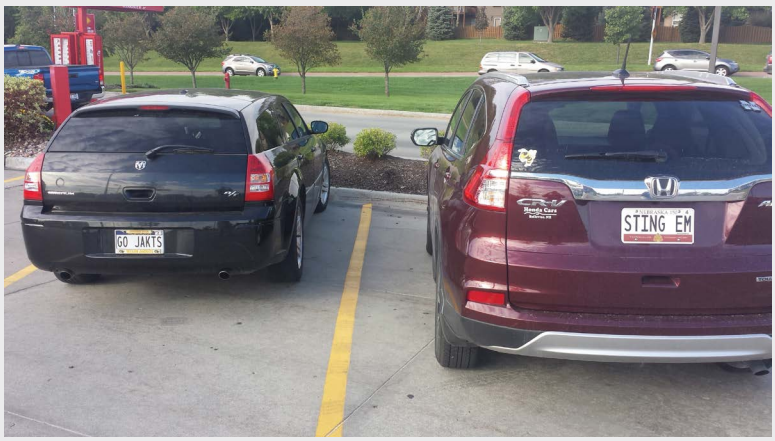
**MICHAEL TOEDT, AP 91,** the Indian Health Service Chief Medical Officer, has been approved for flag-grade promotion by Health and Humanitarian Services Acting Secretary Eric Hargan.

Toedt, promoted to rear admiral, is among the senior ranking officers in the Commissioned Corps. Flag officers provide executive-level leadership and exemplify the core values for which commissioned officers of the U.S. Public Health Service are held in high esteem. Flag officers also carry the title of assistant surgeon general, support special initiatives and exhibit the highest caliber of public health leadership.

As the chief medical officer, Toedt is the Indian Health Service's lead expert on medical and public health topics. He provides national leadership for the clinical and community-based health programs of the agency, and serves as the primary liaison and advocate for IHS health professionals. Toedt is board certified in family medicine and is a fellow of the American Academy of Family Physicians.

Promotion to flag grade is a coveted distinction earned by less than 1 percent of active duty Commissioned Corps officers through a highly competitive process.

## OUT & ABOUT




**FINDING TWO GEORGIA TECH ALUMNI** enjoying lunch at one of Atlanta's world-renowned chicken restaurants isn't all that unusual. Finding them parked so that their specialty plates emphasize their Yellow Jacket spirit is more unusual. Now change the location from Atlanta to a suburb of Omaha, and you have something really rare. That's what happened when Rob Feltus, ME 99, and Lee Higgins, MS ICS 82, ended up at a Papillion, Neb., Chick-fil-A. Go Jackets! Sting 'Em!

## RUNNING WRECK

**LAURIE STURGELL KNOWLES, MBA 04,** finished the New York City Marathon in November as the 20th overall woman, seventh American woman, and second master's runner—just behind the woman who holds the national record for France. An avid long-distance runner, Knowles has completed more than 20 marathons, qualified for four Olympic Trials, and currently runs for the Atlanta Track Club elite team. She lives with her family in Charlotte, N.C.

# OPPORTUNITIES DON'T ALWAYS KNOCK. SOMETIMES THEY BUZZ.

## Georgia Tech Alumni Career Conference & Job Fair

**May 1, 2018**
**Cobb Galleria Centre**

The Alumni Career Conference and Job Fair offers attendees the chance to meet with over 100 employers, attend professional development workshops, and network with fellow alumni. The best part is that this event is exclusive to Tech alumni and 2018 graduates.

Georgia Tech Alumni ASSOCIATION®

**gtalumni.org/2018jobfair**

# John Young

## NASA's Most Experienced Astronaut

***John Young, AE 52, PhD Hon 03***

**ASTRONAUT JOHN YOUNG** passed away Jan. 5, 2018, at the age of 87 from complications of pneumonia. Young was the most experienced astronaut in history—the only person to launch into space as part of the Gemini, Apollo and Space Shuttle programs. He was also the first astronaut to travel in space six times.

Young grew up in Florida and studied aeronautical engineering at Georgia Tech, graduating in 1952 from the Institute with highest honors. He then joined the U.S. Navy, where he flew fighter planes and served at the Navy's Air Test Center before deciding to become an astronaut in 1961 when President John F. Kennedy famously proposed sending Americans to the moon.

Just 10 years after "getting out" of Tech, Young was selected from among hundreds of young pilots to join NASA's second astronaut class. He became part of the "New Nine" that followed the Mercury Project pioneers. It was the beginning of a stellar 42-year career at NASA.

He flew to space for the first time in 1965 on Gemini 3 and would return the next year as commander of the Gemini 10 mission. Some four years later, Young flew to the moon aboard Apollo 10. He and his crewmates scouted landing sites from lunar orbit and tested all procedures and components of the lunar and command modules. It served as a full dress rehearsal for the Apollo 11 lunar landing two months later.


This portrait of astronaut John Young in his spacesuit with a Lunar globe was taken in October 1971, months before he would set foot on the moon as commander of Apollo 16.

Young returned to the moon as commander of Apollo 16 in 1972, this time spending three nights on the surface and driving 16 miles in a lunar rover. He's one of 12 people ever to walk on the moon and the only Georgia Tech graduate to do so.

"The moon is a very nice place," Young said after touching down in the Descartes highlands. "When we landed, we were 20 minutes behind. Because time on the moon was so precious, what I remember most is trying to catch up."

In early 1973, Young became chief of the Space Shuttle Branch of the Astronaut Office at Johnson Space Center. The following year, he was named chief of the Astronaut Office, a post he held until May 1987. Young retired from the Navy as a captain in

Young goes through last-minute checks before the Gemini 3 mission's launch on March 23, 1965. Young served as pilot on the flight.

Astronauts Young (left), command pilot, and Michael Collins, pilot, ready for the Gemini 10 mission.

The Space Shuttle Columbia, commanded by Young, lifts off from NASA's Kennedy Space Center on April 12, 1981, marking the first flight of the Space Shuttle Program.

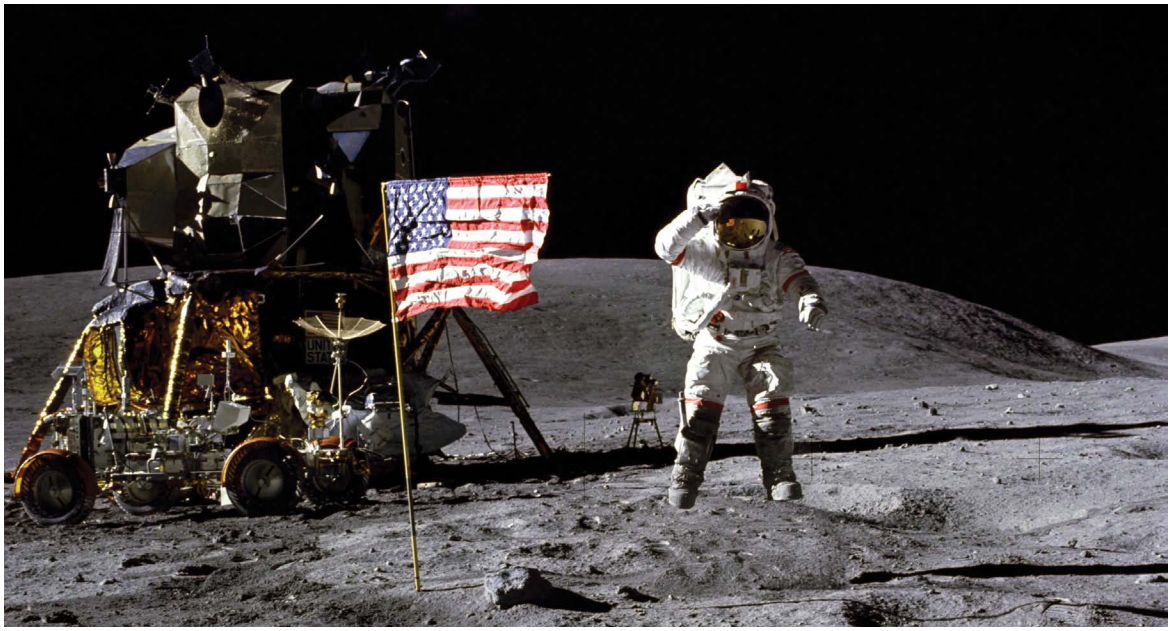
1976 after 25 years of military service, and he retired from NASA in 2004.

**A CAREER FULL OF FIRSTS**

The proud Yellow Jacket's career was full of firsts, none more notable than in April 1981, when Young commanded Space Shuttle Columbia on its—and the Shuttle

**"John Young was at the forefront of human space exploration with his poise, talent and tenacity," Lightfoot says. "He was in every way the 'astronaut's astronaut.'"**

NASA



In his spacesuit, Young salutes the U.S. flag at the Descartes landing site during the first Apollo 16 extravehicular activity.

**"We also celebrate the achievements of an astronaut who walked on the moon and commanded the first Space Shuttle mission," says Lightsey. "John's career defined what it means to be an astronaut, and his legacy will inspire our next generation of space explorers."**

program's—maiden flight, STS-1. It was the first time a piloted spacecraft was tested in space without previous unpiloted orbital flights. Young and pilot Robert Crippen accomplished more than 130 flight test objectives during their almost 55-hour mission.

In late 1983, Young commanded STS-9, the first Spacelab mission. During the 10-day flight, the six crewmembers worked around the clock in 12-hour shifts and were involved in more than 70 experiments in a range of scientific disciplines. The mission returned more scientific and technical data than all the Apollo and Skylab missions combined.

In addition to his six spaceflights, Young was a member of five backup crews. He logged thousands of hours of training and flight time, including a total of 835 hours in space.

Young's numerous awards and special honors included the Congressional Space Medal of Honor, three NASA Distinguished Service Medals, the NASA Outstanding Leadership Medal, two Navy Distinguished Service Medals, three Navy Distinguished Flying Crosses, the Georgia Tech Distinguished Young Alumni Award, the Exceptional Engineering Achievement Award and the American Astronautical Society Space Flight Award. He


A ceremony at the Heroes and Legends exhibit at the Kennedy Space Center Visitor Complex honored Young's life and legacy.

Virgil "Gus" Grissom (left) and Young teamed up for the first crewed Gemini flight, Gemini 3.


Young helped land the Space Shuttle Columbia at Edwards Air Force Base, successfully concluding the program's first mission.

was inducted into the National Aviation Hall of Fame in 1988.

#### A LASTING LEGACY OF SPACE FLIGHT

"NASA and the world have lost a pioneer," says acting NASA Administrator Robert Lightfoot. "Astronaut John Young's storied career spanned three generations of spaceflight; we will stand on his shoulders as we look toward the next human frontier.

"John was one of that group of early space pioneers whose bravery and commitment sparked our nation's first great achievements in space," Lightfoot says. "But, not content with that, his hands-on contributions continued long after the last of his six spaceflights—a world record at the time of his retirement from the cockpit."

Lightfoot personally participated in numerous Space Shuttle flight readiness reviews with Young, and will always remember him as the classic "helluva engineer" from Georgia Tech. "[He] had an uncanny ability to cut to the heart of a technical issue by posing the perfect question—followed by his iconic phrase, 'Just asking … ,'" Lightfoot says.

"John Young was at the forefront of human space exploration with his poise, talent, and tenacity," he said. "He was in every way the 'astronaut's astronaut.' We will miss him."

Fellow astronauts owe a great debt to Young's trailblazing through space. "It would be hard to overstate the impact that John Young had on human space flight," says Johnson Space Center Director Ellen Ochoa, a former astronaut herself. "Beyond his well-known and groundbreaking six missions through three programs, he worked tirelessly for decades to understand and mitigate the risks that NASA astronauts face. He had our backs."

Glenn Lightsey, professor in Georgia Tech's Daniel Guggenheim School of Aerospace Engineering, adds that, while the Institute is deeply saddened by his loss: "We also celebrate the achievements of an astronaut who walked on the moon and commanded the first Space Shuttle mission. John's career defined what it means to be an astronaut, and his legacy will inspire our next generation of space explorers."

At his retirement celebration from NASA in 2004, Young is quoted as saying about all his adventures in space: "I've been very lucky, I think." As to which moment was most memorable, he simply said, "I liked them all." ▲

NASA

# James Robert Thompson Jr.

## Space Flight Expert

***James Robert Thompson Jr., AE 58,*** *of Huntsville, Ala., on Nov. 7, 2017*

**THOMPSON WAS AN INTERNATIONALLY RECOGNIZED** propulsion expert and a key figure at NASA. He served as a lieutenant in the U.S. Navy from 1958-60 and began his professional career at Pratt-Whitney in West Palm Beach, Fla., as a development engineer.

In 1963, he joined the research and development team at the Marshall Space Flight Center as a systems engineer, responsible for component design and performance analysis associated with the J-2 engine for Saturn Apollo launch vehicles. He later moved to the Space Engine Section in the Propulsion & Vehicle Engineering Laboratory and became chief of the section in 1968. In 1969, as chief of the Man/Systems Integration Branch in the Astronautics Laboratory, he managed the design, test and integration engineering for the interface between man and machines that was essential to the development of Skylab.

In 1974, Thompson was chosen to manage the Space Shuttle Main Engine Project, the most technologically challenging element of the Space Shuttle. He was responsible for the development and operation of the most advanced liquid propulsion rocket engine ever developed. He served in that position almost from the inception of early development testing on the Space Shuttle Main Engine through the initial shuttle flights. He joined the faculty of Princeton University as deputy director for technical operations at its Plasma Physics Laboratory in 1983, where he specialized in fusion energy research.

Following the failure of the Shuttle 51-L Mission in

January 1986, NASA mobilized its best talent to support the Presidential Commission appointed to investigate the failure. Thompson led the effort in a dual assignment as vice chairman of the task force and leader of the Accident Analysis Team. In September 1986, he left Princeton to return to NASA as director of the Marshall Space Flight Center to direct a major effort to return the Space Shuttle to safe space flight. In July 1989, President George H.W. Bush appointed Thompson as deputy administrator of NASA. He served as the second ranking official with NASA, participating in all matters pertaining to the management of the United States Civilian Space Program.

He retired from NASA in November 1991, and joined Orbital Sciences Corporation. He served in several roles, including president and chief operating officer and senior advisor until his retirement in 2013. In his positions with Orbital, Thompson directed engineering and manufacturing activities leading to over 350 successful satellite, rocket and related space missions. ▲

***Editor's Note:*** *Beginning with this issue of the* Georgia Tech Alumni Magazine, *we are changing the format for the In Memoriam section. We will include an abbreviated version of each obituary in print, while publishing the full obituaries on our website. To read more, please visit* ***gtalumni.org/magazine.***

## 1940s

**Charles M. "Andy" Anderson, IM 49,** of Naples, Fla., on Oct. 20, 2017.

**Uron Reed Barnett Jr., AE 47,** of Melbourne Beach, Fla., on Nov. 24, 2017.

**James Joseph Walton Biggers Jr., Cls 45,** of Columbus, Ga., on Dec. 20, 2017.

**Charles Coleman Brooks Sr., Cls 46,** of Savannah, Ga., on Nov. 14, 2017.

**Clois C. Brown Jr., IM 49,** of Athens, Ga., on Dec. 1, 2017.

**Harry Norman Cripps, Cls 46,** of Wilmington, Del., on Dec. 7, 2017.

**Walter E. Deyerle Jr., ChE 49,** of Jennersville, Pa., on Dec. 11, 2017.

**Hal Scarlett Holtsinger, IM 48,** of Tampa, Fla., on Nov. 24, 2017.

**William Dan McGee, Cls 49,** of Peachtree City, Ga., on Jan. 1.

**Daniel Childress McNeil, IE 49,** of Atlanta, on Dec. 8, 2017.

**Leonard Joseph Murrans, EE 47,** of Atlanta, on Dec. 4, 2017.

**Charles A. Naegeli Jr., GE 41,** of Carmichael, Calif., on Oct. 25, 2017.

**Donald Byram Payne, IM 48,** of Springfield, Tenn., on Oct. 17, 2017.

**Bruno Damioli, ME 48,** of Bloomfield Hills, Mich., on Nov. 13, 2017.

**Robert Oscar Wilhelm, CE 47,** of San Jose, Calif., on Dec. 2, 2017.

## 1950s

**Marshall Flewellyn Akers, IM 57,** of Atlanta, on Oct. 15, 2017.

**Philip Joseph Bebbington Sr., CerE 52,** of Clearwater Beach, Fla., on Nov. 9, 2017.

**Larry E. Bray, Cls 56,** of Rome, Ga., on Dec. 27, 2017.

**William "Hoyt" Brogdon, IM 53,** of Birmingham, Ala., on Jan. 3.

**Thomas Richard Bruce, AE 57,** of Coeur d'Alene, Idaho, on Oct. 20, 2017.

**Dale Canfield, MS ME 59,** of Chatham, N.J., on Oct.4, 2017.

**John Allen Chambers, Phys 51,** of Birmingham, Ala., on Nov. 28, 2017.

**Philip Robinson "Phil" Compton, MS AE 50,** of Front Royal, Va., on Nov. 21, 2017.

**Glenn Ivison Conway Jr., Text 58,** of Panama City Beach, Fla., on Dec. 14, 2017.

**Ben Gray Christopher, CE 54, MS CE 56,** of Brandon, Fla., on on Sept. 28, 2017.

**Jack William Clontz, Arch 52,** of Charlotte, N.C., on Nov. 28, 2017.

**Charles LeRoy "Charlie" Crumpton, M CP 57,** of Fortson, Ga., on Oct. 31, 2017

**Stephen Mark Ecker, EE 57, MS EE 59,** of Buford, Ga., on Dec. 17, 2017.

**Bruce Adams Feiertag, ME 54,** of Oklahoma City, Okla., on Dec. 8, 2017.

**Robert Charles George, ME 51,** of San Diego, Calif., on Dec. 3, 2017.

**Thomas C. Gilbert, EE 54,** of Fayetteville, Ga., on Dec. 31, 2017.

**Robert G. Gregorie, IM 56,** of Yorktown, Va., on Nov. 9, 2017.

**William Miller "Bill" Hardman, ME 51,** of Decatur, Ga., on Nov. 17, 2017.

**C. Louis Hohenstein Jr., IE 53, MS IE 56,** of Savannah, Ga., on Dec. 8, 2017.

**Robert "Bob" Graham Holt, Cls 58,** of Tallahassee, Fla., on Dec. 4, 2017.

**Carl Hickman Hudson, IM 50,** of Nashville, Tenn., on Nov. 9, 2017.

**Rufus Sladen Johnson, Jr., Arch 50,** of Crossville, Tenn., on Dec. 15, 2017.

**Earl Penuel Jones Jr., ME 57,** of Lutherville, Md., on Nov. 7, 2017.

**Jimmy Edward Joyce, Cls 59,** of Waycross, Ga., on Oct. 16, 2017.

**Joseph Donald "Don" Kelly, IM 58, MS Text 68,** of Marietta, Ga., on Oct. 28, 2017.

**Jack Lawler, Text 52,** of Columbus, Ga., on Nov. 1, 2017.

**Richard "Dick" I'On Lowndes III, AE 58, MS AE 60,** of Estill Springs, Tenn., on Oct. 13, 2017.

**Gordon Edwin Mansfield, ChE 51,** of New Orleans, La., on Dec. 19, 2017.

**Hugh Lane Middleton, Text 53,** of Rye, NY, on Oct. 1, 2017.

**Wilbur Fisk "Bill" Peck, CE 54, MS CE 61,** of Snellville, Ga., on Nov. 16, 2017.

**Frank E. Price, ME 53,** of Atlanta, on Jan. 2.

**Neal Watson Self, IE 50,** of Claxton, Ga., on Nov. 2, 2017.

# FREDERIK W. VAN VONNO
## LAWYER AND CONSERVATIONIST

**FREDERIK W. VAN VONNO, M CRP 80,** of Stuart, Fla., on Nov. 2, 2017.

Van Vonno was born in the Netherlands and moved with his family at six months old to settle in Curacao. At eight years old, his family immigrated to Key Biscayne, Fla., and in 1964 van Vonno became a U.S. citizen. After graduating from Miami Palmetto Senior High School in 1969, he traveled to Woodstock, which inspired his lifelong love of music.

He graduated from the Georgia Institute of Technology with a master's degree in city planning in 1980. As a National Parks Service planner, he was a member of the team that conducted the study leading to the designation of the Loxahatchee River as a Wild and Scenic River. He also conducted studies of the Peace River and Myakka River in Southwest Florida. He loved his Park Service career, canoeing and hiking Florida's wild areas to assess their recreational potential.

In 1982, van Vonno went to the University of Miami School of Law. He graduated in 1985 and began practicing law, first in Miami and then in Martin County, Fla. As a senior assistant county attorney for Martin County from 1988 -2000, he wore many legal hats but he was most proud of his work assisting with many of the county's purchases of park land and conservation land, including Indian Riverside Park. He was a board-certified city, county and local government lawyer. In his later years, he was the attorney for the Martin County School Board and served as a special magistrate for Palm Beach County. He met his wife, Nicki Belville, M CP 82, in Atlanta while she was a student in the City Planning Master's Program at Georgia Tech, and they married in 1987 and had two children. The couple recently celebrated their 30th wedding anniversary. Van Vonno loved music, old cars, sailing and the natural world. ▲

# IN MEMORIAM

## JOHN PORTMAN
### WORLD-RENOWNED ARCHITECT

***John C. Portman Jr. Arch 50,*** *of Sandy Springs, Ga., on Dec. 29, 2017*

**PORTMAN WAS A WORLD-RENOWNED ARCHITECT** and developer who left his mark on skylines around the world.

During World War II, Portman served in the U.S. Navy. After the war, he attended Georgia Tech, where he earned a degree in architecture in 1950. Portman opened his own firm in 1953, which eventually became John Portman & Associates. Open to trying new concepts, he pioneered the role of architect as developer to allow greater freedom in the implementation of his design concepts. His award-winning architecture enhanced cities in which his projects were built, a list that includes Atlanta, New York, San Francisco, Singapore, Detroit, Beijing, Shanghai, Los Angeles and Brussels.

Portman's impact was perhaps greatest on his hometown of Atlanta, where the multi-block Peachtree Center complex includes many of his landmark projects, including AmericasMart, the world's largest contiguous wholesale marketplace, as well as hotels including

the Hyatt Regency Atlanta, The Westin Peachtree Plaza, the Atlanta Marriott Marquis and the Hotel Indigo Atlanta Downtown. By stimulating trade and tourism, Portman provided the catalyst that established Atlanta as one of the nation's premiere convention cities.

From the opening of the Hyatt Regency Atlanta in 1967, with its 22-story atrium, Portman made architectural history and won international acclaim. Portman's love of art is evident in all that he did. He supported the arts, he collected, and he was an accomplished painter and sculptor himself. Throughout his life, Portman was continually recognized for his social accomplishments and civic initiatives as well as for his architecture. ▲

**See page 100 to read more about John Portman's legacy.*

**Harold W. Simpson Sr., ME 50,** of Atlanta, on Nov. 15, 2017.

**Claiborne Smith, EE 50,** of Jekyll Island, Ga., on Oct. 20, 2017.

**John Earl Spooner, EE 53,** of Tecumseh, Mich., on Dec. 27, 2017.

**Gerald Eugene Spratte, IM 56,** of Atlanta on Nov. 21, 2017.

**Thomas Otis "Tom" Sturkie, Cls 55,** of Marietta, Ga., on Nov. 3, 2017.

**Paul Raymond Theobald, CerE 59,** of Cumming, Ga., on Nov. 1, 2017.

**George Thomas, IE 52,** of Gainesville, Ga., on Nov. 28, 2017.

**Marvin Allen Turner, ChE 58,** of Signal Mountain, Tenn., on Sept. 26, 2017.

**Charles Edwin Reed, IM 50,** of Rockledge, Fla., on Aug. 24, 2017.

**William Buford Richardson, IM 51,** of Decatur, Ga., on Nov. 6, 2017.

**William L. Wight Sr., IE 55,** of Bonaire, Ga., on Oct. 23, 2017.

**Floyd Robert Williams Jr., IM 56,** of Decatur, Ga., on Oct. 31, 2017.

## 1960s

**"Ned" O. Darden Jr., AE 67,** of Milton, Fla., on Nov. 30, 2017.

**Frank Scarborough Etheridge III, IM 68,** of Columbus, Ga., on Dec. 1, 2017.

**William Johns James, M CP 68,** of Rock Hill, S.C., on Dec. 7, 2017.

**Marvin Martin, IM 60,** of Santa Fe, N.M., on Nov. 22, 2017.

**S. Kenneth Law, EE 69,** of Ellenwood, Ga., on Oct. 20, 2017.

**Alton David Luckey, AE 65,** of Augusta, Ga., on Dec. 21, 2017.

**Marvin Ronald Nelson, ME 68,** of Johnson City, Tenn., on Oct. 16, 2017.

**Thomas Meriwether Newton, IE 64,** of Griffin, Ga., on Dec. 17, 2017.

**Jerry Earl Payne, EE 61,** of Gurley, Ala., on Nov. 8, 2017.

**Johnny E. Pinkard, IM 60,** of Trussville, Ala., on Nov. 16, 2017.

**Edward Dunston Romm, MS CE 68,** of Virginia Beach, Va., on Oct. 17, 2017.

**Terry Sanders, Text 64,** of Orangeburg, S.C., on Nov. 10, 2017.

**Nick Sotiropoulos, CE 60 MS SanE 61,** of Jacksonville, Fla., on Nov. 6, 2017.

**Joseph Tull Wesley, Sr., IM 67,** of Atlanta, on Dec. 21, 2017.

## 1970s

**Kenneth James Castrop, MS AE 70,** of Dublin, Ohio, on Nov. 8, 2017.

**Olen Lee Earnest, MS AE 72,** of Dothan, Ala., on Nov. 5, 2017.

**Larry Samuel Fulton, MS AE 74,** of Huntsville, Ala., on Oct. 14, 2017.
**Robert Bradley "Bob" Holland, NE 76,** of Buchanan, Tenn., on Nov. 26, 2017.
**Steven Hurner, IE 72,** of Brandon, Fla., on Nov. 22, 2017.
**David Robert Miller, AE 78,** of Commerce Township, Mich., on Oct. 5, 2017.
**Scott "Scottie" Rodgers, EE 75,** of St. Simons Island, Ga., on Nov. 30, 2017.
**Joseph Whitaker Jr., IE 70,** of Fairfax, Va., on Dec. 22, 2017.

## 1980s

**Roy Angelo Arnold, EE 82,** of Warner Robins, Ga., on Dec. 9, 2017.
**Richard Wayne Brettin, ME 83,** of Peachtree City, Ga., on Dec. 20, 2017.
**Michael Jeffrey Bryant, CE 86, MS EnvE 94,** of Lawrenceville, Ga., on Dec. 17, 2017.
**David Parrish West, EE 84,** of Roswell, Ga., on Nov. 12, 2017.

## 1990s

**Samuel Judson Bass, MS Mgt 96,** of Roswell, Ga., on Nov. 9, 2017.
**William Pegram Washington, IA 93,** of Gainesville, Ga., on Nov. 3, 2017.

## 2010s

**Andrew J. "Drew" Swope, M CRP 12,** of Atlanta, on Oct. 15, 2017.
**Taylor Russell Garmon, Cls 19,** of Peachtree Corners, Ga., on Dec. 31, 2017.
**Donald Brent Hitchcock, Econ 13,** of Atlanta, on Dec. 3, 2017.
**Kirby Clarke Jackson, Cls 15,** of Decatur, Ga., on Dec. 8, 2017.

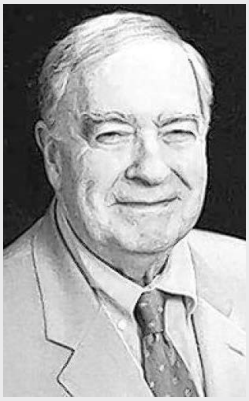
## JAMES BYNUM
### GEORGIA TECH ENGLISH PROFESSOR

**JAMES JORDAN BYNUM JR.,** of Austell, Ga., on Dec. 8, 2017.

Bynum was a longtime professor who spent four decades at Georgia Tech.

Bynum earned his degree in English from the University of North Carolina at Chapel Hill in 1957. While at Chapel Hill, he ran track, played soccer, joined Pi Kappa Alpha fraternity, was elected head cheerleader and appointed battalion commander of the Naval ROTC. While there, he met Jean Davis, a student at Duke University, and they married in 1958. He served two years of active duty in the Marine Corps, then six as a reserve officer. Bynum returned to Chapel Hill for a master's degree in English, and earned a PhD in English from Emory University in 1972.

In 1961, he accepted a teaching position in the English Department—later known as School of Literature, Communication, and Culture— at the Georgia Institute of Technology. He spent most of his 41 years there doing missionary work by teaching English to engineers. He shared with them not only



Shakespeare, but also J.R.R. Tolkien, C.S. Lewis, Robert Frost and film. For eight years he worked in the Graduate Division, reading theses and dissertations, eventually succeeding to the position of Graduate Dean. For 31 years, he served as a resident hall advisor, living with his family in apartments in Brown and Glenn dorms. He was on the Athletic Board, Student Center Board and Publication Board, and was a member of Omicron Delta Kappa and ANAK honorary societies.

Bynum enjoyed reading, writing poetry, woodworking and fixing broken things. He was blessed with extraordinary vision and memory, and a kind and caring heart. He loved his family, the Lord, teaching and Georgia Tech. ▲

## 2020s

**Kaden Campbell, Cls 21,** of Lawrenceville, Ga., on Nov. 10, 2017.

## Friends

**Lawrence Dennis Ballou,** of Macon, Ga., on Oct. 20, 2017.
**William H. Borchert,** of Brookhaven, Ga., on Dec. 12, 2017.
**Robert Edward Brown,** of Winchester, Tenn., on Oct. 15, 2017.
**James Jordan Bynum, Jr.,** of Austell, Ga., on Dec. 8, 2017.
**Marion Leon Calhoun,** of Marietta, Ga., on Nov. 29, 2017.
**Richard J. "Dick" Corbin,** of Jackson, Ga., on Dec. 16, 2017.
**Amy Dykeman,** of Charlotte, N.C., on Dec. 23, 2017.
**William Joel Gamble Jr.,** of Atlanta, on Dec. 7, 2017.
**Janie White Griffith,** of Austell, Ga., on Dec. 28, 2017.
**Charlotte Kuchler Howard,** of Raleigh, NC, on Oct. 12, 2017.
**Angela "Angie" Walkden Levin,** of Atlanta, on Oct. 30, 2017.
**Mavis Lee Stinson Miller,** of Fort Myers, Fla., on Dec. 9, 2017.
**James Clyde Morris Sr.,** of Mableton, Ga., on Nov. 6, 2017.
**Maxwell Carr Payne Jr.,** of Franklin, Tenn., on Nov. 19, 2017.
**Marilyn J. Pettit Greer,** of Fort Collins, Colo., on Dec. 16, 2017.
**Beverly Elizabeth Thompson Swanson,** of Mobile, Ala., on Dec. 15, 2017.
**Susan Marten Torras,** of St. Simons Island, Ga., on Nov. 15, 2017.
**Andrew Whitlock,** of Atlanta, on Nov. 6, 2017.

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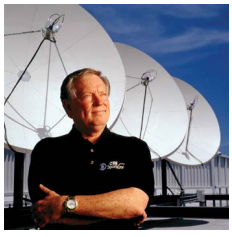

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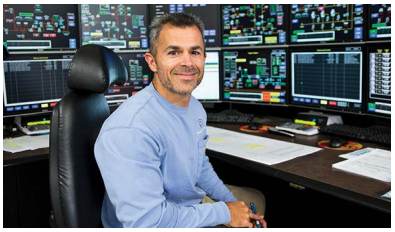

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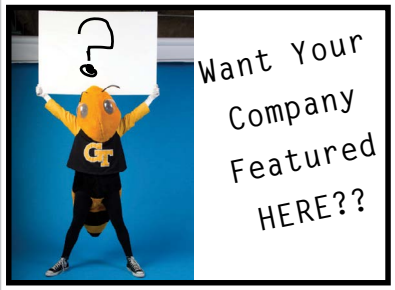


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# A Legacy Built to Last

BY ANN W. HOEVEL, STC 98

John Portman Jr., Arch 50, not only helped shape the skylines of 60 cities, but also has influenced generations of Georgia Tech architects, artists and developers.

**WHEN PEOPLE DESCRIBE JOHN PORTMAN,** they need to use a lot of commas.

He was an architect, a developer, a city planner, an artist, a futurist, and—most of all—a risk-taker. The accomplishments of one of Georgia Tech's most famous alumni resonate with the diverse educational philosophy that the Institute has held for many decades.

Portman, who died Dec. 29, 2017, at the age of 93, had a multidisciplinary approach to the built environment. He had a habit of combining expertise in industries that were quite different, in ways that no one before him thought about. He epitomized a way of thinking that merged the human experience with nature, neighborhoods and cities. He was constantly curious. He was willing to operate contrary to the normal pattern. He persevered and evolved in the face of criticism.

As home to some of the most out-of-the-box thinkers, the Institute and specifically the College of Design is devoted to those ideals.

John Portman Jr. at the Hyatt Regency in 1967. *Credit: Leviton Atlanta Editorial and Interpretive Photography, The Hyatt Regency Collection, the Portman Archives*

## AN ENTREPRENEURIAL ARCHITECT

Portman grew up and went to school in Atlanta. His entrepreneurial spirit was obvious as a young child—his first "franchise plan" was buying a box of gum and selling individual pieces to movie-goers before they headed into the theater. Later, as a 15-year-old, he persuaded his teachers to let him learn architecture drafting instead of mechanical drawing at Tech High School.

Having this particular blend of conceptual creativity and technical curiosity is a powerful combination for any architect, says Tristan Al-Haddad, Arch 01. A part-time lecturer in Tech's School of Architecture, Al-Haddad grew up in Atlanta while Portman's buildings were being erected. He first discovered Portman's skyscraping designs when he traveled into the city for his part-time, high-school job.

"I used to ride the 121 MARTA bus down Memorial Drive to downtown, where I ran a storefront window-washing business as a student," Al-Haddad says. It was there that he experienced many of Portman's works up close—notably the Hyatt Regency, Peachtree Plaza and the Marriott Marquis—featuring the architect's signature soaring atriums. With his

From left: Jack Portman, John Portman Jr., John Street and Herb Lembke, working on a drawing circa 1975. *Credit: Jerry Spearman, The John C. Portman, Jr. Collection, The Portman Archives LLC*

Peachtree Center includes Americas Mart, SunTrust Plaza, Atlanta Marriott Marquis, Hyatt Regency Atlanta, the Westin Peachtree Plaza, and several other buildings designed by Portman.


Portman receives an honorary PhD during the Fall 2012 Commencement Ceremony at Georgia Tech. *Credit: Rob Felt, The John C. Portman, Jr. Collection, The Portman Archives, LLC*

Drawings of Portman's buildings, which changed skylines in 60 cities around the world.

central, light-filled atriums, Portman developed a completely new building type—a rare achievement for an architect. Portman went on to design similar structures across the globe, from San Francisco's Embarcadero Center to Singapore's Marina Square.

Al-Haddad, who today is an accomplished researcher and artist, says that Portman set a precedent for architects who wanted to push their

**"Out of his work came what city planners are talking about now: the smart city, the city that gives priority to pedestrians, connecting cities of all sizes and scales through space," Ross says.**

Portman sits in the middle of Peachtree Center in downtown Atlanta, circa 1988.
*Credit: Flip Chalfant, The John C. Portman, Jr. Collection, The Portman Archives, LLC*

practices into a new age.

"Fundamentally, Portman was a typological innovator," he says. "He understood the history and evolution of architecture and realized that he could continue that tradition of innovation by restructuring how buildings are organized."

Portman embodied a spirit of experimentation, exploration, novelty and innovation. That same spirit has been "part of the cultural milieu of teaching and learning in the School of Architecture and College of Design at Georgia Tech," says Al-Haddad.

Portman's drive and lack of complacency are also a trademark of Tech students, Al-Haddad says. "With a strong vision of what a city should be and how his work would help accomplish that vision, he went out and found the opportunities and the partners needed to make it happen," he says. "I think this 'can-do, will-do' spirit informed both my teaching and research at Georgia Tech, and my creative practice at Formations Studio."

**"I think [Portman] understood the collaborative approach that was necessary to deliver the built environment," Porter says.**

The architectural diversity Al-Haddad first experienced as a teenager in Downtown Atlanta became a life-long influence on his career.

"I learned a tremendous amount from walking around on the streets, looking

at the buildings," he says. "I studied, in an informal manner, the architectonic sensibility of each structure. Of course, I didn't know the word 'architectonic' when I was 15, but I learned so much just by walking around Downtown Atlanta."

**MAVERICK MOVE TO REAL-ESTATE DEVELOPMENT**

Always an entrepreneur, Portman became one of the first architects to incorporate real estate development into his architecture practice. "I think he understood the collaborative approach that was necessary to deliver the built environment," says Rick Porter, who also earned his architecture degree from Georgia Tech, but became a developer soon after graduation.

As the director of Tech's master's in real estate development program, Porter, Arch 75, works to translate Portman's values and inspirations for his students.

"He combined numerous disciplines: planning, design, construction, business, engineering. They all have to come together in the development world. Portman made the development community understand the critical element of design, more than anyone. He was not a developer that went to a consultant for design work," Porter says.

In doing so, Portman was able to merge human experience with the natural environment through his buildings, Porter says.

Porter looks to Peachtree Center as an example of Portman's blend of design and development. The multi-block Downtown complex features six office buildings, a MARTA station, and dozens of restaurants and shops. The district is connected by elevated pedestrian "sky bridges," which allow people to pass through the buildings without having to leave.

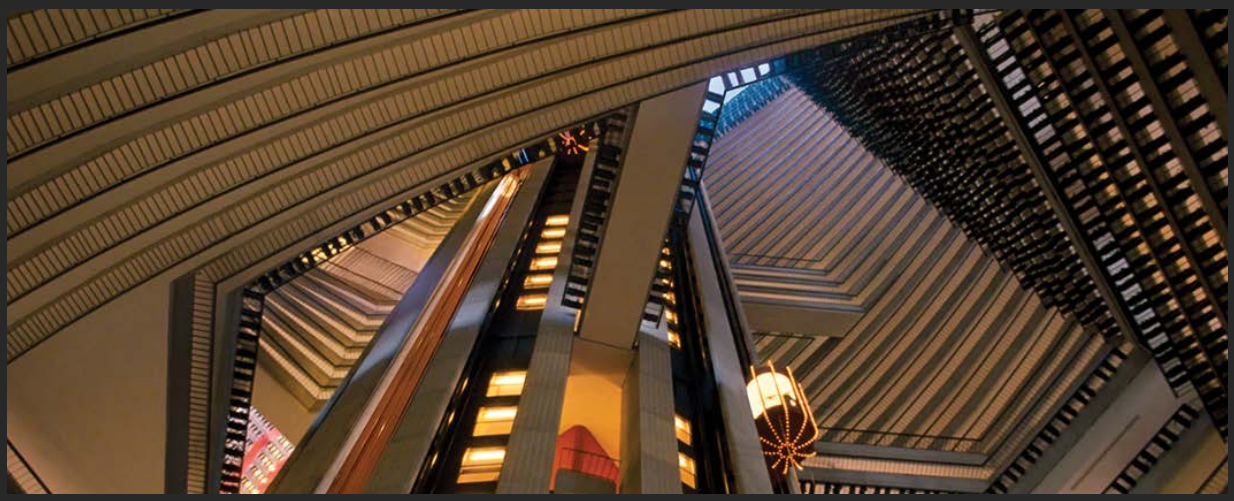
"The 'buzz,' if you will, of Peachtree Center always strikes me," he says. "It's a beehive of human activity. At the end of the day, developers create spaces that can be used over time, and produce a value that was not there before. I think Peachtree Center does that. It's got commerce, food, human activity, pleasure, nature—all of those things. Downtown is a better place than it was before Portman came there."

The educational key that makes something like Peachtree Center possible, Porter says, is an iterative process that breeds curiosity.

"Everything we do is iterative," he says. "This is not a linear process whereby you go on to step two and then you go on to step three. If you

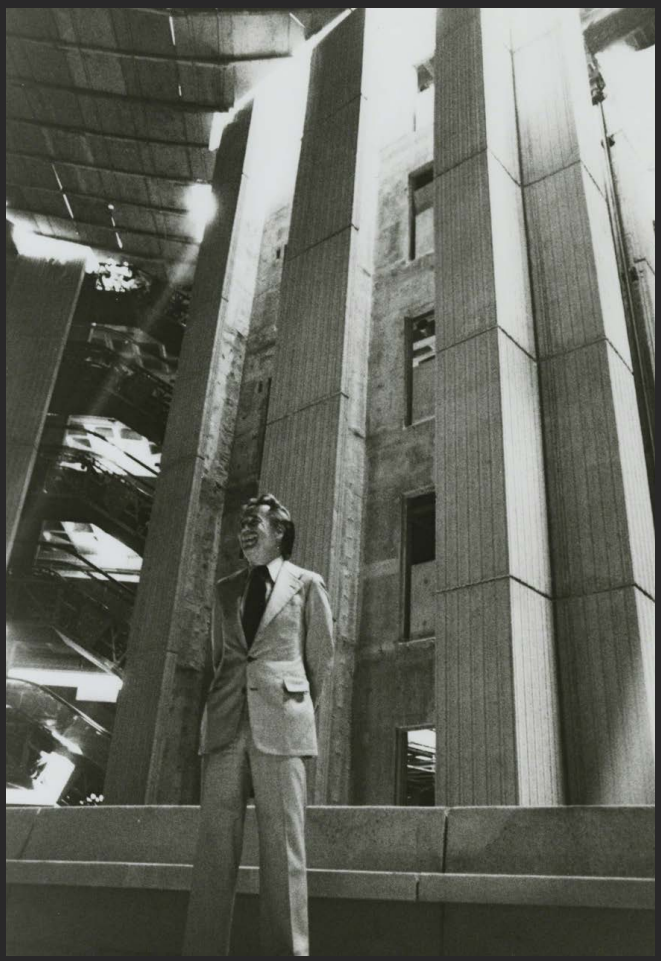
A model of SunTrust Plaza towers over its designer in 1988. *Credit: Michael Pugh, The John C. Portman Jr. Collection, The Portman Archives LLC*

John Schlenkert (left), works with Portman on the drawing for the Detroit Renaissance Center. *Credit: Ron Sherman, the John C. Portman Jr. Collection, The Portman Archives LLC.*



Portman pioneered the use of central atriums and glass elevators, features which completely changed the experience of being in a hotel.

Portman smiles over a model of Peachtree Center in 1989. *Credit: Tom Hamilton, The John C. Portman Jr. Collection, The Portman Archives LLC*



Circa 1979, Portman poses in the Atlanta Apparel Mart, part of the AmericasMart complex he designed. *Credit: Leviton Atlanta Editorial and Interpretive Photography, The Hyatt Regency Collection, the Portman Archive LLC*

think that way, it is very difficult to be curious enough to continue."

Porter views Portman as a man who took curiosity and iteration to an extreme. "He was undaunted," Porter says. "And it didn't always work. He failed sometimes."

As a former Tech student, and now a professor of practice, Porter sees the courage to fail as an undeniable aspect of studying at Georgia Tech. He tells his students that being curious enough to fail is what will lead to something bigger. "You're going to fail more than you succeed here, but the resilience to embrace that failure is an important Georgia Tech way," Porter says. "I can almost tell you to the detail, a third-quarter design project that I had as an undergraduate, and I just got crushed on it. I probably remember that more than some of my successes."

Portman's life and work provide quintessential examples of fearlessness for his students, Porter said.

"He was willing, as an architect, to risk developing a product that might not show design deficiencies until delivery," he says. "Portman was curious enough, and at the same time, plucky, confident, almost cocky enough to then go on to say, 'I can go to China and do this.'"

**PLANNING COMMUNITIES WITH CARE**

Portman designed his Atlanta buildings in response to a downtown district in decline during the 1960s and 70s.

Portman's creations are often criticized as being "fortresses, these concrete facades in downtowns that separate citizens from the city," says Catherine Ross, the Harry West Professor in Tech's School of City & Regional Planning, as well as the director of the Center for Quality Growth and Regional Development.

But Ross believes Portman's work was an important step toward today's city and regional planning theories, which focus on connectivity and pedestrian activity. "People were walking away from the city, and Portman says, 'No. Let's go downtown and remake the city. We can re-create this, we can create vistas that empower people and bring economic activity.'"

Ross views her work as a continuation of Portman's logic. "I think that gave rise to an increased connection in cities, a focus on pedestrians," Ross says. "Out of his work came what city planners are talking about now: the smart city, the city that gives priority to pedestrians, connecting cities of all sizes and scales through space. And the importance of that in terms of community and places."

Portman's decisions gave rise to an outstanding career and allowed him to make contributions globally. "Shanghai, San Francisco, Atlanta, it doesn't matter where you look. Sixty different cities have his brand on them," she says.

And while it may seem like Portman's signature move was to zig when other architects and developers zagged, Ross says an underlying empathy strongly links Portman to the planning profession. "He worried about communities," she says. "Most architects, appropriately, worry about buildings—and they should. But I think Portman was bigger than that. He may not have always got it right, but I think he worried about communities, and neighborhoods, and people, and the idea that buildings should work for people. That's what city planning is."

**"He worried about communities. Most architects, appropriately, worry about buildings—and they should," Ross says. "But I think Portman was bigger than that."**

Portman's passion project of planting trees along Peachtree Street in Downtown Atlanta is also something planners aspire to, she says.

"Anytime you can create an experience with greens and infrastructure, and Peachtree is a classic example, it enhances the environment for whoever is enjoying the benefit of that space. It's no doubt that those trees are an outreach on Portman's part, to be more inclusive, more responsive," Ross says.

His tree planting initiative contributes to Atlanta's reputation as "the city in a forest." Ross says that: "Whether people are walking, riding, or driving, they can have an experience with nature on Peachtree Street. That's a very popular planning strategy, and I think a correct one, as we talk about revitalizing our avenues and boulevards in cities."

Likewise, Portman's design innovations have had lasting effects on cities all over the planet. For example, Ross says the glass elevator that he invented for his atrium concept in the Hyatt Regency in Downtown Atlanta was the most expensive elevator, at that time, in the world.

"I was in Asia this summer, and as I looked at the glass elevators, I thought, *That's Portman!*" she says. "He gave people a different view of the city from that elevator, a way to get outside that building. It's completely the model. And Asia is the best place to see it. The idea of this glass elevator has taken hold in a way that I think is uncanny," Ross says.

You don't look at Portman's work and feel nothing, she adds. "It's rousing and inspirational, that's how his work gets me. What Portman did was create a renaissance, a rebirth. That's huge! And it inspires us at Tech." ▲

# We Can Be Super Heroes

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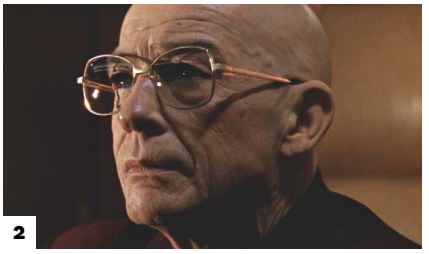

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**1.** Marvel Comics' Mockingbird earned her PhD in biology from Tech. **2.** "Once upon a time, I was a helluva engineer," S.R. Hadden tells Dr. Ellie Arroway in Carl Sagan's *Contact*. **3.** Don't toy with Tech grad Grunt.

**THE LEGENDARY GEORGE P. BURDELL**—created by students decades ago as the epitome of roguish determination—isn't the only Georgia Tech alumnus born of people's imaginations. There are three other fictional Ramblin' Wrecks of note who deserve to be associated with their alma mater, including a comic book super hero.

**1. MOCKINGBIRD, AKA BARBARA MORSE.** Morse is an agent of S.H.I.E.L.D. (like Nick Fury), who first appeared in the Marvel comic book *Tales to Astonish* No. 12 in 1972. The character earned her PhD in biology from Georgia Tech, and was early on involved in the protection of the Super Serum that gave Captain America his powers.

Though originally "just" a trained spy and scientist, she eventually becomes a full-fledged super hero when, to save her life, Nick Fury injects her with a similar serum that gives her super-human strength, agility and healing powers. Strangely, her nickname has nothing to do with these abilities; she earned the Mockingbird moniker due to her penchant for taunting her foes during battle.

So far, Mockingbird has not starred in any of the Marvel Cinematic Universe movies, but she's appeared as a recurring character on the ABC TV show *Agents of S.H.I.E.L.D.* (played by Adrianne Palicki). Don't count her out on the big screen, though, as her comic-book fate once had her married to one of The Avengers: Clint Barton, aka Hawkeye.

**2. S.R. HADDEN.** Hadden is an eccentric tech industrialist—very reminiscent of Howard Hughes—who helps solve the central mystery of the alien transmissions in *Contact*, an acclaimed science-fiction novel and movie written by astrophysicist Carl Sagan. In one pivotal scene, the character (played by the late, great John Hurt) takes the protagonist Dr. Ellie Arroway (Jodie Foster) under his wing and utters the line "Once upon a time, I was a helluva engineer," emphasizing to her that he knows how to solve big problems. While Arroway may get the glory, it's Hadden who saves the day more than once with his engineering know-how and gobs of money.

**3. GRUNT, AKA ROBERT W. GRAVES.** Like Mockingbird, Grunt has graced the pages of many Marvel comic books. He is the intrepid infantry trooper with the elite special ops team famously known as G.I. Joe. But while G.I. Joe dates back to 1960s, Grunt didn't get his start until 1982, and his first incarnation came as a plastic action figure. He grew into greater stature with the *G.I. Joe: A Real American Hero* comics, as well as two animated TV series and a live-action movie. In issue No. 55 of the comic, Grunt leaves the team to attend Georgia Tech and earn his engineering degree. In fact, he's the only member of the team to successfully leave the service to live as a civilan, so he can build things rather than destroy them. A true Yellow Jacket, he's best known for keeping his cool under fire and, of course, his technical and mechanical proficiency.

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