Sandra Magnús

An Astronaut’s Firsthand Account of the Final Space Shuttle Mission

How the Institute is Shaping the Future of Space Travel
"I want to promote success."

— William Dowdy, ChE 1954, MS ChE 1963

In appreciation for the skills and work ethic that Georgia Tech instilled in him as a young man, William Dowdy, ChE 1954, MS ChE 1963, and his wife, Katherine, have made provisions in their revocable living trusts that will one day establish two unrestricted endowment funds: one for the School of Chemical & Biomolecular Engineering and another for the Alexander-Tharpe Fund.

Dowdy, who retired in 1986 from DuPont and resides on Signal Mountain, Tennessee, credits the rigor of the Georgia Tech curriculum with preparing him for long-term success as a chemical engineer. That gratitude motivated his estate commitment.

As a Georgia Tech freshman, Dowdy struggled through his first quarter of academic life, finishing with a 1.8 GPA. After learning that he was in jeopardy of losing his co-op assignment, Dowdy convinced the co-op director at that time, James Wohlford, to give him a second chance. Through hard work, discipline, and some friendly competition with other co-op students, Dowdy finished the next quarter with a 3.6 GPA and earned a 3.0 or higher subsequently.

After working in the DuPont Experiment Station in Wilmington, Delaware, for three years, Dowdy returned to Tech and earned his master’s in chemical engineering. During this time, he was transferred by DuPont to Chattanooga, Tennessee, where he spent the remaining thirty years of his career.

Georgia Tech continues to be important to the Dowdys, who feel a great sense of pride when they see the leaders that Tech produces. “Young people today can go to Georgia Tech and get the training and the knowledge they need to be successful in their careers, and I want to promote success,” says Dowdy.
THE CORNERSTONE OF ROLL CALL IS LEADERSHIP

“Georgia Tech holds a special place in my heart. I am proud to call myself a Tech alumnus, a lifelong fan and a long-time contributor to Roll Call. I believe so strongly and passionately in the many great things that are happening at the Institute, that I have encouraged my fraternity brothers and friends to show their support by giving at the Leadership Circle level. I can think of no greater way to inspire the next generation of global leaders and thinkers than to give generously to Roll Call. Go Jackets!”

Kevin Murray, Mgt. ’90
Former Trustee, Georgia Tech Alumni Association
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NEXT FRONTIER p52
With the space shuttles grounded, Tech alumni and researchers are designing the vehicles and systems that will take humans to Mars and beyond.

FINAL MISSION p44
From blast off to touch down, Sandra Magnus, PhD CerE 96, takes us inside the final mission of the NASA space shuttle program.

SECOND-YEAR ITCH p60
Norquata Allen and the rest of 2010’s Freshman Faces make their mark on Tech as sophomores.
Have you cracked the code? Hidden throughout this issue of the Alumni Magazine is a special message to our readers. But before you decipher it, you’ll have to find it. Once you’ve figured it out, let us know at gtalumnimag.com/code.
You’ve surely noticed that the Alumni Magazine you hold in your hands is quite different from the previous issue. We’ve revamped the whole look and feel of the publication. Take a look at the table of contents on pages 6 and 7 to learn the lay of the land.

These changes are the culmination of months of work by Editor Van Jensen, Vice President of Marketing and Communications Renee Queen and a great team of designers at Metaleap Creative, an award-winning Atlanta-based design firm. The principals of Metaleap are alumna Nikolle Reyes, MS Bio 99, and her husband, Jose Reyes. The foundation of this design is built on our understanding of you, our readers. It also comes from understanding the Institute. We’re blessed with a wealth of content in the amazing work done at Tech to educate the future leaders of this technological world.

I think Van summarized things well during our meetings about the redesign, when he laid out the nine goals of the magazine:

1. Showcase the news and accomplishments of Georgia Tech's faculty, researchers, students and staff.
2. Focus on technological content to show how the Institute is becoming the technological leader of the 21st century.
3. Cover the professional and personal accomplishments of alumni.
4. Highlight business and career advice from alumni and Institute leaders.
5. Cover a full range of Yellow Jackets sports.
6. Inform readers about services and events offered by the Alumni Association.
7. Tackle topical issues with technical, financial, political and scientific insights from faculty and alumni.
8. Employ a writing voice that reflects the personality of Georgia Tech graduates—intelligent, technically minded, engaged in the issues of the world and with a very sense of humor.
9. Celebrate the Institute's rich history.

The Alumni Magazine seeks to build pride for Georgia Tech among alumni and to strengthen the connection between them and the Institute. We hope you enjoy reading it as much as we have enjoyed creating it.

Because of circulation dates, I did not get to thank you all properly at the end of 2011. In many ways, it was an extraordinary year for your Alumni Association. For a full recap, see our Annual Report on page 100. We’re blessed with alumni who care about Tech and the Association. And for that, we’re very grateful.

JOSEPH P. IRWIN, IM 80
PRESIDENT & CEO
GEORGIA TECH ALUMNI ASSOCIATION
This organization receives financial support for allowing Liberty Mutual to offer this auto and home insurance program.

* Discounts are available where state laws and regulations allow, and may vary by state. To the extent permitted by law, applicants are individually underwritten; not all applicants may qualify. Savings figure based on a February 2011 sample of auto policyholder savings when comparing their former premium with those of Liberty Mutual’s group auto and home program. Individual premiums and savings will vary. Coverage provided and underwritten by Liberty Mutual Insurance Company and its affiliates, 175 Berkeley Street, Boston, MA. © 2011 Liberty Mutual Insurance Company. All rights reserved.

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Reflecting on the Sept. 11 Memorial

When I received my Alumni Magazine in the mail yesterday, one of the first articles to catch my eye was the article about Michael Arad and the design of the memorial at Ground Zero in New York [“A Memorial to the Unthinkable,” Vol. 87, No. 7]. While I vaguely recall hearing about a Georgia Tech connection, I was not aware that the main designer was a Georgia Tech graduate!

Before moving south and attending Tech, I grew up in suburban Long Island. The Trade Center was really built before I left, but I visited it several times when I returned, and my cousin worked at the Windows of the World on top of the North Tower (luckily he retired well before 2001). Thus, part of me will always be a New Yorker, and the events of 9/11 hold a particular significance to me, especially since two of my high school classmates lost children in the event.

My wife and I visited the memorial on Oct. 21, and it was a very moving experience. We had been there before, in March 2002, and observed “The Pile” from a platform as it was being cleaned up. For my generation, this event is our Pearl Harbor, and like the Kennedy assassination, everyone can recall exactly what they were doing when they got the news. Also for my generation, there is another great memorial—the Vietnam Wall. It was controversial when it was built but has become the most visited and most revered monument in Washington.

I have a friend whose name is on the wall, and the first time I visited it, I traced that name and it meant a great deal to me. Likewise, when I visited Reflecting Absence, people were tracing the names. In fact, we had talked to a man that was a member of FDNY, and he had found the name of his fire department mentor, but had nothing to trace it with. I gave him my pen and some notebook paper I happened to be carrying, and when my wife and I moved on down the line, he and his wife were busily tracing, tears running down their faces.

Thank you, Michael, for a great work of art that will endure for the ages and help comfort those who lost so much.

Bill Bulpit, ME 70, MS ME 72
Atlanta

Civil War Map Not Accurate

Just received the latest Georgia Tech Alumni Magazine and saw the photo and map inside the back cover [“Civil War Site Rests Below Tech Campus,” Vol 87, No.7]. While the location of the Ponder House is consistent with what many historians have been able to determine, some other information on the map and in the text is incorrect.

The map indicates the Federal line at the north end of campus was occupied by the 4th Corps. Actually, the 20th Corps was positioned there.

The photo was taken from Fort Hood, part of which appears in the foreground. While the Ponder house was extensively damaged by Federal artillery, the presence of sharpshooters was not the cause. Rather, it was a prominent, easily identifiable target for the Federal artillery, and it was proximate to Fort Hood.

Rather than the works on what is now the south end of campus being part of the outer defense line of the city, they were an extension of the inner defense line.

While the Atlanta Campaign lasted almost four months (early May to early September 1864), the Confederate lines on what is now the Tech campus were occupied in strength for less than six weeks (July 21 to Sept. 1), and the Federal lines in the area for slightly less time.

Want to get in touch? Send letters to: Editor, Georgia Tech Alumni Magazine, 190 North Ave. NW, Atlanta, GA 30313, or editor@alumni.gatech.edu. Comment at gtalumnimag.com or on the Alumni Association’s Facebook page. Tweet to us at @gtalumni. Send address changes to: Biographical Records, Alumni Association, 190 North Ave. NW, Atlanta, GA 30313, or bioupdate@alumni.gatech.edu. View our the Letters to the Editor policy at gtalumnimag.com/letters-policy.
Sherman did not order the city to be burned to the ground. Substantial damage occurred when the Confederates evacuated Atlanta on the nights of Sept. 1 and 2, 1864, as they blew up and burned what they could not withdraw. Also, the city warehouses were opened to the remaining citizens and retreating soldiers, who used torches to search in the dark and set accidental fires.

When General Sherman ordered the city abandoned in mid November 1864, he also ordered destruction of any materials that might be militarily useful to the Confederates. Several buildings were torched, while others were set afire by windborne sparks. Contemporary accounts and our analysis indicate less than 40 percent of the city was destroyed.

Even an old Math grad believes we should get the history correct.

Charlie Crawford, Math 71
President, Georgia Battlefields Assn.
Atlanta

Editor’s Note: The map in question was created by the Office of Facilities Design and Construction. All other material was taken from multiple historical accounts of the Civil War.

Who Got My Scholarship?
In the fall of 1949 the Daughters of the American Revolution offered a $125 scholarship to the student who could trace their ancestry back to the oldest date before the War for Independence. I submitted data tracing our family back to 1633, in Brookline, Mass.

I graduated in June 1950 and went to work in Washington, Ga. In the late summer of that year I received a letter from [former dean of students] George Griffin. The first paragraph informed me in glowing terms that I had won that $125 scholarship. I was elated, because in those days that was real money!

In the second paragraph he told me that he knew that since I had graduated and was gainfully employed I would want the money to go to someone who was still struggling to get through school, and that he had acted on that opinion. I was devastated!

I’ve always wanted to know who received that scholarship. Do any records exist that could tell me this? And I wonder where that person might be, if still alive. I would like to contact them just to learn how that may have impacted them.

Wallis Cobb, IE 50
Statesboro, Ga.
wgcobb@ncvt.com

Keep Tech Tough, Please
I was saddened to learn some time ago that incoming Tech freshman are no longer greeted with, “Look to the man to your left, look to the man to your right—four years from now one of them won’t be here.”

I wonder why this tradition was terminated. Was it because we didn’t want to offend or worry young students? In this day and age everyone needs a wake-up call, and that includes the incoming Tech freshman class. It was hard talk like that which first got my attention when I arrived on the Tech campus in September 1966. And the dean was right—my freshman roommate wasn’t there four years later. But a lot of us were because we worked hard. Tech is a tough university. Please keep it that way.

Gordon Waring, IE 70, MS CE 73
Riversdale, Western Cape, South Africa

Glee Club Keeps Wreck Spirit Alive
Larry Wayne Brown, AE 69, of Sturgeon, Mo., responded to an article on Tech’s Glee Club at gtalumnimag.com: “You guys balance the harmonic equations well! Thanks for keeping the Ramblin’ Wreck spirit vibrant in voice and song. A 1969 alumnus, I attended your Spivey Hall Nov. 13 concert, and was truly honored that you sang my newest lyric, ‘Ship of State,’ as part of it! Thank you!”

JoSh CoChraN
grew up in Taiwan but currently lives in Brooklyn where he illustrates for a wide range of clients including the Dubai Metro, Facebook, IBM, Nike and TIME magazine. In his spare time he loves cooking elaborate meals at home and running around the city with his small dog, Porkchop.

JOSH MEISTER,
an Atlanta native, has been shooting portraits of Georgians for most of his life, so shooting the students, faculty and alumni of Georgia Tech was a natural extension. Meister’s work has been featured in such magazines as Atlanta, Paste and Ebony as well as making the hot list on BuzzFeed.com and NotCot.org. He has also produced images for AirTran, AT&T and Cartoon Network, among others.

ANDREW MOSEMAN
lives in Brooklyn, NY. He’s the online editor of Popular Mechanics and has written for Discover, Mental Floss and other publications. He holds a master’s degree in science writing from MIT.
Around

CAMPUS
Congratulations, Jimmy!

Skanska USA congratulates Jimmy Mitchell, the 2011 Georgia Institute of Technology Alumni Association's Outstanding Young Alumni of the Year, for his outstanding service and achievements.
Visitors to campus this past fall might have noticed that they walked into Bobby Dodd Stadium under a sign that reads “Thomas and Mabel Reeder Ga_e.” They also likely spotted a sign on North Avenue welcoming them to “The Georgia Institute of Technology.”

Stealing the T has been a Tech tradition since 1969, when a group of students celebrated the retirement of President Edwin D. Harrison by scaling Tech Tower and snatching one of its most important letters. Over the next 30-plus years, students have often recreated the giddy stunt.

But the practice has been banned since the early 2000s out of concern for student safety. These days, Tech Tower is equipped with pressure-sensitive roof tiles, fiber optic cables and an alarm, and any student caught going after the T faces expulsion.

In recent years, though, the tradition found a new outlet, as students have pilfered T’s from all across campus. Elle Creel, a fourth-year business administration major and president of the Student Government Association, can recall seeing T’s missing from signs since her freshman year.

But this year has been far worse, Creel said, which was made obvious when signs inside the Clough Undergraduate Learning Commons were stripped of their T’s before the building’s grand opening was even celebrated.

And so Tech’s administration approached Creel to brainstorm ways to protect the T’s and save on the six-figure cost to replace the lost letters.

“It doesn’t look like a tradition. It looks like we’re vandalizing our own campus,” Creel said.

Her first move was holding a series of meetings with student leaders to plan a response. “We wanted it to be light-hearted, not adversarial,” she said.

AmnesiaTy Day was held Sept. 28 on campus, and T thieves were allowed to turn in stolen letters without facing punishment. Campus was awash with T-pride, with rallies and T-decorating projects.

Michael Macmillan, member of the Ramblin’ Reck Club and a fifth-year aerospace engineering major, parked the Reck at the center of campus to allow people to leave purloined T’s in the car’s rumble seat.

“We needed to make sure the general community was educated on the true tradition that existed versus the general T thievery,” Macmillan said.

By the end of AmnesiaTy Day, five T’s had been dropped off in the Reck, including some that had been taken from Bobby Dodd Stadium. That night, 200 students gathered around Tech Tower as the light on the east-facing T was turned out to celebrate the true tradition of stealing the T.

One student walked up and handed in six T’s, Creel said. “He said he’d collected them from friends. There was one from the stadium, another one from the big sign by the Interstate,” Creel said. “I don’t have any stories behind it, because we weren’t asking.”
Humans vs. Zombies

Anyone living in fear of undead corpses attacking Georgia Tech might want to consider befriending students Steph Greear and Kate Hoyt, organizers of the massive game of Humans vs. Zombies that overtakes campus every semester.

**Gameplay, in brief:** Students are divided into two teams, the zombie “horde” and the human “resistance,” each side wearing colored armbands to indicate their allegiance. The zombies’ goal is to convert as many humans to their side as possible—not by biting but by a “firm touch with the hand,” according to official rules. The humans, meanwhile, try to stun their would-be attackers by pelting them with balled-up socks and marshmallows.

The game is played for a few weeks early every semester, each session complete with a storyline that tracks a developing premise and mobilizes each side on periodic “missions,” culminating in a final attack.

“It’s basically a big game of tag,” says Greear, an international affairs major, who helped bring Humans vs. Zombies to Tech after reading about its original inception at Goucher College in Baltimore.

“It’s a de-stressor,” affirms Hoyt, who balances her biomedical engineering coursework with developing the storyline for each Humans vs. Zombies session. (Current themes under consideration for the next session, to be played in March: pirates, maybe necromancy.)

Greear and Hoyt know it’s silly. But it’s silliness that requires organizational and managerial skills beyond the level expected of most undergrads—and they know that, too.

About 400-500 students usually sign up to play any given game, and the admins (upwards of 11 at any time) are responsible for making sure everyone knows the rules before play begins and managing disputes during the battle itself. Even during the off season, the admins spend a few hours a week planning for the next go-round.

So, yes: “Humans vs. Zombies” is a line item on both Greear and Hoyt’s résumés. Greear is already pretty sure her experience helped land her a job as a departmental student worker on campus last year.

For players, the game is just good, clean, nerdy fun—and mostly nonviolent, though once a surprise attack left a zombie with a broken nose. And occasionally other unpleasantries arise, like realizing classmates’ moral allegiances in the face of undead attackers.

Hoyt wrote one “final mission” in which the few dozen remaining humans had a choice between fighting off the zombies as a team or picking six individuals to “escape” in a “getaway truck” (really, a giant cardboard box) and leaving the others behind. To the admins’ shock, the humans picked the second option. The stragglers were consumed by the undead horde.

“We got the call and we were like, ‘They did what?’” Greear remembers.

“At that point,” Hoyt says, “I think they were just ready to be done with the game.”

The zombie is part and parcel of this cultural obsession, but it is also the antidote.

---

**Rachael Maddux**
OF COURSE: THE DEAD AND THE UNDEAD
(ENGL 1102: Multimodal Composition 2, Spring 2011)

Instructor: Jesse Stommel, Brittain Postdoctoral Fellow with the School of Literature, Communication, and Culture.

Syllabus says: “With the advent of virtual bodies, cloning, cyborg technology, and even the cell phone, we are seeing ourselves become more and more disembodied... The zombie is part and parcel of this cultural obsession, but it is also the antidote. ... We will examine a multimedia array of texts that explore the zombie and its literary and figurative precursors. ... If you are squeamish you would likely prefer another section of this course.”

Sample reading (and viewing): Robert Kirkman, The Walking Dead; Mary Shelley, Frankenstein; Cormac McCarthy, The Road; Night of the Living Dead; Zombieland; 28 Days Later.

Final project: A 20-minute film collaboratively produced by students, each assigned to one of five “departments,” including screenwriting and marketing.

For more information, and to watch a previous student-produced film, visit jessestommel.com/zombieclass.

Marathon Men
Kristen Shaw

Early one morning in late December, in the basement of a house in Acworth, Ga., Tech students Peter Sohl, Joey Dolensky and Ryan Hoffman watched Nick Ranallo play a video game on a Nintendo Wii.

The scene may have looked like an average post-finals decompression-fest, but it was actually the fourth annual 4/48 Zelda Marathon. The strategy is simple: A group of Tech students gather to play The Legend of Zelda, stream it online, entertain viewers with their sleep deprivation via web chat, and ask everyone watching to give money.

On this morning, in the marathon’s 48th hour, Dolensky, in pajamas, manned a station used to search gameplay tips and track donations, while Sohl followed chats projected onto a TV. The guys discussed how Dolensky had been awake for 23 hours (“Tech prepares you for that”) and the whereabouts of fifth teammate Ryan Adams. Sixth player (and only non-Tech affiliate) Justin Rowe joined the group after a good night’s sleep. Everyone offered tips to whoever wielded the controller and audibly responded to viewers’ chats.

The 2011 marathon eventually pulled in over $4,100, adding to the nearly $8,000 raised since the marathon began in 2008. All proceeds go to the nonprofit Child’s Play Charity, which delivers toys to children’s hospitals worldwide.

Sohl and Adams don’t plan to let their May graduation signal the marathon’s end. As they pursue full-time employment and medical school, the venue may not always be an Acworth basement, but, to them, the charitable gaming endeavor has become a Tech tradition.

MOSQUITOES VS. RAINDROPS

What happens to mosquitoes when it rains? Do the little bloodsuckers go into hiding? Do they dodge the raindrops? Or are they knocked out of the sky en masse? A team of Tech researchers has determined the answer: None of the above.

In a fluid dynamics study, assistant professor of mechanical engineering David Hu and a group of students put a mosquito into a small container with a mesh lid. They then sprayed its roof with water, simulating rainfall.

Filming the soggy bout with high-speed cameras, the team quickly dispelled the myth that mosquitoes dodge rain. “They showed absolutely no sign of trying to avoid them,” Hu said of the mosquitoes.

In a paper on the topic, the researchers wrote, “Experiments with live mosquitoes indicate a surprising ability to quickly recover flight post-collision, despite accelerations of 30-300 gravities over durations of 1 ms.”

Next, using Styrofoam pellets as mimic mosquitoes, the team determined that when a raindrop hits a mosquito, the droplet deforms but doesn’t splash, losing only 2 percent of its velocity. Little momentum is transferred from the water to the insect.

While the research might seem superfluous (a previous study by Hu elaborated on the physics behind the “wet dog shake”) Hu said it will help scientists to design tiny remote-controlled aircraft. So in the future, remember that rain is no protection from mosquitoes—or, for that matter, miniature spy planes.
The quad-rotor copter—a square-shaped aerial vehicle with a propeller at each corner—is autonomous, using an inertial measurement unit, laser sensor, sonar and autonomy algorithms to navigate swiftly and near-silently through the air and around obstacles.

It’s the result of hard work from the three aerospace engineering graduate students who are researchers in the Aerospace Systems Design Laboratory: Zohaib Mian, Patrick Dees and Timothy Dyer. Mian heads up the ASDL’s Micro Autonomous Systems and Technology team, which is sponsored in part by the U.S. Army Research Laboratory. Aerospace engineering professor and ASDL director Dimitri Mavris serves as the project adviser and research engineer Carl Johnson is providing assistance.

The students built the copter to test their autonomy algorithms, sensors and tactics.

“It’s equipped with a couple of control boards to provide stability, wireless communication and autonomous navigation,” Mian said. “It is also equipped with a ranging LIDAR [a laser remote-sensing technology] to detect obstacles and map areas, and sonar for altitude control. Its main software interface is being handled using open-source ROS [Robot Operating System], enabling an efficient way to program, test, share and validate it.

In the future, we are planning to attach a camera to enable visual capabilities.”

The team is working to finalize the fully autonomous navigation and mapping system. Their next step is to partner it with other vehicles—the Micro Crawler and the Flapping Wing—to develop and test algorithms for the vehicles to communicate with each other and collaborate on missions.

The quad-rotor copter could be used in many ways, but it holds much potential for use in a war zone. The main goal for the Micro Autonomous Systems and Technology team is to build a team of micro-sized autonomous vehicles to aid military units in urban environments.

While it’s serious business, the project is also a lot of fun. Mian invoked the famous quotation of French Army captain and aviation pioneer Ferdinand Ferber in describing the best part of working on the copter: “To design a flying machine is nothing. To build one is something. But to fly is everything.”

Flight of the Autonomous Quad-rotor Copter

While walking across campus last fall, I happened upon three graduate students standing on Tech Tower Lawn, watching as a flying contraption buzzed through the air above them. When I asked who was controlling the vehicle, they shrugged. It was flying itself.

The students built the copter to test their autonomy algorithms, sensors and tactics.

“Knowing exactly where hostile targets are, soldiers raid the structure.”

RoboT ScouT

Once the autonomous quad-rotor copter is made small enough, the vehicle will help out troops in urban warzones. The team explains how it’ll work.

1. From a safe distance, soldiers deploy the copter.
2. The copter flies to an enemy base without setting off alarms. Using radar sensors and video, the copter maps out the base and relays details about the layout, occupants, traps and explosives back to soldiers.
3. Knowing exactly where hostile targets are, soldiers raid the structure.
"To design a flying machine is nothing. To build one is something. But to fly is everything.”
I was impressed with the faculty in the College of Management during my undergraduate studies, so I thought the Global Executive MBA program was the best option for me.

I am now in a more strategic role, managing a broader scope of corporate-wide projects than I would have before earning my Executive MBA.”

Diana Chen
Global Executive MBA Class of 2007
Director, Initiatives Management, Equifax

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Undergrad Rebuilds Hometown Park

Tech student Norwood “Wood” Dennis Jr. grew up in Augusta, Ga., on Holly Hill Road, his parents’ yard abutting the edge of Pendleton King Park. He said he spent his childhood playing in the park and knew that one day he would contribute something to it.

That day has come. Dennis recently completed a two-kilometer cross-country trail in the 64-acre park as his Eagle Scout project. The trail loops in a figure-eight pattern and includes portions that are asphalt, dirt and grass. It circles Lake Elizabeth in its lower portion, and is now clearly marked with signs showing directions and distances.

“Although the trails provide a respite in the city to walk and enjoy nature, peace and quiet, it’s my hope that they’ll afford the running community more of an opportunity to train,” Dennis said. “I was grateful for the opportunity to develop an Eagle project that would have a lasting impact on a remarkable community resource.”
Software Allows Unmanned Vehicles to Work as a Team

At the 2010 Robotics Rodeo—which, yes, is a real thing—a team from the Georgia Tech Research Institute, led by chief scientist Lora Weiss, fired up two small-scale aircraft and one Porsche Cayenne automobile and stood back as the vehicles sprang to life. The Collaborative Unmanned Systems Technology Demonstrator allows the unmanned vehicles to collaborate on complex missions without human assistance. Onboard computers run advanced software and the vehicles feature sensors and open standards-based communications. The two aircraft work to quickly identify a target, and the ground vehicle, carrying heavier equipment, can move in to conduct more thorough analysis. The system uses FalconView, a Windows-based mapping application developed by GTRI for the Department of Defense. The team has continued to develop the CUSTD software in preparation for the 2012 Robotics Rodeo in May.

Wireless Sensors Scavenge for Energy

All around us, energy is emitted from radios, TVs, cell phones and satellite communications systems. Manos M. Tentzeris, a professor in Tech's School of Electrical and Computer Engineering, didn't want to let all that power go to waste. Tentzeris and his team used inkjet printers to combine sensors, antennas and energy-scavenging technologies onto sheets of paper. These self-powered wireless sensors can pick up a range of frequencies, from FM radio to radar, and offer a variety of uses, including airport security, radio-frequency identification tagging, energy saving, structural integrity monitoring and wearable electronics devices. The research was sponsored by the National Science Foundation, the Federal Highway Administration and Japan’s New Energy and Industrial Technology Development Organization. The team expects to power devices requiring more than 50 milliwatts using super-capacitors.
LiquidText
Goes with the Flow

Described as “a fluid-like representation of text,” LiquidText software allows readers to use touch-screen computers to manipulate text. It was developed by Tech graduate student Craig Tashman and W. Keith Edwards, an associate professor in the School of Interactive Computing with support from the National Science Foundation, Steelcase, Samsung and Dell. Users can quickly highlight and make comments across multiple sections, extract text, add bookmarks and navigate through a document, all with simple fingertip gestures, pinches and flicks that highlight or collapse text. Tashman worked with Tech’s Enterprise Innovation Institute to commercialize the technology, and he won the $15,000 Georgia Tech Edison Prize and received $43,000 in grants from the Georgia Research Alliance to help launch the company.

SILVER-DIAMOND COMPOSITE SENDS IT COOL

GTRI Researchers have been developing a solid composite of silver and diamond to help cool small, powerful microelectronics used in defense systems. They’ve produced a silver-diamond thermal shim of unprecedented thinness—250 microns or less. The material promises a much higher degree of thermal conductivity than currently used materials. Thermal shims are needed to pull heat from high-power semiconductors and transfer it to heat-dissipating devices such as fins, fans or heat pipes. The semiconductors work in very confined operating spaces, so it’s necessary that the shims pack high thermal conductivity into a tiny structure. Diamonds provide the bulk of thermal conductivity, while silver suspends the diamond particles within the composite and contributes to high thermal conductivity that’s 25 percent more effective than copper.

CARDIAC TOOLBOX LEARNS THE HEART WAY

Created out of a partnership between Georgia Tech and Emory, the software package Cardiac Toolbox gives physicians a more comprehensive look at what is happening inside a patient’s heart. The Toolbox, which has been licensed by Syntermed, was named one of 100 success stories in a recent report from the Science Coalition. It is now in use in about half of all nuclear medicine labs in the country. Whereas once radiologists could only see a two-dimensional still image of a heart, Cardiac Toolbox offers 3-D video of a beating heart and a color-coded guide to show the distribution of blood flow. Emory and Georgia Tech are shareholders in Syntermed, which brings in more than $1.5 million a year in revenue.
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Harold Cash, Tech Power Plant Superintendent

On the third floor of the Holland Power Plant, Harold Cash and his seven-man staff manage the flow of steam power and chilled water throughout most of campus—and, perhaps most importantly, maintain the famous Tech whistle, which sounds at five minutes before each hour weekdays between 7 a.m. and 5 p.m.

What is your day-to-day work like?
We probably serve about 70 percent of the campus. ... We've got the chilled water plant here, we've got the 10th Street chilled water plant, then we've got the Tech Square chilled water plant. Those plants are unmanned—the operator on duty in this plant watches this plant and watches the 10th Street plant through an AVB control system here, and we watch the Tech Square plant through a JCI system.

What kind of upkeep does the whistle require?
During our steam outage they'll check it, make sure there's no problems with it. There are solenoids we'll replace every year or two years—that's the control valve that closes, to let the steam in or out. We operate that thing with this time clock over here on the wall—its schedule is programmed into it. During the football games, the operator either listens to the radio or watches the TV on a local channel so every time Tech scores, they blow the whistle manually. Then they blow it for the touchdowns, and then for the game wins.

Is there one particular person who does that? We have different gentlemen on different shifts, according to whenever the game is.

Are they allowed to tailgate?
They're not allowed to tailgate! It's a duty for them, it's not a fun time.

In 2004, the whistle was replaced and some weren't thrilled with the new sound. Can you tell me about that? It was actually the original sound. I wasn't here when the whistle was first put in place, but the whistle that we had was quite different from what we have now. We got down to where we didn't have any bells left for the thing, and over at the Alumni House is where they've got the whistle that was stolen back around the turn of the century and was replaced—we got a reproduction of that whistle made, and that's what we have now.

Is it loud in here when the whistle goes off? We can hear it in here, but it's not really loud. After a while, it just kind of blends in—you don't really hear it.

It's top secret? Even for alumni? They're typically the ones who we think steal it!

Is the tradition of “borrowing” the whistle still active? That hasn't happened for a while. That's not a good tradition to do.

There's security on the sign on Tech Tower—is there security around the whistle? Yes, there is. We don't want to say what.

What do you think Tech students would be most surprised to learn about your staff's work? I guess that we're here at all. Most people don't realize that. I had a gentleman down here the other day—he had been a student for five years here, and never been around the plant. ... Nobody notices us until something stops working.
Stacks of CDs, framed photos of musicians, concert paraphernalia—sounds like the dorm of a rock-obsessed undergrad, right? Think again. The bookshelves lining the walls of assistant professor Chris Moore’s office in the Couch Building contain all of these things and more, trinkets and artifacts culled from his years as a performance percussionist and music instructor. Moore serves as Tech’s director of athletic bands and coordinator of percussion studies, overseeing the Tech marching band and jazz ensemble, among other groups, and teaches music performance and production courses. He showed the Alumni Magazine some of the most treasured—and most unusual—elements of his office décor.

The Music Man

A peek inside the workplace of a fascinating Yellow Jacket.
“Those are called ‘shakos.’ They’re what the marching band wears. The band wore [a blue one] for about 10 years. And then in 2003 we got the white one, with the ‘GT.’ We went from the official institute logo to more of the athletic logo. [I have two] from the Atlanta Olympic band.”

“Goat toenails. I’m a percussionist, so in addition to all the knickknacks, I have a bunch of interesting percussion stuff. It came from Brazil—a student brought them to me. They’re good for sound effects, like rain.”

“These are things I’ve picked up in percussion shops. I have a variety of them. They’re actually an African instrument called a ‘shekere.’ It has a bass tone—’boom boom.’ They’re just gourds, like a squash you’d see out in the country somewhere.”

“I get some gifts, like these Tibetan bells that a student gave me. They’re good for the holidays.”

“The drumline played a concert with Shania Twain at Philips Arena in 2004, 2005. We’ve also played with Keith Urban three times, with Kenny Chesney, with Sugarland. Being a big school that’s right in Atlanta, we get a lot of calls for corporate things, for conventions. When Keith Urban came through, we got the call the first time, and the next year they came through, they called us again, and we knew exactly how to deal with it. The school gets paid—they make a donation to the band program.”
Georgia Tech alumni can join executives and event planners across the country in choosing to host corporate and professional meetings, seminars, training sessions, and conferences at the Georgia Tech Global Learning Center.

The 32,000-square-foot facility in Midtown Atlanta's Technology Square builds on the Georgia Tech experience for graduates. It's where meeting and learning converge.

Event planners and company representatives say the built-in technology and event and technical support, from start to finish, removes the worry and stress that often surrounds meetings, seminars, and other events.

"The Center is a beautiful space, and the staff makes it all the more professional. Their built-in technology made our event flow smoothly without looking like a typical hotel ballroom," says Colin Owens, communications and marketing coordinator for Hay Group, a global management consulting firm.

The Center’s learning environment, which features five amphitheaters, conference rooms, meeting rooms, computer labs, an executive board room, can hold groups of up to 400 people.

Karen Beard, administrator of OBNET Women’s Healthcare Network LLC in Atlanta, says her organization has used The Center since it opened, and her physician leaders continue to request it as their meeting venue.

"It has become the easiest meeting I plan all year, with excellent service from the staff, and the A/V facilities are impressive..."

–Karen Beard, OBNET Women’s Healthcare Network LLC

Companies and organizations that consistently choose The Center range from Fortune 500 companies to those in technology, finance, law, and other fields, to Georgia Tech’s Alumni Association and university departments.

That state-of-the-art technology and in-house expertise helps The Center host a distraction-free meeting, with no pauses or delays. In this global age, The Center’s technology enables people to be connected across thousands of miles and continents.

"It has become the easiest meeting I plan all year, with excellent service from the staff, and the A/V facilities are impressive," she says.
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The Center’s event-planning expertise helps make events more successful than ever before, impressing clients and bosses. This assistance is all part of The Center’s all-inclusive Complete Meeting Package, at no extra charge.

“The facilities at The Center are among the very best in the market in terms of quality, spaciousness, and cleanliness of the rooms...”

—Julio Vergara, Training America

The Center’s experienced event planners provide step-by-step consultation on technology and other details, from room setups to the continuous refreshment service to off-site events. It’s a partnership where flexibility is routine, not filled with rules or inaccessibility.

These resources create a perfect setting for pivotal meetings where corporate employees and professionals can engage in productive learning.

“The facilities at The Center are among the very best in the market in terms of quality, spaciousness, and cleanliness of the rooms. The audio/visual equipment provided in the rooms are the best in the market,” says Julio Vergara, an instructor with Pennsylvania-based Training America, which provides IT education. “All this, combined with their customer-oriented service, provided for a more than welcoming and pleasant experience for our class.”

Alumni can create new memories at Georgia Tech, as The Center builds on the school’s tradition of an excellent environment for learning.

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With three stellar years already under his belt, tennis player Kevin King started off his senior season showing even more improvement. King compiled a 14-3 singles record in the fall season, including wins over several top-ranked opponents and a first-place finish at the USTA/ITA Southeast Regional. At the National Indoor Intercollegiate Championships he made it to the quarterfinals. King also teamed with Juan Spir to form the nation’s top-ranked doubles team. King shines in the classroom as well, making the Dean’s List and the ACC All-Academic team as a mechanical engineering major.

Goodlett Towers Over Competition

The first thing people notice about senior basketball star Sasha Goodlett tends to be her height. At six-feet, five-inches tall she is the tallest Tech player since the 1980s. But Goodlett is far more than a towering presence. Her graceful moves in the post have made her the 25th player with 1,000 career points as well as one of the team’s leaders in career blocks. Goodlett, who also has made the Dean’s List as a history, technology and society major, spent the past offseason doing more than just working on her basketball game. She took an internship at Martin Luther King Jr., Middle School in Atlanta.

Buzz finished second in the Capital One mascot contest, which allows fans to vote online for their favorite mascots. Buzz dominated throughout, besting such rivals as Testudo, Sparty and Hairy Dawg.

Omorogie Uzzi, a junior guard on Tech’s football team, earned second-team All-America honors and first-team All-ACC honors. Uzzi helped lead the Yellow Jackets offense to the top of the ACC in rushing offense, scoring offense and total offense.

Monique Mead was named to the American Volleyball Coaches Association honorable mention All-American team for the third straight season. Mead, a junior right-side hitter, recorded 588 kills in 2011, the most in the ACC and second most in the nation.

Dodd’s Boys, a group of former football players once coached by Bobby Dodd, are creating a statue to honor the legendary football coach. Former players, coaches and trainers can take part in the project by contacting Taz Anderson, IM 61, at (770) 434-8104.
Whether you’re shopping for home or business, a Sam’s Club Membership can help you find exceptional value on things you need all year – from groceries and household essentials to office supplies and computers. You’ll also enjoy time-saving services like Pharmacy, Optical and Photo.† And, as a member of the Georgia Tech Alumni Association, you can start with up to a $25 Gift Card!* To take advantage of this offer, visit gtalumni.org/SamsClub or present this certificate along with proof of alumni association membership to the Member Services Desk of your local Club.

* $25 Sam’s Club Gift Card when signing up for a $100 Sam’s Club Plus® Membership; $10 Sam’s Club Gift Card when signing up for a $40 Advantage Membership. See full offer details at gtalumni.org/SamsClub.
† Specialty Departments vary by Club.
It goes back farther than their time playing together, notching wins against the likes of Andre Agassi and Todd Martin. It goes back farther even than the duo’s four years together as Tech students, when both were All-American tennis players. It goes back to when they were both teenagers, to a tennis camp in Huntsville, Ala. It was there that a friendship formed and two lives unknowingly moved onto the same track.

Thorne and Shelton recently spoke with the Alumni Magazine about their friendship and work at Tech.

Thorne: We go way back, to the juniors when I was just turning 15. I lived in Florence, Ala., which was just more than an hour away from Huntsville, where Brian lived. He was taking lessons from this coach there who was very good. The coach invited me to come live with him. That’s where we first met.

Shelton: I recall I had seen him at a sectional tournament when we were younger and he was living in Hot Springs, Ark. He was playing doubles with this guy named Brad Everly. Was it Everly?

Thorne: [Bryan’s] memory’s better than mine still. Shelton: They were one of the best teams in the Southeast. So when he moved to Alabama, I vividly remember thinking, ‘All right, this is another guy who’s going to push me, and we’re going to push each other. It’s going to be a good thing.”

Thorne: You want to be the best, even at that age. Fortunately we had a coach that — it was more about surviving him, so we bonded. There was a rivalry. He wanted to beat me and I wanted to beat him. But we wanted to beat everybody else, too.

What was the worst thing the coach did?

Thorne: [Laughs.] That’s not legal to say.

Shelton: He was a perfectionist. He expected the most out of everybody every single day. If he came in that door and you were sitting down and weren’t doing something constructive, he would chew you out. He wasn’t shy about using whatever words to get the message across. He didn’t like mistakes. He didn’t like to tell you the same thing twice. It was a military compound.

Thorne: The tennis court was a library, he said. You were constantly studying and constantly working. Coach Bill Tym is his name. For two years, it was tennis and sleep. And not much sleep.

Shelton: It was sink or swim. You’re either going to survive and get tougher or you’re going to get out. We saw a lot of kids come into the program and fall out.

Do you keep in touch with Coach Tym?

Shelton: I do. He’s had a profound effect on our lives — somebody who’s kind of a father figure.

Thorne: His passion for tennis has stayed the same, and that’s something that coaches need. It’s something he instilled in us, a love for trying to understand the game — the frustrating parts, the exciting parts.

At that point, between you two, who was the better player?

Thorne: [Bryan] was.

Shelton: I remember playing a tournament in Huntsville, and we were playing in the 16-and-under division and 18 and under. We made the finals of the 16s and the 18s. In the morning we played the finals of the 16s and in the afternoon we came back and played the finals in the 18s. I won one and he won one.

Thorne: Have you seen the movie Brian’s Song? Brian Piccolo was the guy always trying to catch up to Gale Sayers. And I felt like Brian Piccolo. I would go out, early in the...
“All right, this is another guy who’s going to push me, and we’re going to push each other. It’s going to be a good thing.”
morning, and see him out there, already working on his serve. And I’d think, “OK, I need to get out there.”

**Did you decide to come to Tech together?**

**Thorne:** I moved when I was 16 up to Richmond, Va., for my junior, senior years. Bryan was still in Huntsville. We started to take recruiting trips together.

**Shelton:** Georgia Tech came up really late. I was contacted by the coach at the time, Gery Groslimond, and he went after both of us.

**Thorne:** I was looking to get into some type of engineering. Academically and tennis-wise [Tech] seemed like one of the better fits.

**Shelton:** The team at the time here was really weak. But we felt like great things could happen. Kenny and I, and there was Andre Simm from Miami—the three of us decided to come together. We thought we had a shot at not just developing as players but building something from the ground up.

**When you came, was that still in the days of “Look to your right, look to your left”?**

**Thorne:** That was our orientation speech, and we were sitting right next to each other. [We wondered,] “Which one of us isn’t still going to be here?” That first semester, the professors just tested you to see if they could break you down. We could’ve had better GPAs, but we worked through it.

**Shelton:** I remember our first class was calculus.

**Thorne:** Are you going to mention his name? Don’t do it.

**Shelton:** Oh, man, professor [Bill] Ames. He was head of the math department. We were in Calc One. We walked in that class for the first time, and after five minutes, we looked at each other and said, “We’re in the wrong class.” We walked out of the classroom.

**Thorne:** We left.

**Shelton:** We went to see our academic adviser.

**Thorne:** We definitely weren’t in the right class.

**Shelton:** You know how that ended. “Get right back in there, because that’s your class, and you’d better figure it out.” A couple of weeks later, we went in to talk to [professor Ames] about missing an exam and see when we could make it up. He gave us a lecture like something Bill Tym would say. He had to make up an exam for a couple of little freshmen? We just crawled out of his office.

**When did you first see signs that you were going to have success here?**

**Thorne:** I saw it in Bryan right away. His first year he came in and won the ACC tournament, which is extremely difficult to win [even] as a senior. His leadership on that team showed us, OK, it’s a team that’s going to be extremely dangerous.

**Shelton:** When you have a number one player who’s winning, it brings everyone up. You say, “I can do it too.”

**Were there challenges for you in tennis?**

**Thorne:** I had numerous injuries. We were trying to figure out which match I was going to play or if it would be better for me to sit out and get healthy.

**Shelton:** My freshman year I had a lot of success. Well, my sophomore year and my junior year I didn’t have any success on the court. I lost my confidence. You feel like you’re on top of the world, and the next year you go to the cafeteria and you’re sitting by yourself. I’d come out early, I’d stay late. Fortunately, some of that paid off in my final year where I got back on track. I remember Kenny being hurt through a lot. But the most amazing thing was that he could miss practice for three weeks, and Coach would just put him out there even when he wasn’t 100 percent, and he’d go out and beat some of the best players in the country. To me, it said a lot about who he was as a person and as a player.

**How did you get out of that hole?**

**Shelton:** Through that time, God was just showing me that I couldn’t do it on my own, that I don’t deserve anything. But if you stick with something and you work hard, you will get the rewards. Looking back, I wouldn’t trade it. I love the fact that I struggled for two years. I tell my players, “It’s so cool to get to the good stuff after the struggle.”

**Thorne:** No one who’s had success hasn’t struggled. Look at what Bryan did, and it’s a testament. He still came out and worked every day for two years.

**What was your best moment as players at Tech?**

**Shelton:** I remember us beating Georgia in Athens our senior year.

**Thorne:** That’s what I was thinking. Absolutely.

**Shelton:** It had been 18 years since Georgia Tech had beaten Georgia.

**Thorne:** We both went on to the pro tour and won a lot of matches, but those times when you win as a team are just phenomenal. Instead of just you jumping around and maybe your mom and dad at home jumping around when you’re on the tour, it’s the whole team. To have that in tennis is not too common. The only chance you get is here in the college atmosphere.

**Shelton:** When you’re practicing together, you’re conditioning together, you’re going to classes together, traveling together, doing everything together, now you’re a team. That’s the great part of college tennis. Now the team is more important than you.
**Did you stay close after graduating?**

**Shelton:** Kenny got married shortly after graduation. He and his wife, Bridget, were living here in Atlanta. I was living in a condo nearby as well. We still played doubles together, trained together, hung out together. There weren’t too many gaps when we weren’t side by side, all these years. I’m 45. I’m a little older than he is.

**Thorne:** A lot older.

**Shelton:** I’ve got him by a month. Thirty-one of those years we’ve been pretty close. He stopped playing six months before I did. There was a little gap where he came back to work here and I was coaching for the USTA. And then he talked to me about coming in and interviewing for this position. We’ve been side by side ever since.

**How did you both end up back at Tech?**

**Thorne:** I came off the tour in 1997 and took an assistant coaching position. I was going to use my industrial engineering degree, and I’d started interviewing in that. The head coaching position came open right then, and until that happened, I had not even considered it. As soon as it did, it was like I opened my eyes. I could help these guys to do better than I did. And then it was one year later, they approached me and said, “The women’s coaching position is open, and do you have any suggestions?” I said, “Well, I’ve got one. And if you can make it happen, you’re going to have the best coach in all of women’s tennis by far.”

**Shelton:** I was looking at going into education. Kenny contacted me, and it had never been a thought that I’d be a collegiate tennis coach. I said, “What’s it going to hurt?” We met at the OK Cafe. Kenny was there and our athletic director at the time, Dave Braine. We sat and he talked about what he wanted to do to turn it into a top 20 program. They were super supportive of doing the things they needed to do to get the program to a higher level. So I accepted the offer. By the end of my first year, we lost our last match out at UCLA in the regional, and I told the team, “Now I know. This is exactly where I’m supposed to be.”

**Thorne:** I remember 2007, sitting in the stands, watching Bryan win the national title. It’s probably a little like him watching me be injured and come back and win and thinking, “Man, I wish I could do that.” I jumped down from the stands and gave him a hug. Just the sheer thrill of what had just happened was overwhelming. We both want another title. We want a title every year. At the same time, we want to make an impact on people. When we leave here, we want to have had the most positive impact on the players that came through here that we possibly can.

That means not just taking care of tennis, but mentoring them as people. We watch them 10 years down the road. Are they good husbands? Are they good wives? Are they good parents to their kids?

**Shelton:** We’ve had the opportunity, because we’re so close, to feed off each other. I’ve often said that some of Kenny’s best coaching years, maybe results-wise, haven’t been his best years. But coaching-wise, I know it’s his best year ever. People get recognition when they’re winning. But 2007 for us was the culmination of the years leading up to 2007. I was with the team in the championship match and I was doing no coaching.

**Thorne:** That’s a great statement.

**Shelton:** I didn’t say much before the match started. I said nothing between the doubles matches and the singles matches. But as he was saying, there’s a consistency of commitment. When I come in at 6:30 in the morning, he’s down there hammering away. I’ve seen that for 12 years, but most people don’t get to see it. So this last year, he’s national coach of the year, and I’m like, “Yes! I know he is! I see it every day!” It’s like when he was seeing me at 16, out there hitting my serves. When I see him out there with his team, I’m like, “All right, I’ve got to get ready for practice!” That’s our lives together.

**Thorne:** We’ve gone through tough times at different times. We’ve been able to lift each other up. We absolutely know we have each other’s backs.

**When was the last time you played each other?**

**Thorne:** With his bum shoulder and my bum everything, not too much. When was the last time we did?

**Shelton:** I think we might have done that and I threw my back out.

**Thorne:** [Laughs.] You threw your back out.

**Shelton:** I was reaching back to put a little something on my serve, and next thing you know, I’m out.

**Thorne:** We still know how to do it, but our bodies aren’t quite letting us do it.
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The Yellow Jackets football team capped off an up and down season with a 30-27 loss against Utah in the Sun Bowl. Here, some regular season stats from the 2011 football campaign.
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All information is believed to be accurate but is not warranted.
What was your first investment? A business in Florida called Sawtek. They made micro-electronic devices. It worked out pretty well. We made a little money.

What did you learn from it? The management of the company is the most important factor. It’s also the most difficult to judge.

Why? People always have their best foot forward when they want funding. And you invest before you know the results.

How do you determine good management from bad? You have more certainty if you’re dealing with people who’ve been successful. You look at other things like the history and the experience the management team has. The reputation. Personal references.

What personal qualities are you looking for? People think of entrepreneurs as “roll the dice and go for it” kind of people. The best people to invest with are very realistic. The most dangerous are those that don’t care about risks.

What questions do you ask of them? I’m trying to assess, “What kind of person is this?” When you invest in a private company, you are in close proximity with that person for a number of years. If you really don’t want to deal with that person, you’re not going to be very happy.

Who were your most important teachers? A professor at Georgia Tech, Cecil Johnson, said, “You better watch out and keep balance [between work, family and faith]. If one thing gets too far out of balance, it’s going to make problems.” I don’t remember too many specific things from his class, but I remember that.

What was your biggest investing mistake? We were coming off of fantastic investing days of 1998, 1999. It was really a little too easy. That came to a really abrupt ending in 2000. We did not anticipate that the game was over, and it was going to be 10 really tough years.

How involved are you with the companies? Most investment partners at Noro-Moseley are on the company’s board. It’s very detailed and time consuming: “Are we getting where we’re trying to go? If not, what do we do to get there? Do we need more money? New people?” Then we help engineer an exit. Getting out is as important as getting in, because the only way we make money is by selling the company or going public.

How has the latest recession affected Atlanta’s entrepreneurs? The effect has made it more difficult for entrepreneurs in technology. But I think we’ve been through the worst. Atlanta has Georgia Tech, which is an engine behind most of the technology development. That deep foundation will sow the seeds needed to have continued economic growth. The entrepreneurial effort and results in Atlanta over the last 40 years have been dramatic. And I suspect in 40 years when we look back, we’ll say the same thing again.
With fear spreading that the European debt crisis or other factors could plunge the U.S. economy back into recession, the Alumni Magazine wondered, “What will happen to the economy in 2012?” For answers, we turned to two Tech experts on the subject. Jim Taylor, IE 72, is the chief investment officer of the Georgia Tech Foundation. Thomas “Danny” Boston is a professor of economics at Georgia Tech; CEO of EuQuant, an economic research company; and creator of the Gazelle Index, a national survey of minority-owned businesses.

Hope Remains for U.S. Economy in 2012

Jim Taylor

After reading today’s news headlines or watching the talking heads on CNBC, the world’s economy would seem to be in dire straits. The frustrations of millions of unemployed people in the U.S. and overseas have been on display through Occupy Wall Street, Greek riots and Italian public service employee demonstrations.

The straight jacket of heavy debt and below average economic growth will likely take years to escape as politicians, employees and retirees adjust to the new realities of deleveraging governments and corporations.

But all may not be as bleak as described. Economic growth in a number of the larger emerging market countries in Asia and Latin America remains strong, as tens of millions of people move up the economic ladder each year and become middle class consumers of products made both in their home countries as well as in the U.S. Because of a number of recent favorable economic reports, it appears the chances of a second-dip recession in the U.S. during 2012 have fallen from about 50 percent as of mid-2011 to around 30 percent. Despite the fallout from the European sovereign debt crisis on the U.S. economy in 2012, many forecasters now expect real GDP growth of between 2 percent and 2.5 percent in 2012 versus growth of about 1.8 percent in 2011.

Although the consensus forecast for 2012 currently looks modestly favorable, the Georgia Tech Foundation’s investment portfolio maintains a cautious allocation to global stocks and an appropriate degree of portfolio liquidity as hedges in case the current process of global deleveraging results in a recession. At the same time, given the extreme levels of monetary and fiscal stimulus injected by central banks and governments around the globe since the 2008 credit crisis, the Foundation portfolio is being prepared for a likely acceleration of inflation over the next several years through increases in the portfolio’s exposures to “hard” commodities, as well as commodity-related stocks. Also, the Foundation’s healthy allotment to “macro-economic oriented” hedge fund strategies is intended to enhance its chances of generating attractive future returns for the benefit of the Institute and its students, regardless of the eventual economic environment.
I expect GDP to increase to 3.5 percent and the unemployment rate to decrease to 8 percent by the end of the second quarter. Here’s why I’m optimistic:

As a percent of GDP, corporate profits are at record rates since the early 1980s. As the economic uncertainty settles and consumers spend more, corporations will accelerate their investment. This will be a boon to economic activity, and small businesses will be the immediate beneficiaries. Their health is closely tied to opportunities in corporate supply chains.

Consumers were saving disposable income at record rates, but they’re spending more. Holiday season online spending was 15 percent above a year ago. As consumers spend more and corporations increase their investment, the net result will be more hiring and greater stability in household income. This will help stabilize the housing sector. While the absolute housing numbers are still far below trend, positive movement in this sector can have a tremendous linkage effect on economic activities.

The Eurozone debt crisis is still a black cloud hovering over the world’s economy. A resolution is important to U.S. consumers because it is estimated that Bank of America, J.P. Morgan and Citigroup each has $15 billion or more invested in the countries most likely to default: Greece, Italy, Ireland, Portugal and Spain. As this crisis is moderated, U.S. banks can reduce reserves and make more loans to U.S. consumers and small businesses.

The big unknown is government action or inaction. If Congress moves in a reasonable way to balance the budget, growth can accelerate rapidly. Specifically, we must have a combination of actions that stimulate economic growth, generate more government revenue through taxes and reduce government spending without damaging the health and social fabric of the country. To do otherwise would be to repeat the bad lessons that Eurozone countries are now learning.

Small Business Leaders Expect 2012 Recovery

My fourth quarter index survey of small business future hiring indicates that twice as many CEOs will be hiring workers than laying them off as we enter 2012.
I created a Photoshop design of exactly what I wanted to do. Every paint detail was shown on the rendering.

I went to the annual Cushman Show, which coincidentally is held in Cochran, Ga. I talked with experts on how to restore the scooter and got many leads on unique parts, engine mechanics, body painters and chrome dippers.

I tore the scooter down to literally a thousand pieces. Every nut, bolt, spring and cable was separate and unique.

I took every piece and soaked them in degreaser, acid or paint thinner. I disassembled the frame to a dozen pieces and hand delivered them to a company in Newnan that does bead blasting, which provides a much smoother finish than sand blasting.

I primed the entire frame with a recommended sealer primer for the smoothest texture and paint finish.

I sent the engine to an expert on Cushman engines and had it rebuilt and painted with heat-resistant chrome paint.

I sent the shroud and anything else I thought could be chromed to a chrome shop. They said the springs could not be chromed, so I ended up buying new chrome springs—against my better judgment, since I wanted this restoration to be all original.

I laid out the entire paint scheme in pencil on the frame. I called Georgia Tech and got the official PPG numbers and paint codes for Buzz. I went to a local body paint store and bought all the ingredients for a complete paint job. Then I scrolled through the Tech website and got the best picture of Tech Tower and a sample of a Buzz sticker for the painter to reference. The painters airbrushed them on the scooter. I won’t have stickers on the scooter.

I delivered the entire package to Cumberland Custom Designs in Tennessee who did a fantastic paint job.

I took the metal seat to a local custom leather shop and had a new seat cover made with ostrich skin and a custom gold GT emblem stitched into the center of the seat.

After assembling all the parts old and new we had our final product. Only one problem: It didn’t run. I messed with it for days but couldn’t get it running. Then, I took it to Bob, my next-door neighbor, an engineer. He pulled the engine back off the frame and rebuilt it again. Now, with a couple of kicks, it cranks right up.
“I tore the scooter down to literally a thousand pieces. Every nut, bolt, spring and cable was separate and unique.”
UP IN THE AIR

ASTRONAUT AND TECH ALUMNA SANDRA MAGNUS OFFERS A FIRST-PERSON PERSPECTIVE ON NASA’S FINAL SPACE SHUTTLE FLIGHT
“The solid-rocket boosters light and you jump off the pad. You get pressed back in your seat. There’s a lot of noise, a lot of vibration. Everything’s shaking. There’s a big roaring. It’s pretty violent.”

As told to Van Jensen | Photograph by Josh Meister
August 2010 — Magnus is Working at NASA Headquarters in Washington, D.C.

I got a call about the end of August, when chief of the office Peggy Whitson asked me if I wanted to be considered for the last shuttle flight, and I was very surprised. She told me that she was curious if I was interested in a short-term mission or wanted to stay in the long duration line. My answer to her was, “Use me where you need to use me.” She called me back about two and a half weeks later and said she’d assigned me to the STS-135 mission.

We were not sure if the mission was going to be executed or not. We were the rescue mission for the shuttle in front of us. Every mission after Columbia, you served as the rescue team for the shuttle in front of you. We were going to be training for the rescue mission, so there was a lot of hope we would be added to the manifest as a normal flight in order to do this logistics delivery.

I think we all started to get comfortable in the February to March time frame that we really were going to go and this was going to be a mission. We had to approach it as if it was 100 percent going to be a mission. You had to learn the things you had to learn: “This mission is going, and I need to learn this now.”

I’ve been an astronaut for 15 years, and I’ve been on three missions. So five years of that time was taken up by training. It’s the hardest thing. Sometimes you forget you’re doing it because it’s fun.

We were a four-person crew. [The other crew members were commander Chris Ferguson, pilot Doug Hurley and mission specialist Rex Walheim.] A shuttle crew normally consists of six or seven, especially for these very busy station flights. So we had to change how we train. Normally you can split the crew up into a small series of specialists, and each person becomes an expert in that one area with maybe one person backing you up. It reminded me of training for the space station with just four of us, because you had to be a jack-of-all-trades. We had a lot more to absorb. We had extra space station material to absorb because the rescue scenario involved us staying on the space station for up to a year, coming home one by one on a [Russian] Soyuz craft. And we had a shorter time to do it.

The other thing that was quite difficult was saying goodbye to all these people that you’ve worked with for decades. People who just are outstanding, wonderful, dedicated, passionate space employees. Having to say goodbye to them was hard.

We were approaching the end of the shuttle mission whether we flew or not. We were the last crew to do a lot of things. That came up frequently: “This is the last time we’re going to use this simulator. This is the last time we’re going to be in this building.” In addition to that, we had people who were getting laid off as we were going through these milestones—these people were no longer needed.

For example, the crew interface and equipment test in Florida—we visit with the vehicle and the processing facility and we get an introduction to the equipment we’re going to be working with inside the orbiter, and all of the Florida team supports that. The day after we were finished, a couple hundred of them got laid off.

The media attention really started after the 134 mission launched. It was like a huge set of binoculars found us. We did some interaction with the media that’s not typically done. They came and followed us through our training. There was a lot of difference in the last few months, in April and May.
JULY 8, 2011  →  STS-135 IS SCHEDULED FOR AN 11:26 A.M. LAUNCH FROM KENNEDY SPACE CENTER.

We actually woke up about two hours later than we would have normally, because we were extending our on-orbit awake time for two hours in order to complete all of the tasks that needed to be completed on flight day one. Normally you have a larger crew and more hands to get these things done. With four people, we were going to need more time.

We woke up that morning and really hit the ground running. We ate breakfast, we put our suits on and we headed out to the launch pad.

We are allowed to choose what we have for the meal before we put our suits on and launch. I like having some kind of salad, because I always miss crunchy and fresh things when I'm on orbit. And a toasted cheese sandwich. And a chocolate shake, because I miss ice cream and dairy products as well. And sometimes I'll have French fries, just because they're tasty and a treat before we launch.

The space suits are just bulky. It's like putting on 17 layers to go out in the snow. It's awkward. It's not uncomfortable, but you don't want to wear it to run a race.

The weather was questionable. We weren't even sure if we were going to make it, but you have to go try. Lo and behold, it cleared up and we were able to launch.

JULY 8, 2011  →  AT T-31 SECONDS, THE LAUNCH SEQUENCE FREEZES.

The vent hood that sits on top of the orange tank moves away shortly before launch. And I guess the micro-switch that indicates to the control center that that arm had swung away successfully had failed. And so they stopped the count to verify that it indeed had cleared the top of the tank. That was a surprise.

What it does is it throws you off of your stride, off of your rhythm. There's a certain rhythm with coming out of T-nine and getting through the launch. When you have something happen that's unexpected like that, it completely throws you off of your rhythm. We were all surprised. We were very taken aback. Of course, we didn't know any more than people listening to the loops at Saturn V Building at Banana Creek did. We were waiting to see if they were going to resolve it and we were going to go. As Rex likes to put it, they started the countdown at 31 seconds and it's like, 3, 2, 1, and bam, you're off. You almost don't have enough time to take it all in, because it goes so fast. The vehicle is moving so fast it feels like time is compressed.

The main engines light six seconds before the launch so the engines can be fully checked out. You feel the stack sway a little bit. Then six seconds later the solid-rocket boosters light and you jump off the pad. You get pressed back in your seat. There's a lot of noise, a lot of vibration. Everything's shaking. There's a big roaring. You're trying to watch the computers. It's pretty violent like that for the first six minutes, and then the solid-rocket boosters are spent and detach with a loud bang and a brief flash of light as the pyrotechnics separate them. And then things calm down quite a bit.

The main engines provide about 1 million of the 7 million pounds of thrust. They're fairly smooth. Things are pretty quiet for a little while. You can watch the horizon drop away, if you've got a day launch. You're monitoring the systems, you're monitoring the engines. There's about a minute before the engines cut off that you feel three G's through your chest. And then the main engines cut off and you're floating in your seat. It's an exciting ride. It's a little bit different every time I've done it, but always exciting.

As soon as the main engines shut off, you are in microgravity. You are floating in your seat, and everything starts to float away if you hadn't gotten it tied down ahead of time. Then you go into the mode of, “OK, I'm in zero G, I need to keep track of my stuff better. I have to move slowly.” It's a different world now, so put on your zero G hat.

The thing that catches everybody by surprise, the thing you can't train for, and the thing you're constantly warned about as a rookie is that, when you get up there, you have to have a plan. You're going to take your gloves off—where are you going to put them? You can't just set them down. You have to put them in a bag, or under your chair. You can't disconnect your five-point harness. Leave at least one band around your leg so
In addition to Sandra Magnus, Georgia Tech has had 13 alumni serve as astronauts. Tech also has had one former faculty member fly on a space shuttle mission: Mike Massimino, a former assistant professor in the School of Industrial and Systems Engineering, was a crew member aboard STS-109 Columbia in 2002 and STS-125 Atlantis in 2009.

John Young, AE 52 One of NASA’s most decorated astronauts, Young first flew in space on Gemini 3 in 1965 and visited the Moon on the Apollo 16 mission. He was spacecraft commander of STS-1, the first flight of the space shuttle program, in 1981. He also commanded STS-9, the first Spacelab mission, in 1983. After six missions to space, Young became chief of the Astronaut Office.

Richard Truly, AE 59 A Naval pilot and instructor at the U.S. Air Force Aerospace Research Pilot School, Truly was among the first military astronauts selected for the Manned Orbiting Laboratory program in 1965. Four years later he joined NASA and served as support staff for all three manned Skylab missions. In 1977, he piloted the 747 space shuttle Enterprise approach and landing test flights. His first flight into space came aboard STS-2 Columbia in 1981. Truly returned to space in 1983 as the commander of STS-9 Challenger. He retired as a NASA administrator in 1992.

L. Blaine Hammond Jr., MS ESM 74 Hammond piloted STS-39 Discovery in 1991. It was the first unclassified Department of Defense space mission, and the crew performed experiments to collect data on atmospheric infrared and ultraviolet phenomena. Hammond also piloted STS-64 Discovery, a mission that included the first use of lasers for environmental research and an untethered spacewalk to test a self-rescue jetpack.

Jan Davis, Biol 75 Davis served in 1992 on STS-47, NASA’s 50th space shuttle mission. During the mission, she operated Spacelab and performed several experiments. She went on to serve aboard STS-60 in 1994 and STS-85 in 1997. Davis later worked for NASA in a variety of roles, including as head of safety and mission assurance, before retiring in 2005.

Michael Clifford, MS AE 82 After spending several years working at the Johnson Space Center as an engineer, Clifford was selected as an astronaut in 1990. He flew aboard three missions, STS-53 in 1992, STS-59 in 1994 and STS-76 in 1996. He logged 665 hours in space and conducted a six-hour spacewalk outside the Russian space station Mir.


The commander of the very first space station crew was a Navy SEAL, Bill Shepherd. He instituted for American visiting vehicles that, when the shuttle arrives, we have a ship’s bell on board. Following the Navy tradition of ringing aboard a crew, when the shuttle docks and when it undocks, the commander of the space station rings the bell and announces, “Atlantis arriving,” or, “Atlantis departing.” And then there’s a handover ceremony for the station guys when they change command. And then we have a very small arrival or departure ceremony with the crews, but there’s nothing really institutional about it.

As soon as we docked and opened the hatch it felt like I was home. It was like I’d never left, it was the same place but bigger. It really did feel like a homecoming.

I would’ve been the third one down [to Earth, if the shuttle had been
unusable], so I would’ve stayed for nine months. I basically ran out of radiation tolerance, according to their calculations, so they weren’t going to let me stay longer than that. We’re basically considered radiation workers under the OSHA standards. And then NASA takes those standards and tightens them up a little more. There’s a certain amount of radiation you can be exposed to in a year and in your lifetime. I had four and a half months a couple of years ago and I’m a female, fairly young, so that was kind of a hit against me. As you get older, you’re allowed a higher dose of radiation because it’s a statistics game, and the probability you’re going to die from something other than radiation increases as you age.

The day-to-day life on this latest mission was nothing like that on any of my previous missions. We were so incredibly busy. It was frantic. Sometimes we didn’t bother eating. Just change clothes, go to the bathroom and immediately get started working, because we had so much to do. We were afraid of not getting it done.

We were transferring 10,000 pounds of equipment from the MPLM [multi-purpose logistics module] to the station and then we were transferring 6,000 pounds of equipment from the station to the MPLM. And some of that equipment still had to be located by the time we arrived. Usually it’s packed up in a bundle and ready to move. But the station crew didn’t have enough time. I was worried about having enough time to find things. On station, that can be very challenging.

It was like 3-D Tetris. That’s exactly what it was. In training, I had some great logistics people who set up the plan. “How do you approach this in three dimensions? How do you break it down and do it so it’s most efficient?” We had a great plan going in. We had to alter it a little bit, but not much. If you don’t have a good plan, you’re doomed.

Doug Hurley and I did the robotics in support of the space walks. When there’s a space walk, if you’re in any way involved, you’re 100 percent paying attention. You’re making sure you’re doing everything you can to support them. If you aren’t involved, you’re listening to the communications to make sure everything’s going OK in case you’re needed. You’re always aware during a space walk. That’s the major task for that day.

The payload doors [on top of the shuttle] opened, and I looked out at our atmosphere and said, “Oh my gosh, it’s so thin!” It looks like this teeny, tiny eggshell. It just makes you realize how fragile our existence is.

You usually have a couple of hours to wind down at night, have dinner, and we were working right up to the point that we should’ve started sleeping most of the time. We did manage to have three nights that we had dinner with the station crew in the three different galley locations.

Living in space, on the station, you’re on a rotating menu. You see the same thing over and over again. The food in itself is actually really good. It’s a little higher in salt content than I would normally have. They need to do...
YELLOW JACKETS IN SPACE

Scott J. “Doc” Horowitz, MS AE 79, PhD AE 82 Horowitz first flew aboard STS-75 in 1996, a mission that saw several breakthroughs in electrodynamics research. The next year he flew aboard STS-82 Discovery, the second mission to conduct maintenance on the Hubble Space Telescope. In 2000, Horowitz flew aboard STS-101 Atlantis, which aided in the construction of the International Space Station. His final mission was STS-105 Discovery in 2001, which delivered 2.7 metric tons of supplies and equipment to the space station.

Susan Kilrain, MS AE 85 Kilrain’s first space shuttle mission, STS-83 in 1997, was cut short because of problems with one of the shuttle’s fuel cell power generation units. Later that year, she flew aboard STS-94 later, a Spacelab mission undertaken to conduct materials and combustion science research in microgravity.

Douglas Wheelock, MS AE 92 During a dangerous spacewalk assignment in 2007, some solar panels snapped and were damaged, and Wheelock was one of the astronauts to conduct an unplanned spacewalk to repair the array. The effort earned him the American Astronautical Society’s Flight Achievement Award. Wheelock spent more than 20 hours on three spacewalks in his career and spent 178 days in space, including a period as commander of the space station. He also flew on STS-120 Discovery.

Alan Poindexter, AE 86 The first of Poindexter’s two space shuttle missions was aboard STS-122 Atlantis in 2008, which was the 24th shuttle mission to visit the International Space Station. The crew delivered the Columbus Laboratory to the station. Poindexter also flew on STS-131 Discovery in 2010, a mission to deliver 13,000 pounds of supplies.

Eric Boe, MS EE 97 In 2008, Boe was on STS-126 Endeavour, which delivered materials to expand the International Space Station and also dropped off Sandra Magnus for her stay on the station. And in 2011, Boe flew on STS-133, the 39th and final mission of the Space Shuttle Discovery, which delivered two modules to the space station.

Robert “Shane” Kimbrough, MS OR 98 Kimbrough was the third Yellow Jacket on board the STS-126 mission. He performed two spacewalks, spending nearly 13 hours installing a new bathroom, kitchenette and two bedrooms onto the International Space Station. The additions allowed the station to house six total crewmembers.

Timothy Kopra, MS AE 95 In 2009, Kopra flew aboard STS-127, which delivered him to the space station, where he served with the Expedition 20 crew as a flight engineer. While at the station, Kopra performed one spacewalk and conducted several scientific experiments. He returned to Earth with the STS-128 crew aboard the space shuttle Discovery.

that, they claim. You get a decent variety, but you miss crunchy, and you miss fresh. And I miss melted cheese. I always look forward to a piece of pizza when I get home.

Every now and then you’ll get a cargo vehicle with a load of apples and oranges, onions and garlic. Crunching into an apple is very rewarding when they show up. And the oranges, they have that nice citrusy smell—that’s very nice.

I always liked the red beans and rice. The Japanese had a mackerel and miso sauce that tasted like fresh fish. It was awesome. I liked the cherry, blueberry cobbler. I liked the creamed spinach. Shrimp cocktail is good. A lot of the veggie dishes are good. The Russians’ mashed potatoes and mushrooms are very good. They have this thing called tvorog, with nuts, which is kind of like a cross between a cottage cheese and a cream cheese. If you mix strawberries with it, it tastes like strawberry cheesecake. That was always a treat.

We had a half a day off somewhere in there; flight day seven, I think. But the station guys were still working on some things. So we didn’t all have time off at the same times. We’d find moments here and there to chat.

What I did a few nights, because I wanted to be on station and to relax and to enjoy it, I basically blew my sleep out of the water. I just stayed up late for a couple of hours, spent some time in the cupola or chatted with Mike Fossum [a member of the space station crew], who’s also a late night person. We find moments. What you do is you spend time in the window and chat as the earth goes by below you. That’s really one of the most companionable things you can do up there.

The cupola is a spectacular place to view the world, because you get a 360-degree view. That was a completely different experience than looking out of a porthole. The southern lights were particularly strong. We were down near Antarctica, the dark side of the planet, and so we had some spectacular views of the southern lights.

We’re not up there talking philosophically. At the end of the workday, you’re just chatting with your colleagues, like anywhere else. I will
recall one moment, I was in the cupola, looking out the window, and Mike, who's very much into photography, came by. He was telling me to look this way, look that way. I said, “Mike, what are you doing?” He said, “I’m trying to capture a memory.” I thought, “OK. That’s OK with me.”

The last time I was there I treated it like it was the last time I’d be there. And this time I treated it like it was the last time I was going to go there. It’s not likely I’ll go again. That’s why I wanted to stay up late, just to make sure I had time at the window watching the world go by. I’m much more familiar with the planet and the regions, and it’s fun to look at it with a lot of familiarity.

We’ve had women in the [Astronaut] Office since 1978. They represent 20 percent of the office. Which, if you look broadly at science and engineering, it mirrors pretty closely. It’s certainly as male-dominated as engineering.

It doesn’t matter if you’re male or female. It matters that people can count on you. You’re expected to contribute, pull your weight, react certain ways in an emergency. People’s lives depend on you. And you’ve trained with these people forever.

They’re like your brothers. I feel like you know their sense of humor; you know their family really well. It’s like acquiring new family members.

Having said that, having a female on the crew is no doubt a civilizing influence. I don’t know what happens in a men’s locker room, but I’m sure if a female walked in it would be civilizing.

**JULY 19, 2011 → AT 1:28 A.M., ATLANTIS UNDOCKS FROM THE INTERNATIONAL SPACE STATION.**

I didn’t want to leave, but they made me.

The night before we came in, before we landed, we had everything complete. And we had some quiet time. And so the four of us were on the flight deck, and we were contemplating that this was the last mission, this was the last night. It really hit us; “This is the last time a shuttle is going to be in orbit. Wow.” We just shared the moment, enjoyed the view.

The landings are pretty benign. You’re having to deal with gravity, and that can be challenging. What I usually do as we reenter is move my head around, side-to-side, nodding. I’m trying to get my vestibular system ready to deal with gravity when I stand up. You’re not vibrating a lot. There’s not a lot of noise.

**JULY 21, 2011 → AT 5:57 A.M., ATLANTIS TOUCHES DOWN AT THE KENNEDY SPACE CENTER.**

I knew I had medical tests in front of me. I knew I had my family down there. You just sit there and it’s like, “Wow, I just got back from space.” It doesn’t seem real. Even thought you just got back. It’s that strange. It seems like a completely different life, and it fades into this dreamlike state. You ask yourself, “Was I just there?”

Those kinds of thoughts are traipsing across as I’m nodding my head, because I’m going to have to stand up and go down that ladder in a minute. And I don’t want to fall on anybody.

There are people at the bottom of the ladder watching carefully. It’s not a big ladder, five or six rungs. But you’re feeling very heavy. You’ve got this bulky space suit on, and you just got back from being in space for 13 days. So you’re just very careful going down.

You take a shower as soon as you can. Because the whole concept of hot water falling on your head is a beautiful thing. Gravity has some benefits, and that’s one big one. Don’t take it for granted.

When we’re not training for a space mission, we have technical jobs. I’m going to help write some procedures for ISS for people who are going to do training. After that, I don’t know what I’m going to do. Well, I’m taking a vacation. I’m going to Peru. I’ve never been to South America.

We were the last four. That’s going to mean something to somebody in a book somewhere. But to me personally, it’s too close. I recognize it was the last shuttle flight. I’m still wrapping up the mission. What that’s going to mean in the long term? I haven’t put much thought into that.

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MARS

BY ANDREW MOSEMAN
Envisioning the Post-Shuttle Future of Space Travel
On April 12, 1981, the first space shuttle mission took flight. Carrying John Young, AE 52, as half of its two-man crew, the Columbia mission, dubbed STS-1, completed more than three-dozen Earth orbits and inaugurated a new era at NASA. Thirty years later, the shuttle Atlantis—carrying another tech astronaut, Sandra Magnus, PhD Cere 96—completed STS-135, its final mission.

Now, the remaining shuttles are on their way to museums and human space travel faces an uncertain future. But Robert Braun, former NASA chief technologist and the David and Andrew Lewis Professor in Space Technology at Georgia Tech, is undeterred.

“The space shuttle was a workhorse—it was the centerpiece of human space exploration for the last 30 years,” he says. “But retiring the space shuttle doesn’t mean that we’re retiring human spaceflight. It’s quite the opposite.”

For now, the United States must buy seats on Russian spacecraft to get American astronauts to and from the International Space Station. Meanwhile, NASA is nurturing the American private space industry, hoping those companies can build space-worthy vehicles capable of taking over for the shuttles in low Earth orbit. And the space administration is trying to dream big once more, setting its sights on sending explorers to places humans have never been—presuming there’s money to pay for it.

“There are all kinds of opportunities waiting in the wings,” astronaut Magnus says. “We will eventually get out of low Earth orbit and go somewhere. We might not do it with the easiest route, because we’re human beings and we don’t always do things the easy way, but we will do it. I have no doubt.”

Heavy lifting

Rewind to 2004. With the space shuttle program set for retirement at the end of the decade, President George W. Bush called upon NASA to envision a future for Americans in space beyond the ISS. The result was a set of rockets and spacecraft called the Constellation Program. But NASA’s next big thing barely got off the launch pad. Six years into the program,
The space shuttle was a workhorse—it was the centerpiece of human space exploration for the last 30 years,” Braun says. “But retiring the space shuttle doesn’t mean that we’re retiring human spaceflight. It’s quite the opposite.”

Constellation’s components lagged behind schedule and remained underfunded, so President Obama axed it as part of his overhaul of the U.S. space program. But NASA hopes this was more of a pause than a full stop. In an April 2010 speech, Obama called on the space agency to develop a new way to send humans not only bang-zoom to the moon, but to an asteroid in the 2020s or even to Mars after that. NASA’s response was the Space Launch System, a rocket system that will be able to lift 70 metric tons of payload upon its first flight (scheduled for 2017) and eventually as much as the 130 metric tons necessary to fly humans beyond the Earth’s orbit, says Roy Malone, EE 80, who heads the new Shuttle-Ares Transition Office at NASA’s Marshall Space Flight Center in Huntsville, Ala.

The Space Launch System’s crew-carrying vehicle is the same Orion spacecraft designed during the Constellation days. But instead of a winged lifting body like the shuttle, the Orion (now known by the decidedly less sexy name Multi-Purpose Crew Vehicle) is a capsule like those the Apollo astronauts flew in, with a heat shield on its round bottom built to resist the scalding temperatures of Earth-orbit reentry. For now, the main engines firing during the core stage of an SLS launch will be leftover space shuttle engines—there are 15 remainders to use before SLS will bid on any new engines. And the upper-stage engine, called the J-2X, is a revitalized version of the classic J-2 that was a component in the Apollo-era Saturn V rocket.

SLS flights are still a long way off, though: The only mission scheduled beyond the 2017 first flight is one tentatively set for 2021.

“NASA’s got aerospace, airlines, science, robotic missions. There’s a huge portfolio of things we have to do within a set budget,” Malone says. “[And] we have budget uncertainty.”

But if the agency succeeds and astronauts do head for an asteroid in the next decade and a half, it will be because NASA overhauled its entire way of doing business.

HANDING OVER THE KEYS

“Getting up and down to space has been the province of governments for as long as space flight has existed,” Braun says. “[But now] NASA is turning over access ... to low earth orbit to American industry.”

In December 2010, SpaceX, founded by billionaire Elon Musk (formerly of PayPal and now of Tesla Motors) became the first company to successfully orbit and recover a spacecraft when its Dragon capsule completed two trips around the Earth, and they’ve since signed a deal with other private companies to launch satellites into orbit. Other private space companies, including Blue Origin and Sierra Nevada, are also building ships to carry astronauts and serve the growing market in space. Some, like billionaire Richard Branson’s Virgin Galactic, are even venturing into space tourism.

If the private spaceflight sector takes off, then NASA won’t need to worry about operating and servicing a shuttle between the surface and the space station, and their engineers can turn their imaginations toward Mars.

The challenge for NASA now is to play nice with others. Private contractors have always built the ships that carried American astronauts, but NASA owned those ships and oversaw their construction and maintenance with legendary amounts of paperwork. By giving the burgeoning private space industry a boost, Braun says, NASA hopes to be just one client of many that pay to use private spacecraft.
Humankind hasn’t put a man on Mars—yet. But in the past 50 years, we’ve explored much of the final frontier. Here, a visual history of all the manned and unmanned missions made so far.
50 years of SPACE EXPLORATION

HOW TO VISIT MARS

Braun is a self-proclaimed “Mars guy.” He’s worked on a series of NASA’s robotic missions to the red planet, and he described being NASA chief technologist as the best job at the agency: dreaming about the future and putting the technology in place to make it happen. But he knows the daunting challenges NASA and everyone else faces in sending humans to our closest planetary neighbor—and, more importantly, bringing them back.

“You need a big launch vehicle and a crew capsule to keep them safe, but you need a lot of other things as well,” Braun says. “You need in-space propulsion so that you can maneuver around in space. Radiation protection. You need to improve the life-support systems that we’re using. You need new ways to slow down when you get to these destinations. If you take a look at a human-to-Mars mission, it makes what we’re doing robotically with Mars pale in comparison.”

One major challenge complicating plans for a Mars mission is the development of sufficient electronic systems. In flight, spacecraft bound for Mars will encounter extreme temperatures and damaging amounts of radiation that wreak havoc on traditional silicon-based electronics. At low temperatures, semiconductors’ resistivity can change and alter their performance; at high temperatures other woes crop up. Charged radioactive particles in space introduce unwanted currents into the system and degrade interfaces.

“It could be something that’s fairly benign [or] something that’s catastrophic for the system,” says Georgia Tech professor of electrical and computer engineering John Cressler, Phys 84.

To protect the electronic systems on spacecraft, NASA engineers currently package all the main electrical components inside a “warm electronics box.” It’s basically a simple oven, Cressler says, that keeps the electronic systems just warm enough to operate. But he recognizes that it’s an inelegant solution: Heating the box burns extra energy, and having to cram all of the electronics in one space restricts how engineers can design a spacecraft.

These “ovens” typically come encased in heavy shielding to protect them from radiation, and the heavier a spacecraft is, the more energy it takes to launch it. For 15 years, Cressler has been pioneering a different kind of electronics for space, a variety based on silicon-germanium alloys. The alloys are more resistant to temperature extremes and radiation than ordinary silicon, potentially rendering future spacecraft lighter and more energy efficient.

Cressler’s research reveals the huge scope of the challenges facing an interplanetary future: His systems are 15 years in the making but address just one of the litany of technological problems of sending humans to Mars. To supply a manned mission to Mars, Braun says, NASA would need to send something the size of a two-story house that could land autonomously and become a base camp for the human crew, complete with supplies.

And then there’s the matter of getting the astronauts home.

“We know how to do a rocket—that’s not the hard part,” Braun says. “The hard part is, how do you package that rocket inside the lander that has to take it there, and how do you set up that rocket with just the right precision in a rock field?”

NASA explorers recently took the next step. The latest rover, formally titled the Mars Science Laboratory and nicknamed “Curiosity,” launched on Nov. 26. It’s about the size of a Mini Cooper—a few steps up from the famous Spirit and Opportunity rovers, which were not much bigger than RC cars.

But the mission that really excites Braun is a series called Mars Sample Return, NASA’s first attempt to bring samples from Mars back to Earth, planned for the 2020s. The mission represents a potential turning point, Braun says. Not only will it basically function as a dry-run for putting humans on the planet, but the samples returned could provide decades worth of scientific breakthroughs. (After all, researchers are still discovering things from the lunar samples Apollo astronauts brought back to Earth in the late 1960s and early 1970s.)

From the standpoint of human space flight, the missions could be even more important: If they succeed, NASA will have proven that a mission to Mars and a safe return home are indeed possible.

THE END OF NASA’S BIG MACHINES?

The SLS timeline presumes that NASA—the agency of the Apollo missions and 30 years of the space shuttle program—will also be the agency to blast big rockets into space, building a heavy-lift rocket while private companies take over orbital shuttling. But not everyone shares this vision.

Vigor Yang, chair of the School of Aerospace Engineering at Tech, isn’t sure this is the best bet, mostly thanks to NASA’s policy of reusing engine technology from the shuttle and even Apollo eras.

“That technology was established at least 40 years ago,” Yang says. “Using old technology will not save us money. Never mind that we won’t attract fresh blood into this business ... It’s a safe plan, but it’s not very exciting, technology-wise.”
The big problem is money. Back in 1965, back in NASA’s Apollo heyday, it received about $5.2 billion (more than $30 billion in 2007 dollars). Today NASA receives about half as much in equivalent dollars; meanwhile, the cost of a space launch has increased substantially in the last decade.

“That business model is unsustainable,” Yang says. “To reduce the cost, the easiest way is to increase the number of flights.”

That’s what Stephen Fleming, Phys 83, is counting on. Fleming is vice provost of the Enterprise Innovation Institute, the arm of Tech that helps to commercialize ideas developed on campus. He’s also on the board of the space company XCOR, which he calls “the biggest of the little guys” in the private spaceflight sector. XCOR is developing a business to fly to suborbital and eventually orbital space, carrying tourists and doing long-duration weightlessness experiments, helping the military conduct surveillance, launching mini-satellites into orbit and taking scientific measurements.

“What all of these [private efforts] have in common is that they are elastic markets if you can provide very, very quick access to space: You roll it out, you refuel, you press the button and you go,” Fleming says.

That’s in part why he argues that the future of big launch vehicles belongs to the private sector—not to NASA. Whether or not NASA follows through on building SLS, Fleming says, it’s just too expensive, especially during a recession.

“I think NASA will build the payloads for huge interplanetary projects—I don’t think they’ll build the boosters,” he says. “I think the torch for that is passing. Some people have embraced that. Some people are still not admitting it yet.”

John Olds, formerly an aerospace engineering professor at Tech and currently CEO of Atlanta-based SpaceWorks, agrees. SpaceWorks models the feasibility and economics of future space technologies so clients like NASA know where to put their money, and Olds sees the SLS as the last big government-built launch vehicle.

Right now, he says, the United States is split between boosting private space and planning new big NASA rockets in case the private sector doesn’t work out. In time, he says, commercial enterprise will take over. While that’s inevitable, it also presents a risk.

Private companies may supplant NASA as America’s rocket-builders, Olds says, but industry can’t replace the government’s ability to invest huge sums in technological development. “If private industry is left to do its own investment,” he says, “there are some breakthrough technologies that will be too expensive, too risky for a private company interested in the bottom line.”

“We know how to do a rocket—that’s not the hard part,” Braun says. “The hard part is, how do you package that rocket inside the lander that has to take it there, and how do you set up that rocket with just the right precision in a rock field?”

The robots will lead them

Whether we go to Mars or beyond, and whether NASA or a private company takes us there, Braun says the first explorers will be not humans but robots. Once Mars Sample Return is done, or even before, the next goal may be robotic missions to the moons of the outer solar system, like Saturn’s Titan and Enceladus or Jupiter’s Europa.

“We know that there’s water at Enceladus,” Braun says. “We know that there’s methane and other life constituents at Titan. We know about Europa being an ice-encrusted world that we believe has an ocean beneath it.”

Those missions could lead to the technology breakthroughs needed for manned exploration. Cressler hopes to test silicon-germanium electronics on such a mission to prove their readiness.

Machines will lead the way, but regardless of recessions and setbacks, Braun has no doubt that flesh-and-blood explorers will follow—especially as the continued discovery of Earth-like planets continues to focus our collective imagination on the last great “out there.”

“There’s something about being there that is hard to quantify,” Braun says. “There’s something about people exploring [space] that captures the spirit of a society. I think this country has always been about exploration. There’s something about who we are that makes us want to explore.”

The robots will lead them
In October 2010, the *Alumni Magazine* introduced you to a gang of brand-new Georgia Tech freshmen, some of the best and brightest students to ever call themselves Yellow Jackets. And as promised, we tracked them down as they began their second years at Tech to see how the intervening semesters have treated them, how their dreams for the future have changed (or not), and what they’ve learned about themselves. A common thread? These seven firecrackers could all use a few more hours in the day, but they’re trying to make the best of the 24 they’ve got.

ASTOLD TO Rachael Maddux

PHOTOGRAPHS BY Josh Meister
Ronnie Foreman

BETHESDA, MD - AEROSPACE ENGINEERING

WHAT WAS YOUR BIGGEST CHALLENGE FRESHMAN YEAR?
I usually felt like the biggest challenge of each day was walking up Freshman Hill for my 8 a.m. classes, but in many ways that was also an inspiration to me. In November of last year, I started training for my first marathon, and I logged quite a few miles running up and down that hill. It taught me how to balance my academics and extracurriculars to make time for training. It helped me to keep a good balance between work and play and showed me the importance of working with a team. Whether I was running with my dad, who ran the Atlanta Marathon in March with me, or friends here on campus, I saw a direct correlation to my efforts and experience in school. Much of life, especially college life, really is a marathon and not a sprint.

HAS YOUR MAJOR OR ANY OF YOUR CAREER GOALS CHANGED SINCE LAST YEAR?
So far, I love everything about aerospace engineering and I’m still an international plan student, but I’m now hoping to pick up a minor in economics. I’m working on research with [professor] Christine P. Ries this semester, completing an economic impact analysis of the Great Georgia Air Show. I loved her global economics class last year and working with her as a research student has really opened up my perspective as to the relationship between social sciences, like economics, and the aerospace industry. And of course, I still want to be an astronaut.

WHAT EXTRACURRICULARS ARE YOU INVOLVED IN NOW?
I’m a GT1000 team leader this year, which I absolutely love. My GT1000 experience was a great one, and I wanted to be able to give back to Tech by helping new freshmen adjust to college life. I’m also a tour guide here on campus, and I love getting the chance to show prospective students and their families the campus each week. Additionally, I’m a member of the aerospace engineering honors society, Sigma Gamma Tau, a freshman-mentoring program, and the Student Library Advisory Board.

WHAT IS ONE BIT OF ADVICE YOU WISH YOU’D BEEN GIVEN (OR LISTENED TO) BEFORE YOUR FRESHMAN YEAR?
I called home one night frustrated that I was really struggling with some homework, and my mom suggested I ask some friends from upstairs for help. I said I wasn’t sure if I wanted to ask them for help before I’d gone to my professor. She said, “Ronnie, in college, your friends are just as much your teachers as your professors are,” and she was absolutely right.

WHAT’S YOUR FAVORITE TECH TRADITION?
As of this year, I’d have to say the Mini 500. All of the homecoming events were great fun, but the Mini 500 really struck me as a time-tested Tech tradition. As goofy as it is, it is a testament to how much we love to be students at this school. In everything from assembling the tricycle to discussing the best ways to ride it, I saw a competitive edge driven by each Tech student’s work ethic, and just a little bit of real physics analysis go into all aspects of preparation.

WHAT ARE SOME ASPECTS OF LIFE AT TECH THAT YOU HAVEN’T YET EXPLORED, BUT HOPE TO?
Other than the waterskiing club, I’m planning on working on my pilot’s license when I return from my study abroad at GT Lorraine, which is currently set for this coming spring.

HOW IS LIFE AT TECH DIFFERENT AS A SECOND-YEAR THAN AS A FRESHMAN?
Second-year college life is more focused than freshman year. My classes are more geared toward my major, as are my extracurriculars. In fact, so is my free time. My friends and I went to go see Apollo 15 Command Module pilot Al Worden speak at the Tellus Science Museum recently. It was great and very much a Tech type of Friday night.

WHAT’S ONE THING ABOUT LIFE AS A TECH STUDENT THAT YOU HOPE TO HAVE FIGURED OUT BY THIS TIME NEXT YEAR?
Other than the fastest way from the Clough Commons Starbucks to the aerospace building, I’d really like to know how early you have to be at the football stadium to sit in the front row of the Swarm Student Section. Go Jackets!

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I’m still an international plan student, but I’m now hoping to pick up a minor in economics. And of course, I still want to be an astronaut.
What was your biggest challenge freshman year?
Prioritizing my activities and having to decline participating in certain events in order to make time for other ones. At the beginning of freshman year you somehow end up on 15 different email lists for interesting-sounding clubs and you want to go to their meetings and events, but balancing that with studying and spending time with your friends can be pretty difficult.

What did you learn about yourself during your freshman year?
It might sound weird, but I realized that I actually enjoy being stressed, just not overstressed. I was really busy throughout last year and am even more so in the current semester, but I find it fulfilling to still be able to stay on top of things and I think I’m growing a lot because of it.

Did you have any experiences that surprised you last year?
How much I loved playing Ultimate Frisbee. I joined the women’s club team last year and knew I would like it, but didn’t anticipate it becoming as important to me as it has become.

Has your major or any of your career goals changed since last year?
I am undecided right now about what path I want to take to reach my overarching goal of helping bring access to clean water and sanitation to the developing world. I’ve been doing research through GTRI and the Civil and Environmental Engineering department, and it’s made me consider staying in the academic environment and pursuing higher level degrees so I could eventually teach and do my own research.

What extracurriculars are you involved in now?
I’m heavily involved in Tech’s student chapter of Engineers Without Borders, and I actually spent winter break in Cameroon working on our water distribution project. I started off fall 2010 working on fundraising for the Cameroon project, and through my continued commitment I was given the opportunity to travel to the village of Mungoa-go-a for our second implementation trip. We built a water storage tank and a distribution system for a well that we dug last December. I also do research through GTRI and CEE to design appropriate sanitation technology for the developing world, specifically solar sanitation.

What’s your favorite Tech tradition or annual event?
My favorite event on campus is the farmer’s market that takes place on Tech Walkway. It’s not exactly a Tech tradition, but I hope it becomes one!

How is life at Tech different as a second-year than as a freshman?
Life is easier because I’ve had a full year to adjust to the college lifestyle. In terms of academics, I have gotten better at time management and now have a much better idea of what to expect from my classes. As far as my personal life goes, I’ve been lucky to find some really good friends as well as activities that I enjoy to help me relax when I need to.

What’s one thing about life as a Tech student that you hope to have figured out by this time next year?
I’d like to figure out whether or not I want to pursue a master’s degree at Tech.
**What was your biggest challenge freshman year?**
To do well in my math classes. Both Calculus II and Calculus III forced me to learn a few new study skills.

**What did you learn about yourself during your freshman year?**
I learned about what I really wanted to major in. Previously I had wanted to get a dual degree or minor in aerospace engineering. However, even though I enjoy aerospace, I enjoy computers and programming much more. I believe computing holds so much potential for the future of society.

**What is one bit of advice you wish you’d been given (or listened to) before your freshman year?**
I used to think upperclassmen were intimidating and unfriendly. This was not the case at Tech, I found. Upperclassmen treat freshman as equals and sometimes cannot even tell that you are a freshman until they ask.

**Did you have any experiences that surprised you last year?**
One thing that I did not expect to do was to become a teaching assistant for one of the introductory computer science classes. The teaching assistants that taught my recitation really inspired me to join the community of those in the College of Computing who aspire to help others. I have learned many new things about the class, programming and explaining concepts to students.

**Has your major or any of your career goals changed since last year?**
Currently, I’m deciding which areas of interest I have in computer science. I’m considering studying platforms and information internetworks.

**How has your relationship with your parents changed since last year?**
Not too much. I will say that my mom is no longer doing my laundry anymore.

**What’s your favorite Tech tradition?**
My favorite Tech tradition would have to be the Mini 500, though I also like the other unique things that Tech has, such as the whistle and the Mickey Mouse clock.

**What’s one thing about life as a Tech student that you hope to have figured out by this time next year?**
What exactly I want to do with my career and the precious time at Tech. Currently I just want to study a bit of everything offered by the College of Computing.

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**Tanner Smith**
Suwanee, GA - Computer Science
I think adaptability and resilience are the two things I learned about myself last year. I was able to roll with the punches that college threw at me.
What was your biggest challenge freshman year?
One of the major differences between high school and college is the amount of independence and responsibility you have in college. Everything is pretty much in your hands, and the results you obtain can have far-reaching effects on the future. There isn’t really anyone to coddle you around.

What did you learn about yourself during your freshman year?
I think adaptability and resilience are the two things I learned about myself last year. I was able to roll with the punches that college threw at me and come out a more experienced and hopefully better person.

Did you have any experiences that surprised you last year?
This past summer, I studied abroad in the Oxford program. Going into the program, I wasn’t really sure what to expect as it was going to be the longest amount of time I have spent away from home. I was going to be in foreign countries and was going to have to pretty much fend for myself, as my parents would be thousands of miles away instead of being only 30 minutes north of Georgia Tech’s campus. It turned out to be one of the most amazing and fun experiences of my life. Meeting all the great people, seeing all of the famous places, learning about music and paintings that we got to witness firsthand—it was probably the best summer of my life, and I was enjoying my major classes. The medical school thing may still be up in the air depending on how much I enjoy volunteering at Grady Hospital, which I am going to try and do next semester. I guess it’s always good to keep your options open.

Has your major or any of your career goals changed since last year?
I’m currently still on my path as a biomedical engineering major on the pre-med track. My goal is to graduate in the spring of 2014 and hopefully get into a medical school to pursue a career in medicine. As of now, I haven’t found anything in the major that would turn me away and am enjoying my major classes. The medical school thing may still be up in the air depending on how much I enjoy volunteering at Grady Hospital, which I am going to try and do next semester. I guess it’s always good to keep your options open.

What extracurriculars are you involved in now?
A couple of organizations that go in line with my interest in medicine, cancer in particular, are Relay for Life and Colleges Against Cancer. I am currently lucky enough to be on the executive board of both organizations while trying to spread awareness regarding the fight for a cure. In addition, I am also a brother in the Delta Chi fraternity. I am also a writer for The Triple Helix scientific publication at Tech and have written a paper about international stem cell policy for it. I recently got accepted into a research scholars program here at Tech, so I will also be involved in undergraduate research for at least my next three semesters.

What’s your favorite tech tradition?
I pretty much love watching any sport to ever be played, and college football is no exception. One of the most exciting things about fall semesters is going to football games and cheering on the Yellow Jackets. That being said, the homecoming game and homecoming week in general is likely my favorite annual event. All of the events and competitions that are held make the entire week a lot of fun because of the spirit everywhere. Beating Clemson doesn’t hurt either.

What are some aspects of life at Tech that you haven’t yet explored, but hope to?
I was pretty involved in many different community service events in high school, but that involvement has definitely decreased in college. There are so many things to do in college that one can sometimes lose sight of what is important. Community service is definitely important to me and I hope to rectify my negligence in the upcoming semesters.
What was your biggest challenge freshman year?
Being away from my family (especially my dog) for so long. Another challenge I had was trying to learn what seemed like a year’s worth of material in just a semester.

What did you learn about yourself during your freshman year?
I learned that if I really apply myself I can get things done. I also learned that I can go for a really long time without sleep.

What is one bit of advice you wish you’d been given (or listened to) before your freshman year?
I wish someone had told me that getting bad grades is not the end of the world, especially since grades are all based on the average in a class. I wish someone had told me before coming in that Tech students can be kind of stressed out about 75 percent of their time here.

What extracurriculars are you involved in now?
I am a contributing writer for The Technique and a member of the Red Dress Committee for Women’s Awareness. I hope soon to become involved in the Georgia Tech chapter of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers.

What’s your favorite Tech tradition?
This isn’t really a tradition, but I love singing the fight songs at football games, especially since I sit right next to the band. It’s pretty awesome.

What are some aspects of life at Tech that you haven’t yet explored, but hope to?
I want to learn more about the community service opportunities that are available all over campus.

How is life at Tech different as a second-year than as a freshman?
It’s definitely way better living in an apartment than a dorm your second year. Life is different because of that and because second year is when engineers start getting into their major-specific classes, which can definitely be a little different.

What’s one thing about life as a Tech student that you hope to have figured out by this time next year?
The best way to combine studying and not studying. I think it’s pretty important to not be studying all the time, because if one was to study all the time I think they would lose it. The balance between school and some other activity has to be there, and I’m hoping to find the correct balance as soon as I can.
What was your biggest challenge freshman year?
Finding time to do everything that I wanted to. As they say, you can have a good GPA, a social life or sleep. Pick any two.

What is one bit of advice you wish you’d been given (or listened to) before your freshman year?
I wish students at Tech weren’t so concerned about grades. Instead of chasing after an A, it’s less stressful to just focus on learning the material. If you can do that, the grade generally takes care of itself.

Did you have any experiences that surprised you last year?
I was honestly surprised at how much fun I have at Tech. Everyone has always told me that college would be some of the best years of my life, but I really didn’t understand what that meant until I came to Georgia Tech.

Has your major or any of your career goals changed since last year?
I was recently exposed to how mechanical engineers design systems for use in marine environments. Being from Florida, I have always loved the ocean, and the unique challenges of design for this environment are interesting.

What extracurriculars are you involved in now?
I am currently the shop manager for GT Motorsports, which is a student-led design team that builds an open-wheel formula racecar to compete internationally at the Formula SAE Design Series in Michigan each May. Being a part of the team has helped me see what my degree can actually do in the real world.

What’s your favorite Tech tradition?
The Ramblin’ Reck parade is easily my favorite Georgia Tech tradition. The mechanical contraptions represent the ingenuity that the world has come to expect when they think of Georgia Tech. The fact that students usually leave the construction of the wrecks to the night before is also typical of how things are done here.

What are some aspects of life at Tech that you haven’t yet explored, but hope to?
I stopped playing the saxophone when I came to college, and in the future, I would love to become involved with one of the many music ensembles available on campus.

How is life at Tech different as a second-year than as a freshman?
The screws have really tightened as a sophomore and it’s hard not to perpetually feel behind. The coursework is considerably harder and suddenly everyone is talking about internships and co-ops. On the other hand, there is quite a bit more freedom as a sophomore. My friends and I have ventured out of “the bubble” of Tech into the city more, and started to take advantage of what the rest of Atlanta has to offer.

What’s one thing about life as a Tech student that you hope to have figured out by this time next year?
I hope that I will have figured out how to manage my time better. It’s so easy to put assignments off until the last minute, but eventually that catches up with you.

Mike Jasper
Jacksonville, Fla. • Mechanical Engineering
What was your biggest challenge freshman year? 
Self-doubt. There was one class that I just knew I would not get an A in because it is known for being one of the hardest core classes at Tech. Because I knew the class was hard and my chances of getting an A were slim, I almost did not feel motivated to put forth my best effort. I, myself, was my own obstacle. Once I got my act together and realized that the class was doable, I got on the right path and rode it all the way to an A. The lesson I learned is that hard work will pay off even in the most hopeless situations.

What did you learn about yourself during your freshman year? 
I learned that in order for me to study effectively, I need to be out of my room and in a quiet place. I also realized that I like to procrastinate, which means that I need to capitalize on the times when I actually feel like studying. Lastly, the more involved I am, the more I feel like I need to budget my time and the less time I waste doing nothing.

What is one bit of advice you wish you’d been given (or listened to) before your freshman year? 
Don’t let previous misconceptions and others’ opinions of a class scare you. What is hard for one person may not be hard for you. When you go into a class, trust that if you put forth a conscious effort, you will do well.

Has your major or any of your career goals changed since last year? 
My major, aerospace engineering, is the same, but I feel as if I have a better understanding of what I would like to do within my major. After completing an introductory course to my major, I found that I enjoy learning about engines. My goal would be to secure a job after school with an engine manufacturer such as GE. Another option I have been weighing is graduate school.

What extracurriculars are you involved in now? 
I serve as the membership chair of the Georgia Tech chapter of the National Society of Black Engineers, a member of GT StartUp, a member of FASET Cabinet, and I work at the Campus Recreation Center as a fitness attendant and at the OMED as a tutor. I participated in TEAM Buzz as a project coordinator, in which I helped organize a community service project as a part of the school-wide community service day. In addition to all of that, I am co-oping this semester with Delta Airlines in the interiors engineering department.

What’s your favorite Tech tradition? 
The homecoming football game. I love football dearly and there is so much school spirit shown around Homecoming. Homecoming is also when Mr. and Ms. Georgia Tech are announced. Each year I have been at Tech, I have had a friend win. Besides the game, TEAM Buzz, all of Homecoming events and the beautiful chalking just make me happy. So, Homecoming has been a great experience that I look forward to every year.

What are some aspects of life at Tech that you haven’t yet explored, but hope to? 
I have yet to explore the Study Abroad Program, but it is at the top of my to-do list. I really want to spend a semester or two abroad, and I plan on it as soon as I decide where I want to go.

How is life at Tech different as a second-year than as a freshman? 
I feel that I know my way around the city better, especially after getting lost a few times. I feel as if I have developed my time management and prioritizing skills because I don’t feel as overwhelmed. Lately I have involved myself in more activities because I have a sense of how I want to be involved on campus and where I can make a difference.
Once I got my act together and realized that the class was doable, I got on the right path and rode it all the way to an A.
This spring, dozens of companies will converge on the Alumni Career Fair looking to fill hundreds of positions. The event, held March 6 at the Cobb Galleria Centre in Atlanta, is exclusive to Tech alumni and offers a perfect opportunity for Yellow Jackets looking for a new job or a mid-career change.

Several employers offered advice for alumni planning to attend the event, giving their secrets for what sets apart a great candidate.

First, employers agree, job seekers should research what companies will attend the fair and create a list of who they want to talk to. Candidates also should put care into their résumés and attire.

“The number one non-technical attribute we look for in a candidate is a well-tied tie,” said Nickolas Downey, principal at Nead Werx, a custom software firm. “It sounds flippant, but the candidate’s physical presentation is a great indicator for their attention to detail on subjects that are outside their core competency.”

When talking to a candidate, Downey looks for initiative and passion.

“One of our standard interview questions is, ‘Tell us about the first program or technology project you ever worked on?’ And the ‘correct’ answer usually begins with, ‘In high school or grade school I programmed my calculator, Lego or computer to do something cool,’” Downey said.

“People who are passionate about technology generally start early in life.”

Some companies’ criteria are more set in stone. Prime Engineering has 10 non-negotiable traits that recruiters look for in candidates. Judy Skaggs, an executive assistant with the company, said it only hires people who are accountable, competitive, ethical, honest, open to change, positive, professional, respectful, result-oriented and self-motivated.

“As we interview, we incorporate questions that allow us to assess candidates’ ability to demonstrate these traits,” Skaggs said. “We also look for passion and their ability to adapt to corporate culture.”

Caroline Player, the Alumni Association’s Director of Career Services, offered one last piece of advice: Even if an employer doesn’t have an open position that fits your skills and background, talk to their representatives anyway.

“They may be willing to share insight and recommendations about the company and the type of role you are seeking,” Player said. “Utilize our career fair to make direct connections with employers and to leverage your Georgia Tech network.”

Attending the Career Fair? Alumni can check in at 11:30 a.m. to prepare for the 1:30 p.m. opening. Pre-registration closes Feb. 28, and walk-up registration will be available. More information and a complete list of employers is available at gtalumni.org/careerfair.
Over the next few months, alumni around the country will open up their homes to high school students in the hopes of convincing them to attend Georgia Tech.

The Accepted Student Meet and Greets are an integral part of the Institute’s student recruitment efforts, allowing high school students who have been accepted to Tech and their parents to mingle with alumni and learn about all that Tech has to offer.

“We’ve repeatedly heard from students that they ultimately selected Tech because of the alums they met in their area,” said Rick Clark, director of Undergraduate Admission. “Alumni stories, the benefits of a Georgia Tech education and the articulation of the GT family are far more powerful than anything our admission counselors can convey at that point of the process. Since most of our students are admitted to other top tier schools, this sense of community is essential.”

The gatherings are hosted by Alumni Networks in partnership with the Office of Undergraduate Admission. Nearly 50 took place last year, and an additional 35 alumni met with accepted students in areas without an active Network.

More than 1,000 students and parents attended the meet and greets last year.

For the students, it gives them a first-hand account of life at Tech as they weigh their options for college.

Kevin Cook, now a first-year computer engineering major at Tech, last spring attended an event at the home of Tyrone Murray, ME 82, and his wife, Wanda, HS 82. He credited the gathering for convincing him to tour Tech’s campus.

“The more I learned about the programs, the more impressive Georgia Tech seemed,” Cook said.

Last year, the Columbus, Ga., Network held a meet and greet. Network member Ken Townsend, ME 64, said one parent asked him to write to her daughter to encourage her to go Tech.

“She said that this event made her a lot more comfortable in having her daughter attend Tech,” Townsend said. “She indicated that the support of the alumni in the area was important throughout the process.”

Interested in hosting a meet and greet? Contact Jane Stoner, Senior Manager of Networks, at (404) 385-2216 or jane.stoner@alumni.gatech.edu. For more information on how you can help with student recruiting through the Georgia Tech Alumni Admissions Program, visit gtalumni.org/studentrecruiting.

Annual running of the Pi Mile: April 14, 7 a.m.

Want to run? Register for the race and find more information at gtalumni.org/pimile.
GTBAO Celebrates Legends and Leaders

Fifty years ago last September, three African-American students—Ralph A. Long Jr., Lawrence Williams and Ford C. Greene—enrolled at Georgia Tech, desegregating the Institute and paving the way for thousands more to follow. One year ago, the Georgia Tech Black Alumni Organization and the 50th anniversary steering committee began celebrating the milestone, kicking off 12 months of celebrations. And in November, at the black-tie Legends and Leaders celebration at the Carter Center in Atlanta, the GTBAO and special guests concluded the yearlong celebration with a gala that is not soon to be forgotten.

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Want to join an Affinity Group? Visit gtalumni.org/affinitygroups.
The Alumni Association’s Networks and Affinity Groups depend on volunteer leaders to organize gatherings, fundraisers and community service projects. Here, we single out a few leaders who deserve thanks for all of their hard work.

George Caviness, EE 88, MS Mgt 90
A past president of the New Jersey/New York Alumni Network, Caviness has been active with the network for years and currently serves as an adviser to its leadership team and regularly hosts events in his home. Caviness has given to Roll Call for 23 straight years and serves as a role model to alumni and friends. He’s also an energetic recruiter, bringing the best and brightest high school students in his area to Tech.

Jack Henderson, IM 79
A Vietnam veteran who served 29 years in the Marine Corps, Henderson now works as Senior Director of Database Operations at the Alumni Association. Since 2006, Henderson has served as a leader of the GT Military Affinity Group. In that role, he has been active not just in maintaining a network of veterans but also in supporting ROTC detachments at the Institute.

John Rafferty, EE 02
After serving as president of the Pensacola/Emerald Alumni Network, Rafferty now is an adviser to its leadership team. Rafferty is a passionate Georgia Tech historian, maintaining the Georgia Tech Antique Collectors Facebook group, where he keeps track of the Institute’s history and traditions. Rafferty also serves as a church lector and is a Eucharistic minister to the sick and homebound.

Betsy Bulat Turner, IAML 04
Turner serves as president of the Georgia Tech Bar Association, the legal Affinity Group. She leads the group as it engages in several volunteer and community service projects. The group, which spans the country, has been active in networking activities and always has a strong presence during Homecoming. Turner has played an active role in increasing the level of giving among group members.

Help Elect the Next Alumni Association Board of Trustees

The nominating committee invites you to submit your application for consideration to serve on the Alumni Association Board of Trustees beginning July 1, 2012 and ending June 31, 2015.

Nominees must be Tech alumni and have a significant record of supporting the Institute. Self-nominations will be accepted. The nominating committee will review all submissions in late March and propose a slate of candidates in April that best promotes diversity and active participation.

Go to gtalumni.org/boardoftrustees or fill out the form below to submit a nomination. The deadline to submit nominations is March 21, 2012.

NAME OF NOMINEE
CLASS/DEGREE
PHONE NUMBER
HOME ADDRESS
EMAIL ADDRESS
COMPANY AND TITLE
NOMINATED BY
CLASS/DEGREE
PHONE NUMBER
HOME ADDRESS
EMAIL ADDRESS

Include a résumé or brief biographical profile of your nominee and mail all materials to: Trustee Nominations, Attn: Jolie Rosenberg, Georgia Tech Alumni Association, 190 North Ave. NW, Atlanta, GA 30313.

Online Voting Opens April 2012
Alumni may review and vote on the slate of candidates beginning in late April at gtalumni.org/boardoftrustees. Alumni will be emailed when voting opens. If you do not have a current email address on file, please update your information at gtalumni.org/alumnicomunity. For more details, email jolie.rosenberg@alumni.gatech.edu.

KUDOS!

The Alumni Association’s Networks and Affinity Groups depend on volunteer leaders to organize gatherings, fundraisers and community service projects. Here, we single out a few leaders who deserve thanks for all of their hard work.

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Our first night in Athens, I opened my balcony doors and realized I was looking at Syntagma Square and the Parliament buildings featured so often on CNN. On my right was some ancient structure, floodlit and shining—the Parthenon. I thought I’d have to take a bus to see it, but there it was. I was alone, but I just had to say “wow” out loud.

We spent several days in Crete, an island larger than I expected and famous as the center of the Minoan civilization. The first morning in Crete we had a riveting lecture by a native of the island. As he talked I was spellbound by the ferocity and loyalty of the Cretans: Over the centuries, they battled against the Venetians and the Ottomans and caused a lot of grief to the German army during the occupation of World War II. Even today, they remain very proud of their culture and just as strong.

And then there’s Santorini, paradise on the precipice of a volcanic crater. If you see this place, you’ll be willing to take your chances with the possibility of another eruption. It’s just like the commercials on TV with the little white buildings with blue domes. And yes, a blue glow permeates the island. I was asked if I altered the colors of my photos from this area. But no, it just has a hue all its own.

Among the many special moments there, we helped two of our fellow Georgia Tech alumni travelers celebrate 40 years of marriage. The sun was setting on one side of the balcony and the moon was out on the other. Guests were dressed in blue and white and holding bougainvillea branches. When you travel with a group, such unscripted moments together can create lasting memories.

A unique and valuable part of this trip was the educational component. From guided tours of museums to special speakers and lectures, you “graduate” at the close of the trip with a thorough knowledge of the culture and history.

There are three other lessons I took away from the trip: Georgia Tech travelers are wonderful companions, we should use much more olive oil than we do and, finally, the best way to understand the beauty of the Mediterranean is to look at photos. At least until you join us on our next alumni tour there!
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 bevy of trips planned for 2012 that will lead alumni everywhere from Scotland’s Military Tattoo to the wilds of Manitoba.

For more information or to register for any of these trips, visit gtalumni.org/travel.

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**Scotland, Aug. 1-9**

Walk in the footsteps of William Wallace and Prince Charles Edward Stuart on this adventure showcasing the stunning countryside and fascinating history of Scotland. Sights to be seen include castles, lochs and a trip to Edinburgh for the famous Military Tattoo.

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**Danube River cruise, Aug. 8-20**

This 12-day journey combines a seven-night cruise aboard one of Tauck’s luxury riverboats with stays at premier hotels in Prague and Budapest. Other highlights? A tour of Prague’s Strahov Monastery libraries and a private Imperial Evening at a grand Vienna palace, with dinner and traditional entertainment.

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**Tuscany, Sept. 12-20**

With the charming village of Cortona as our base, we’ll navigate cobblestone streets in Siena, experience the artistic and architectural heritage of Florence and, in the Umbria region, explore medieval Assisi.

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**French Alps, Provence and Burgundy, Oct. 1-10**

Spend three nights in charming Annecy, then cruise for five nights along the Saône and Rhône rivers aboard the five-star M.S. Amadeus Symphony. Plus, visit Lyon, Avignon and Arles, taste wine in Burgundy, and enjoy views of the French, Swiss and Italian Alps. Two-night extension option available.

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**Mediterranean cruise, Oct. 15-30**

After two nights in Athens, board the MV Aegean Odyssey and sail the Mediterranean Sea. Excursions include Mycenae, Monemvasia, Crete, Mykonos and more. Plus, discover the treasures of Ephesus and Aphrodisias on the Turkish coast. Trip includes both informative lectures and ample free time.

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**Manitoba, Oct. 17-22**

Each fall, polar bears descend upon the secluded seaport of Churchill, Manitoba, Canada, to hunt for ringed seal. We’ll be able to observe and photograph the bears from the comfort of a custom-designed Tundra Buggy. Plus, take a dogsled ride, delve into local history and culture and participate in lectures and field presentations with our expedition leader.
Richard Collier, AE 48, competed in the Huntsman World Senior Games in St. George, Utah, in October. He returned home to Englewood, Fla., with a bronze medal in singles tennis and a silver medal in doubles. Collier lettered for four years in tennis at Tech, which he attended through the V-12 program from 1943 through 1945, returning in 1946 on a basketball scholarship.

Bob Curry, AE 79, was recently selected as chief scientist at the NASA Dryden Flight Research Center in Edwards, Calif. In this position, he will perform strategic analysis and assist the center’s senior management with the development of strategic plans for the center’s missions.

Dwight Delgado, IE 77, has been named operations manager of PremaTech Advanced Ceramics in Worcester, Mass. He will lead the company’s production and new product and service development activities.

Guy Gober, IE 75, retired from the U.S. Army National Guard in August. His military career began in 1969 when he joined the First Army Signal Corps as a private. He was honorably discharged as a corporal in 1971, then re-enlisted as a captain in 1987 after pursuing undergraduate studies at Georgia Tech and UGA and receiving his medical degree from the Medical College of Georgia. He served as a medical officer and was mobilized five times during conflicts in Iraq and Afghanistan. His career decorations include the Iraq Campaign Medal with two campaign stars and the Army Commendation Medal, among many others. He owns and operates Tiger Urology in Rabun County, Ga.

Dana M. Hicks, IE 79, joined Huber Technology as president and CEO in April 2011. Huber is an industry-leading manufacturer of stainless steel.
machines and systems for processing municipal waste and industrial process water. Hicks lives in Huntersville, N.C.

Douglas R. Hooker, ME 78, MS PubPol 85, has been named Atlanta Regional Commission executive director by the ARC’s search committee by a unanimous decision. He is currently vice president and southern states director for Atkins, a position he has held since 2004. He previously served as executive director of the Georgia State Road & Tollway Authority, and before that he served as commissioner of public works for the City of Atlanta, including during the 1996 Olympics.

Daniel Kelley, Arch 75, lead design partner at MGA Partners Architects, announced the launch of the firm’s new album, To Be Continued, in celebration of its 20th year.

Kenneth Miller, ME 79, is serving as an ASME congressional fellow in the office of U.S. Senator John D. Rockefeller. Miller is a professor of engineering at St. Cloud State University in Minnesota and has 32 years of experience in engineering. For his yearlong fellowship, he will contribute his expertise on technical initiatives under consideration in public policy discourse.

Stefan V. “Steve” Stein, EE 77, was named in Best Lawyers’ 2012 Lawyers of the Year list. He is an attorney with GrayRobinson, P.A., of Orlando, Fla.

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1980s

Jian Li, MS AE 88, PhD AE 92, has been recognized with the prestigious Boeing Special Invention Award by the Boeing Company for his outstanding contributions.

Jim Winer, Arch 82, M Arch 86, dissolved his Atlanta-based Menefee & Winer Architects firm after 20 years. He has started a new firm, MAKE Architecture Planning Design, also located in Atlanta.

1990s

Jany Brown, Mgt 97, was featured in

VIACYCLE ROLLS OUT

This fall, the transportation situation on the Tech campus saw some real improvements—or, shall we say, wheel improvements? ViaCycle is a high-tech bike-sharing startup helmed by Yellow Jackets. It launched in November with praise from Tech President G. P. “Bud” Peterson and Atlanta mayor Kasim Reed, becoming the first major bike-sharing program in the Southeast. Kyle Azevedo, MS ME 10, is ViaCycle’s CEO; Siddarth Doshi, MS ME 10, its chief technology officer; and Yuriy Romaniw, a current mechanical engineering graduate student, the company’s research engineer. While campus bike-sharing is no new thing, ViaCycle has taken it to the next level: Anyone with a BuzzCard will be able to lock and unlock access to one of 35 bikes, located at five corrals around campus, via phone, text or app. Plans are in the works to eventually expand into greater Atlanta. For more, visit viacycle.com.
the Nov. 2 issue of Dunwoody, Ga.’s Dunwoody Crier for her work organizing Chili for the Children, an annual chili cook-off and silent auction benefitting the Literacy Volunteers of Atlanta and the Juvenile Diabetes Research Foundation. Prior to the Nov. 14 cook-off, the annual event had raised more than $50,000 since its inception in 2005.

Errrika Mallett, IE 96, graduated as a member of the 10th anniversary class of the Diversity Leadership Academy, a program of the American Institute for Managing Diversity. She currently serves as president of the Georgia Tech Black Alumni Organization.

Phillip Russell, Mgt 91, MS Econ 92, an attorney with Ogletree, Deakins, Nash, Smoak & Stewart, P.C. in Tampa, Fla., recently testified before the U.S. House Committee on Education and the Workforce in support of the Workforce Democracy and Fairness Act.

Dave Whitten, EE 90, has been promoted to senior vice president, strategy and marketing, at NORDAM, based in Tulsa, Okla. In his new position, he will identify, evaluate and pursue new deals and acquisitions. Whitten has led global marketing for NORDAM since 2005.

Charles West, CS 01, MBA 05, has been appointed by New Orleans Mayor Mitch Landrieu to lead the city’s new innovation delivery team. A New Orleans native, West has managed service and innovation for the city; as a consultant, he has worked with the State of Minnesota and the Centers for Disease Control and Prevention, among other clients.

2010s

Sherri Ramson, IE 11, and Eric Ramson, IE 11, a brother and sister from South Florida, recently graduated from Tech’s H. Milton Stewart School of Industrial and Systems Engineering, each returning for their undergraduate degrees after more than 10 years in the workforce. Since graduation, Sherri has taken a position as a consultant with Clarkston Consulting, and Eric works as a software implementation consultant at Power Plan Consultants.

WEDDINGS

Sandip Patel, MS ICS 88, married Asha Dhamsaniy on Dec. 9.

Matthew Oatts, IE 10, and Sarah Marriner, Bio 10, were married on April 30 in Atlanta and left their reception in the Ramblin’ Wreck. Matthew reports, “This memorable experience was made possible by a gift from my grandfather, John ‘Bucky’ Oatts, EE 52, who even skipped out on part of our reception for a ride of his own!”
SMULE SMUSHES WITH KHUSH

It’s a match made in obscurely-named-start-up heaven: Smule, the fastest-growing maker of music apps for iOs, announced in December that it had acquired Khush, the maker of “intelligent music applications.” Co-founded in 2009 by (1) Parag Chordia, the director of the Georgia Tech Music Intelligence Lab, Khush is powered by a number of Tech grads: (2) Alex Rae, MT 09; (3) Mark Godfrey, EE 05, MS ECE 05, MS MT 08; (4) Trishul Mallikarjuna, MS MT 10; Andrew Willingham, MS MT 10; and architecture student (5) Avinash Sastry. Khush’s most popular app to date is Songify, which remixes speech into hypnotizing, somewhat robotic and reliably hilarious songs.

For more, visit khu.sh.

Out & About

1. Wes Hunt, a second year civil engineering major, shows off his RAT Cap.
2. Stuart Richmond, IM 51, lets his Tech flag fly on Jungfrau in the Bernese Alps.
3. Karen, IE 96, and Todd Meredith, Mgt 97, dressed their daughters (L-R: Ava, Elise and Claire) as Tech cheerleaders for Halloween.
4. Armand Breard, MS IM 62, (front, center) poses with his family during a trip to Orvieto, Italy.
5. The official GT Crew Affinity Group flask reads, “Never go dry again.”
6. Paul Edfeldt, IE 52, poses with the Wreck at a wedding reception.
7. Chris Kenney, ChE 01, a U.S. Navy pilot instructor, wears a “GT” sticker on his helmet.
8. Members of the Georgia Tech Band Alumni Affinity Group perform during the Homecoming game.
10. L-R: Gene Hallman, a past parent; Sam Aube; Jeff Petrea, Mgt 90; and Ben Echols were the winning team at the Southern Company Georgia Tech Network’s golf tournament. The network raised $3,500 for scholarships through the event.
11. L-R: Adam Tart, DM 07, MS Stat 08; Marlee Moseley, Mgt 08; and Shannon Langston, Mgt 08, enjoy the Alumni Magazine in San Francisco.
Tech Leaders lauded at Gold & White Ceremony

The Gold & White Honors, the most prestigious awards given by the Alumni Association, are bestowed in recognition of outstanding contributions on campus, in communities and in the world at large. The 2012 recipients have made a difference not just through their hard work and business acumen, but through their dedication to volunteerism and philanthropy. The 2012 recipients will be recognized for their accomplishments and generosity during a Feb. 16 dinner and awards ceremony. Here, the 2012 honorees and the awards they will receive.

Oliver Sale Jr., ME 56, served as football team manager under Coach Bobby Dodd and credits Dodd with making a significant impact on his life. After graduation, Sale served in the U.S. Air Force and became a corporate leader in engineering and management. He serves on Georgia Tech’s Facilities Advisory Board, is an emeritus member of the Foundation Board and is a past president of the Alumni Association Board. He has served on the Ferst Center Advisory Board, College of Engineering Advisory Board and Athletics Board. He received the School of Mechanical Engineering Distinguished Alumnus Award in 1999.

Howard Tellepsen Jr., CE 66, followed in his father’s footsteps by earning a civil engineering degree at Tech and now also by receiving the Distinguished Service Award. Howard Tellepsen Sr. received the award in 1952. The younger Tellepsen was active as a student at Tech, including serving as his senior class president. He went on to spend his career with the Tellepsen Corporation, founded by his grandfather. He has been active in many civic organizations in his hometown of Houston and has served Tech as a Foundation Board trustee, Alumni Association Board trustee and Civil Engineering Advisory Board member. He was recognized by the College of Engineering with the Distinguished Engineering Alumni award in 1996.

The Joseph Mayo Pettit Alumni Distinguished Service Award is the highest honor bestowed by the Alumni Association in recognition of exceptional and outstanding support of the Institute and a lifetime of professional and philanthropic leadership.

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Talmage Dryman, IM 45, participated in many student organizations at Tech and went on to serve as an officer in the U.S. Navy during World War II. Dryman had a successful career in real estate brokerage and development and has served in leadership roles for the Atlanta Board of Realtors, the Atlanta Regional Commission, the Atlanta Presbytery and boards for Georgia Tech, Oglethorpe University and Morris Brown College. He has received the Silver Beaver and the Silver Antelope awards for his work with the Boy Scouts of America and was the 1996 recipient of the Dean Griffin Community Service Award. He also has chaired numerous charitable associations, including the MS Society and the United Way.

Lamar Oglesby, IM 50, joined the Merchant Marine Corps out of high school and later enrolled at Tech, where he was active in several student groups. After graduating, he served in the Beach Jumpers, an elite unit of the U.S. Navy. Later, he held leadership positions with high-profile companies including Robinson-Humphries, GE and Kidder Peabody. Oglesby served on the College of Management’s Dean’s Advisory Board, was President of the Alumni Association Board of Trustees, chaired his Homecoming 50th reunion committee and has given to Roll Call for 60 straight years.

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Richard “Dick” Beard, IM 67, first came to Georgia Tech as a night student and worked his way through school by holding a string of real estate jobs. This set the stage for a career in real estate, as well as for a dedication to the Institute. Beard went on to be active in several civic organizations in Tampa and St. Petersburg, Fla., as well as statewide and national organizations. He has also been a constant supporter of Georgia Tech ever since finally getting out.

Robert Hall, IM 64, was active as a member of Sigma Alpha Epsilon while a student and went on to become a leader at IBM. Mid-career, he cut back to working a half-time schedule so that he could spend more time volunteering with the Rotary Club and Georgia Tech. He was Chair of the Alumni Association in 2002-2003. His work with Rotary includes much effort on the polio immunization program.

The Outstanding Young Alumnus/Alumna Award Goes to a High Achiever Under Age 40 Who Has Contributed to Georgia Tech, the Community and the Business World.

Jimmy Mitchell, CE 05, is a national authority on environmentally sustainable construction as well as a philanthropic and volunteer leader at Georgia Tech and in the Atlanta community. As a patron partner of the Atlanta Symphony Orchestra, he created the first Casino Night benefit for the Atlanta Youth Orchestra. In April 2011, Jimmy led Skanska’s efforts to develop the Atlanta Urban Garden, a downtown community garden that provides healthy food, training and therapy to

more than 500 homeless men at the Atlanta Mission. He has led the rebuilding of the Atlanta Intown Alumni Network. Along with his wife, Angela, PTC 04, Jimmy established an endowment benefiting President’s Scholars.

Tyler Townsend, IE 98, was a co-op and member of Sigma Phi Epsilon while at Tech and went on to work as a senior manager for Manhattan Associates after graduating. He now is vice president of investments at Townsend Wealth Management, earning premier credentials as a financial planner. He is treasurer and president-elect of the Columbus, Ga., Georgia Tech Network and is active in the Co-op Affinity Group and the Columbus Rotary Club. He serves on the boards of directors of the Muscogee County Library Foundation, the Columbus Regional Medical Foundation and the Greater Columbus Chamber of Commerce. In 2011, he co-chaired the Revenue Review Commission for the mayor of Columbus.

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Margaret Guthman grew up playing the piano and organ with her father in church, fostering a love of volunteering that continued with service on the Board of the Visiting Nurses Association and the Advisory Board of the Ferst Theater when she and her husband, Richard Guthman Jr., IE 56, lived in Atlanta. Richard, a second-term trustee of the Alumni Association, received the Dean Griffin Community Service Award in 2010. For his Homecoming 40th Reunion, Richard endowed the Margaret Guthman Keyboard Competition, now the Margaret Guthman Music Instrument Competition. The Guthmans are avid Tech sports fans and contribute generously to the Institute and the Alumni Association.

Margaret McCamish and her husband, Henry F. “Hank” McCamish Jr., IM 50, for many years were football and basketball season ticket holders and passionate fans. When Hank’s health began to decline and he was no longer able to attend Yellow Jackets games, Margaret and her son, Gordon Beckham, sought to honor him by making a major commitment on behalf of a new multi-use arena. The McCamish Pavilion will serve as a state-of-the-art venue for men’s and women’s basketball and other events. The McCamish family also supports Tech’s internationalization efforts and academic and athletic scholarships and have been drivers and advocates for recent philanthropic efforts. The McCamishes are proud members of The Hill Society, Georgia Tech’s most prestigious association of principal philanthropists.
Welcomed a future Yellow Jacket into your family? Send a photo and note to ramblinroll@gtalumni.org.

BIRTHS

1. David Bottoms, Mgt 01, and his wife, Brittney, are pleased to announce the birth of Andrew “Drew” Thomas Bottoms, on Oct. 27.

2. Whitney Hopkins Appenfelder, IE 06, and Doug Appenfelder, EE 01, announce the birth of Garrett Douglas, on Aug. 19. Garrett joins his sister Kayley, 3, at the family’s home in Cumming, Ga. Whitney is the hardware forecast manager for the hospitality and specialty retail team of NCR (formerly Radiant Systems) and Doug is a system performance engineer with Verizon Wireless.

3. Molly Freeman, MS HS 07, and her husband, Ben Lawder, Mgt 04, welcomed a daughter, Anna Kate Lawder-Freeman, into the world on Sept. 24. Molly works as a data manager for Humana and Ben leads competitive intelligence for ADP. The family resides in Dunwoody, Ga.

4. Jeffrey Sauls, IE 95, and Iris Chang Sauls, IE 95, MS IE 97, celebrated the birth of their first child, Thomas Allen, on Sept. 6. The family resides in midtown Atlanta.

5. Matthew Kramer, CS 94, and his wife, Katrina, are proud to announce the birth of their second daughter, Fiona Park Kramer, on Sept. 22.

6. Chad Tarter, ChE 98, and Jennifer Devens Tarter, IE 99, welcomed twin daughters Kate Aubrey and Brooke Finley on Sept. 5. They join big brother Cole, 5, at home in Nashville.

Eileen Hitcho, IE 01, MS HS 02, and her husband, Shawn Symonds, announce the birth of son Jake Allan on Aug. 28. Jake joins his 1-year-old brother, Dean Michael, at the family’s home in Charlotte, N.C. Hitcho is an emergency medicine physician with EMP.

Alicia Hodler Hurley, CE 99, and Adam Hurley, CE 00, welcomed son Troy Steven on Oct. 1. Troy joins big sister Bridget at the family’s home in Marietta, Ga. Alicia is a stay-at-home mom and Adam is a regional manager for Berkel & Company.
Tell us what you’ve been up to

Have you changed jobs? Earned a degree? Won an award? Gotten hitched? We’d love to share the news with your fellow alumni.

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Clip the form above and send it to Ramblin’ Roll, 190 North Ave. N.W., Atlanta, GA, 30313, or email it to ramblinroll@gtalumni.org. If available, please include a high resolution photograph for publication.

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Alumni Build High School in Ghana

This May, a class of 60 students in Western Ghana will go through a common rite when they graduate from St. Joseph’s High School. And attending the ceremony will be two Georgia Tech alumni who were instrumental in making the graduation happen.

Local contractors helped with the project, and Berzanskis made sure they were outfitted with official Yellow Jackets baseball caps.

The school opened in 2008 thanks in large part to engineering work done by Kim Sak, IM 78, and Niels Berzanskis, CE 99. Two years earlier, a Ghanaian priest, Simon As-samoah, visited Atlanta and spoke about his desire to build a high school for his diocese, which faced extreme poverty and had little infrastructure.

Sak heard about the project and offered to help with fundraising. But she knew she’d need someone to help with managing a construction project in a developing country.
“When I called Niels and asked him if he wanted to go to Ghana, he told me he had never owned a passport and didn’t like to fly,” Sak said. “But he said sure, he’d go. Niels had taken a semester off during his studies at Tech to hike the Appalachian Trail, so I knew he would be tempted by adventure.”

Also assisting with the project was Sak’s husband, Ted, MSci 74, IE 77. The three made numerous trips to Ghana. After using machetes to clear the construction site, they began construction.

Local contractors helped with the project, and Berzanskis made sure they were outfitted with official Yellow Jackets baseball caps.

The team finished a classroom building, an assembly hall, four faculty bungalows and utilities work in early 2008, coming in well under the $735,780. Later that year they added a girls’ dormitory, a kitchen and a road with streetlights.

In 2010, a boys’ dormitory was added, and fundraising is underway to add another classroom building, which would increase the school’s enrollment to 500 students. More information on the project is at clapforjesus.org.

“A common language, cell phones and internet access have enabled us to work well with the Ghanaians,” Kim Sak said. “The most exciting part is that an incredible group of young men and women will graduate from St. Joseph’s.”

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Mr. Moeller strove to protect the health and safety of the American public and environment against the threats of ionizing radiation.

1930s

Royce Lee Brandon, IM 39, of Lilburn, Ga., on Oct. 28. He was retired from Georgia Tech. He served as a major in the U.S. Air Force, including service in World War II.

Archibald Reese Hooks, CE 39, of Atlanta, on Oct. 20. He worked as district manager of Chase Brass and Copper Company from 1939 to 1977, except for his five years of military service. He served in the U.S. Army Corps of Engineers as a lieutenant colonel in North Africa and Italy during World War II.

1940s

William Lisman Baker Jr., ME 43, of Atlanta, on Sept. 30. He was a member of Kappa Alpha and the Georgia Tech Glee Club. He served in the U.S. Army during World War II. He worked as a consulting mechanical engineer for 40 years, 25 years at his own firm. He retired from the Georgia Board of Regents in 1993.

John Howard Best, AE 47, of Dallas, on Nov. 5. He graduated from Tech during World War II as a participant in the U.S. Navy V-12 program. He worked for 40 years as an engineer with Chance Vought Aircraft of Dallas, retiring as department director.

Roy Carlton Brand, ME 49, of Statham, Ga., on Sept. 25. He served as a first lieutenant and bombardier in the U.S. Air Force in World War II. He was awarded the European-African-Middle Eastern Campaign Medal with four Bronze Stars for the Rome-Arno, Southern France, Balkans and Germany campaigns. He also was awarded the Air Medal with three oak leaf clusters. He worked for IBM for 36 years, retiring as service engineer in 1984.

Albert Oren Daniels, IM 48, of Hixson, Tenn., on Oct. 16. He served in the U.S. Navy on active duty and in the reserves for 28 years, including during World War II and the Korean War; he retired as captain. He worked for the Tennessee Valley Authority for more than 33 years as director of power marketing, and worked for 10 years as senior utility consultant with Allen and Hoshall Engineers.
Logan Douglas “Doug” Davis Jr., ME 42, of Dunedin, Fla., on Oct. 24. He served as a major in the U.S. Army during World War II in North Africa and Europe. He and his brother-in-law purchased H. L. McCurdy Lumber Company in 1947, renaming it Davis-Beatty. In 1968, the company became Davis Concrete, Inc. He continued to operate the business with his son and grandson until his death.

Merle R. Donaldson, EE 46, of St. Petersburg, Fla., on Nov. 11. He served in the U.S. Navy during World War II and later in the Naval Reserves, attaining the rank of ensign, USNR, before his honorable discharge. He attended Tech as a member of the Navy V-12 program. Among the positions served during his long career, he worked at the Oak Ridge National Laboratory, taught as an assistant professor at Georgia Tech and joined the charter faculty for the new College of Electrical Engineering at the University of South Florida, where he was later honored as professor emeritus.

William M. “Bill” Hamilton, IM 47, of Westlake, Ohio, on Aug. 26. He served in the U.S. Navy during World War II and the Korean War aboard the USS Franklin D. Roosevelt and the USS Steinaker. He worked for 35 years at Cleveland, Ohio-based Premier Industrial Corporation, retiring as president.

Frederick “Fred” Martin Hammill, ME 47, of Athens, Ga., on Nov. 7. He served as a first lieutenant in the U.S. Army Air Corps during World War II and worked at DuPont for 38 years until his retirement.

James Walter Heatwole, ChE 40, of Daleville, Va., on Oct. 21. He was commissioned as a second lieutenant in the U.S. Army from the Georgia Tech ROTC unit in 1940. He served in World War II in Northern Ireland, England, North Africa and Italy, and began his 26-year tenure at the Harvard University School of Public Health in Boston. There, among other accomplishments, he wrote a textbook, Environmental Health, which entered its fourth edition in 2011 and is used in public health graduate programs nationwide. After his retirement in the early 90s, he was granted the honor of professor emeritus.

Mr. Moeller was active in a number of organizations striving to protect the health and safety of the American public and its environment against the threats of ionizing radiation. He became president of the Health Physics Society and chaired a number of committees for the U.S. Nuclear Regulatory Commission, U.S. Environmental Protection Agency, National Council of Radiological Protection and Measurements, International Commission of Radiological Protection, National Academy of Sciences and the American Academy of Environmental Engineers, among others. He received numerous professional awards, including the U.S. Nuclear Regulatory Commission’s Meritorious Achievement Award and a 1999 induction into the Georgia Institute of Technology Engineering Hall of Fame.

The legacy of Mr. Moeller’s work lives on, notably in the United States employ more certified health physicians than any other company in America.

Dade William Moeller, who passed away Sept. 26 at age 84, was a widely respected researcher, professor and steward of environmental health. But in 1944, he was just another Georgia Tech freshman, albeit one able to claim the distinction of being the only student at his high school to have passed the V-12 Navy entrance exam.

In 1948, Mr. Moeller distinguished himself again, graduating magna cum laude from Tech with both a bachelor of science degree in civil engineering and a master’s degree in environmental engineering under his belt. He then joined the U.S. Public Health Service as a commissioned officer, which led him to being stationed across United States, at the Oak Ridge National Laboratory in Tennessee, Los Alamos National Laboratory in New Mexico and the service’s headquarters in Washington, D.C.

The Health Service sponsored Mr. Moeller’s return to academia, his 1957 PhD in nuclear engineering from North Carolina State University. Soon after, he launched into the professional study of radiation, which would define his life’s work. He first taught radiation protection courses at the Public Health Service’s Radiological Health Training Center in Cincinnati in 1959, then became a certified health physicist and a certified environmental engineer; by 1961 he was the officer in charge at the Northeastern Radiological Health Laboratory in Winchester, Mass. There, Mr. Moeller’s staff studied the radioactive fallout from weapons testing and the effects of radiation on children’s thyroids.

After retiring from the Public Health Service in 1966, he

Dade Moeller STEWARD of ENVIRONMENTAL HEALTH
later served as an ROTC instructor at the University of Minnesota and on the Army General Staff in Washington, D.C., with additional duty in Korea and Germany. Among other honors, he received the Legion of Merit and the Bronze Star. He retired in 1972 as a colonel, then served as town manager of Narrows, Va., for 10 years.


R. Conway “Connie” LeCraw, Phys 49, of Hilton Head, S.C., on Nov. 15. He was the son of a former Atlanta mayor and became one of the youngest-ever Eagle Scouts at age 14. He served in the Pacific theatre of World War II as a corporal in the Signal Corps. From 1955 until his retirement in 1986 he was a renowned physicist at Bell Laboratories in Murray Hill, N.J., where he was granted 35 U.S. patents. His most significant discovery was of magnetic bubble devices, which revolutionized the storage of information for military technology. Among others, he is survived by his brothers Veazey, ChE 49; Julian, IM 52; and Rupert, ME 56.

Melvin H. Mooney Jr., EE 49, of Sandy Springs, Ga., on Nov. 7. He served as a staff sergeant in the South Pacific during World War II. He worked for 37 years at Southern Bell/South and was a past president of the Dogwood Chapter of the Telephone Pioneers. He was recognized for his 25 years of volunteer service with the AARP’s Tax Aide program.

William D. Munroe Sr., ME 43, of Quincy, Fla., on Oct. 25. He served in the U.S. Army Air Corps and Army Corps of Engineers, including service in the South Pacific. Later, he purchased the Quincy Feed Mill in Quincy, Fla., and designed feed processing plants and equipment. He designed a solar-powered air-conditioner for the Department of Agriculture for use in poultry houses. Later, he purchased a share of K-C Manufacturing Co., where he manufactured go-karts, mini-bikes and RV vehicles for 20 years. He participated in a number of NASA experiments, including the Mars Viking project. He is survived by, among others, son William D. Munroe Jr., IM 74, and grandson Michael E. Munroe, IE 07.

Bruns McKie Myers Jr., IE 49, of Madison, Miss., on Oct. 5. He served in the U.S. Army Air Corps and was honorably discharged as a second lieutenant. At Tech, he was a member of Kappa Alpha. In 1963, he founded a mechanical contracting business, which he ran until his retirement. He raised thoroughbred horses for 40 years and served as president of the Mississippi Thoroughbred Owners and Breeders Association for many years.

Graeme Dickerman Plant Jr., ME 48, of Napa, Calif., on Nov. 10. His time at Tech was interrupted by service with the U.S. Army in the European and Pacific theatres of World War II. He began his career in engineering management with Worthington Machinery and worked at Basalt Rock Co. and Kaiser Steel. He was active in the Napa community, serving as chairman of the endowment committee of the Queen of the Valley Hospital and on the board of the Napa Valley Symphony.

Samuel David See, EE 41, of Spokane, Wash., on Oct. 15. He served in the U.S. Navy as first lieutenant and studied naval architecture and marine engineering at MIT. During World War II, he worked for the Puget Sound Naval Shipyard and the Supervisor of Ship Building Office in Tacoma. After the war, he was an engineer at Standard Oil Company, where he spent the rest of his career. There, he assisted with the design and construction of the first jet fueling system at SeaTac Airport in 1948.

Julian E. Sides Jr., NS 46, of Tunica, Miss., on Sept. 25. He was a Naval officer in World War II. Among others, he is survived by his grandson, Jonathan “Scott” Monteith, CmpE 05, MBA 11.

Alan G. “Gart” Symons, ME 48, of Perdido Beach, Ala., on Sept. 23. He served in the U.S. Army Signal Corps in the Pacific theatre. He was a mechanical engineer, retiring from Layne Central Co. in Pensacola, Fla., as district manager in 1987.

Steven A. Varga, ME 47, of Silver Spring, Md., on Sept. 8. He served in the Army Air Forces during World War II. At Tech, he was a member of the gymnastics team and was inducted into the Tech Athletics Hall of Fame. He worked as a mechanical engineer at Lawrence Livermore National Laboratory, Aerojet General and the Atomic Energy Commission, which became the Nuclear Regulatory Commission, from which he retired in the 1990s. Survivors include daughter Lesley Whitaker, EE 81.

Robert Bryans Watkins Sr., TE 48, MS Text 62, of Woodstock, Ga., on Sept. 22. He served in the Navy during World War II. He taught at Southern Polytechnic State University and worked in sales, then worked at the Atlanta Journal-Constitution for 20 years. Among others, he is survived by his daughter Barbara Beavers, IE 87.

Dan Wilson, IM 48, of Montgomery, Ala., on Sept. 6. At Tech, he was a member of Sigma Alpha Epsilon. He served in World War II in the Southern Philippines campaign, Japan and the Berlin Crisis, and was a graduate
of the Infantry OCS, Quartermaster School, Advanced Career Course and the U.S. Army Command and General Staff College. He received numerous military awards, including the Legion of Merit and the Army Commendation Medal, and retired from the military as a colonel. He owned and operated the Goodform Shop until 1973, and he later retired from the State of Alabama Banking Department.

1950s

Neel Burnett Ackerman, CE 54, of Harrisonburg, Va., on Oct. 12. He served in the U.S. Air Force during the Korean War. He most recently worked for Braniger Corporation in Savannah, Ga. Among others, he is survived by grandson T.J. Ackerman, CE 09.

David William Arnold, Cls 51, of Gwynedd, Penn., on Oct. 6. He served in the U.S. Marine Corps during the Korean War and later worked as a sales manager for Weyerhauser and Time-Life Corp., and most recently as director of new business development for Acculogix, Inc.

Milford Harvey Bennett, IM 54, of Tucker, Ga., on Sept. 22. He played football for the Yellow Jackets. Later, he served in the U.S. Army as a first lieutenant, then worked for a number of banks and served as president of the Peachtree Atlanta Kiwanis Club.

Julian Whitfield “Whit” Benson Jr., EE 54, MS EE 60, of Marietta, Ga., on Oct. 8. Prior to his studies at Tech, he worked as a geologist on an oil rig in Louisiana. Later, he served four years in the U.S. Navy and was honorably discharged as a lieutenant. He joined the staff of Lockheed-Georgia in 1957 as an engineer, programming computer simulations of real-time flight conditions for the C-5 Galaxy, the C-130 Hercules and the F-22 Raptor. He was a member of the Georgia Appalachian Trail Club for more than three quarters of the club’s history and held nearly every office on its board.

Marshall Jones “Skip” Beebe, IM 67, passed away suddenly on the evening of Nov. 7 after suffering a stroke. That he spent some of his final hours engaged in the company of colleagues and students at the Global CoreNet real estate conference was apt.

Beebe spent the last two decades of his professional career as an educator, most recently joining the faculty of Georgia Tech, his alma mater, as the Ledbetter Professor of the Practice of Real Estate Development in 2009.

Robert H. “Bob” Ledbetter Sr., the professorship’s namesake, told the Atlanta-Journal Constitution in November, “We wanted someone that would teach students about the business of real estate development, and Skip did that beautifully.”

Mr. Beebe’s AJC obituary noted, “He often said he considered the students his teachers and that he learned more in two years [at Tech] than in his entire real estate career.”

Prior to returning to Tech, Mr. Beebe worked in banking and then fostered a 35-year career in the real estate industry. He was an active member in Atlanta’s business community, serving as trustee of the Leadership Atlanta program, among other positions. He worked with CBRE Group, Inc., from 1994 until 2007, when he retired as chief learning officer. He then formed Beebe Interests, through which he continued to mentor a number of his CBRE colleagues. He also served as senior vice president of Cousins Properties, president of Mobil Land Development Corporation, and president of Wilma Southeast.

In lieu of flowers, Mr. Beebe’s family requests that gifts be made to the Georgia Tech Foundation, 760 Spring Street, N.W., Suite 400, Atlanta, GA.
He served in the U.S. Navy as a lieutenant flight navigator for reconnaissance missions aboard the carriers Saratoga and Randolph.

Everett "Fritz" H. Ehrhart, MS EE 51, of Lawrenceville, Ga., on Oct. 8. He served in the U.S. Navy during World War II and worked for 30 years at BellSouth. Survivors include his grandsons Mark Ehrhart, Psy 96, and Zachary Hayes, an assistant registrar in Tech’s Office of the Registrar.

Malcolm T. Gilliland, EE 53, of Marietta, Ga., on Sept. 27. He founded Malcolm T. Gilliland, Inc., in 1960. Based in Peachtree City, Ga., the company manufactures welding equipment and robotics, and he held more than 40 patents over his career. He is survived by, among others, daughter Kristi Matheny, IM 80, and son Ken Gilliland, EE 89.

Clealand M. Joye Jr., CE 59, of Atlanta, on Oct. 6. He attended the U.S. Naval Academy and served a commission at the Naval Flight School in Pensacola, Fla. He had a long career as a project engineer in Atlanta, spanning more than 50 years and ending in retirement from C.P. Richards Company in Lithonia. Survivors include his brother Benjamin Cuttino, CE 67.

J. Lee Harrell, EE 50, of Rome, Ga., on Sept. 19.

J. Lee Harrell, EE 50, of Rome, Ga., on Sept. 19. He served in the U.S. Army during World War II, then worked in the aerospace industry in California for 35 years.

Herschel Wilcox Godbee, Che 52, PhD Che 63, of Cuyahoga, Ohio, on Oct. 28. He worked at X-10/ORNL from 1958 to 1994. Among others, he is survived by his son Dan Godbee, ME 76, MS ME 87, MS IE 89.

James E. Harwood III, IE 58, of Memphis, on Nov. 16. Over his 55-year career, he served as vice president of Conwood Corporation; president of Dr. Scholl and DAP, Inc., both divisions of Schering-Plough; and president of Sterling Equities, Inc. He also served as a board member of Regions Bank, Morgan Keegan, Union Planters Bank, Leader Federal S&L and SCB Computer Technology Corporation, and on the boards of the Church Health Center, Mid-South Coliseum, Christian Brothers University, Board of Visitors of the University of Memphis and the Chickasaw Council of Boy Scouts of America.

Paul M. Blair Jr., Phys 59, of Earlysville, Va., on Sept. 23. He served in the U.S. Navy and later spent his career as an engineer.

George Daniel Boggs, EE 53, of Jacksonville, Fla., on Oct. 3. He served in the U.S. Navy in World War II and the Korean War. He worked for 36 years at Southern Bell, Bell Labs and AT&T. After retiring, he volunteered for 11 years at St. Luke’s Hospital in Jacksonville.

Richard William Brokenshire, IM 57, of Asheville, N.C., on Sept. 24. He served in the U.S. Army during the Korean War and retired from the Department of Defense after a 28-year-career.

Donald Arthur Campbell, ChE 51, of Houston, on Oct. 2. He served in the U.S. Marine Corps and had a long career with Exxon.

Jack Edmond Cavender Sr., Arch 57, of Atlanta, on Sept. 29. He practiced architecture in the Atlanta and East Point areas for more than 50 years, designing buildings around the Southeast. He designed the Southwest Christian Church in East Point, where he was a member for 40 years. He was also the primary consulting architect for Chick-Fil-A mall locations and worked on numerous projects for Gulf Oil Corporation. He was an emeritus member of the American Institute of Architects. He is survived by, among others, his son David Cavender, Arch 77, M Arch 80.

James E. Harwood III, IE 58, of Memphis, on Nov. 16. Over his 55-year career, he served as vice president of Conwood Corporation; president of Dr. Scholl and DAP, Inc., both divisions of Schering-Plough; and president of Sterling Equities, Inc. He also served as a board member of Regions Bank, Morgan Keegan, Union Planters Bank, Leader Federal S&L and SCB Computer Technology Corporation, and on the boards of the Church Health Center, Mid-South Coliseum, Christian Brothers University, Board of Visitors of the University of Memphis and the Chickasaw Council of Boy Scouts of America.

Clealand M. Joye Jr., CE 59, of Atlanta, on Oct. 6. He attended the U.S. Naval Academy and served a commission at the Naval Flight School in Pensacola, Fla. He had a long career as a project engineer in Atlanta, spanning more than 50 years and ending in retirement from C.P. Richards Company in Lithonia. Survivors include his brother Benjamin Cuttino, CE 67.

John Richard Doll, EE 51, of Los Angeles, on Sept. 23. He served in the U.S. Army during World War II, then worked in the aerospace industry in California for 35 years.

In early November, the Tech community was deeply saddened to learn that two students had been killed in an automobile accident in Pickens County, Ga., north of Atlanta: Naren Raghuraman, a 21-year-old international affairs major from Princeton, N.J., and Daniel Bernard Hickman, a 21-year-old aerospace engineering major from Atlanta. A third Tech student, 20-year-old aerospace engineering major Ratheesvar Mohan, was injured in the crash.

In addition to funeral services held by the students’ families, at the request of undergraduate and graduate leadership, Tech honored the young men with a moment of silence taken before the playing of the National Anthem at the Nov. 10 home football game against Virginia Tech.
Judd Eugene Kahn, ME 59, of Woodstock, Ga., on Oct. 7. He served in the U.S. Army as a military policeman in Japan during the Korean War. He worked for 36 years at the Oak Ridge National Laboratories, designing nuclear reactor core cooling systems and working on nuclear particle cleanup.

Leo Louis Lehner, EE 52, of Glendale, Ariz., on Oct. 17. He served in the U.S. Army. Most of his professional career was spent at Motorola, where he worked as an electrical engineer.

Thomas Loucas, Cls 55, of Stamford, Ct., on Oct. 19. He served in the U.S. Navy as a lieutenant flight navigator for reconnaissance missions aboard the carriers Saratoga and Randolph. He worked for General Electric and in 1970 founded Digital Associates Corporation, a distributor of high-speed line printers. He later served as vice president of Miltop Corporation and helmed business development of DEER-OFF, Inc., a deer-repellant product company founded by his wife, Athena. Together, they sold the company to Woodstream Corporation in 2002. He was active with SCORE of Ft. Lauderdale and was known for his commitment to helping young entrepreneurs.

William Burson McGuire, IM 53, of Sandy Springs, Ga., on Nov. 6. At Tech, he was a member of Phi Delta Theta. He served two years in the U.S. Army as a first lieutenant and had a 35-year career with Westinghouse Electric Corporation.

Charles William Moore, CerE 50, of Saint Paul, Minn., on Oct. 12. He served as an infantry officer in the South Pacific and as an Air Force pilot over Burma during World War II, then in the Armed Forces reserves for 24 years, retiring with an honorable discharge. He worked for the SM Company for 30 years as a plant manager and engineering manager.

Jacob Daniel “Dan” Nash, EE 54, of Tallahassee, Fla., on Nov. 3. After his graduation from Tech, he began a career with Schlumberger Oil Well Services that lasted until his retirement in 1987. From 1987 to 1996, he served as manager of the radioactive material programs for the Florida Department of Health.

Lewis Steven Nathanson, IM 56, of Mt. Pleasant, S.C., on Nov. 4. He was a lifelong member of Kappa Sigma and served in the U.S. Navy. He worked with his father at Carolina Door and was president and owner of Overhead Door Company of the Piedmont, Inc., for almost 30 years, during which time he earned a number of awards. Later, he worked at Overhead Door Company of Charleston and the Grand Strand and American Eagle Insurance Company for more than a decade.


Carl “Smiley” Paul, MS IM 53, of Atlanta, on Nov. 12. He served in the U.S. Navy in the Mediterranean and Pacific theatres of World War II. Later, he was the commander of the Navy Reserve unit at Tech and retired with the rank of captain. He worked for the City of Atlanta for 36 years and became the deputy director of the Personnel Department.

Calvin “Cal” Lee Pratt Jr., AE 55, of Arlington, Texas, on Nov. 2. He was employed by Chance Vought/LTV for 23 years. Along with his wife, Liz, he owned and operated Comet Cleaners in Duncanville, Texas, and Cedar Tree Gallery in Arlington.

Charles “Pete” Renner III, IM 53, of Atlanta, on May 26.

William “Bill” Fitzgerald Robertson, IM 51, of Algonquin, Ill., on Nov. 10. He worked at the Savannah Ice Delivery/Georgia Ice Company, then held management positions with a number of national cold storage firms. He also served on the board of directors of several regional and national associations.

Nelson “Ben” Severinghaus Jr., Cls 50, of Davidson, Tenn., on Oct. 13. He served in the U.S. military as a special weapons officer. His career began at the Tennessee Copper Company, where he worked as a mining engineer. He rose in the ranks at Georgia Marble Company to become president in 1974. In 1977 he became president of Franklin Industrial Minerals in Nashville, Tenn. He was the recipient of a number of professional awards, memberships and publications, and he held three patents involving mineral processing. He is survived by, among others, his brother Joel Thompson, IM 53, MS IM 59.

Parke Skelton, EE 55, of Colorado Springs, Colo., on Oct. 31. He served in New Guinea with the U.S. Army during World War II. Later he worked as an aerospace electronics engineer at Rockwell International, where he was part of the team responsible for the Apollo moon landing.

Benjamin Sanford Ulmer, Text 53, of Savannah, Ga. He served in the U.S. Army as a first lieutenant in Korea. He worked with the Celanese Corporation of America and then as executive director of the Savannah Port Authority. He was then called to the priesthood, serving as an assisting priest at Saint Michael & All Angels Episcopal Church in Savannah. He also served as administrator of the Episcopal Diocese of Georgia.

Fritz N. Watson, Cls 51, of Anderson, S.C., on Sept. 18. He served as staff sergeant in the finance corps as part of the occupation forces in Germany during World War II. He worked at the Oak Ridge National Laboratories in Tennessee and with the U.S. Department of Energy, and founded Aquarius Enterprises, a swimming pool company.
1960s

Carr Bolton “Bo” Abernethy, Arch 63, of Willis, Va., on Oct. 16. He enjoyed a career as an architect and was especially celebrated in his hometown of Johnson City, Tenn., where he designed numerous buildings, including many on the East Tennessee State University campus. He later founded Archeonics-Research and Development, where he developed a modular building system. He also led popular classes and workshops on spirituality and forgiveness and founded Light of Freedom, Inc., a nonprofit community based upon the principals of experiencing inner peace.


Abron “Abe” Brinson, IM 60, of Columbus, Ga., on Sept. 23. He played defensive end and tight end for the Yellow Jackets, playing in both the Sugar Bowl and the Orange Bowl. At Tech, he was a member of ANAK and ODK, and served as president of Phi Delta Theta, president of his senior class and president of the student body. He served in the U.S. Army during World War II and the Korean War. In 1950, he began work at Daniel Johnson, Inc., then worked for SP Newsprint until his retirement.

Oscar V. Bryan, IE 68, of Marietta, Ga., on July 20. He was a member of Chi Psi fraternity while at Tech. He served for 26 years in the Air Force as an engineer, then worked as a consultant for Davis Consulting Group.

Thomas E. Costello, IE 65, of Charlotte, N.C., on Sept. 24. He worked for 30 years in data processing, systems engineering, development, marketing and sales at IBM, and earned a top-10 national salesperson designation several times. After retirement, he founded several companies for business solutions software, education, training and web design.

Jerald L. Deriso, IE 69, of Marietta, Ga., on April 20. His work as an engineering consultant took him to all 50 states and a number of other countries. In 2008 he wrote a book, *Save Me a Place in Heaven*, about his family and growing up in the South.

John David Freeman, IM 61, of Dunwoody, Ga., on Sept. 21. He served in the U.S. Navy aboard the submarine USS Greenfish. He worked for 18 years in sales at International Paper Co., then worked for SP Newsprint until his retirement.

Patrick P. Garvin, ChE 61, of Bowie, Md., on Oct. 11. He served as a second lieutenant in the U.S. Army at White Sands Missile Range in New Mexico during the Cuban Missile Crisis. He worked at the U.S. Patent and Trademark Office for 35 years and was awarded the Department of Commerce Bronze Medal in 1978.

Daniel A. Graham Jr., IM 66, of Atlanta, on Sept. 23. He graduated from Tech at the top of his class, then served as a Green Beret in Vietnam during 1967 and 1968, receiving a Bronze Star. He later co-founded LaVista Associates, Inc., a commercial real estate business, and in 1993 co-founded Graham Commercial Realty, Inc., with his wife, Lila.


Henry Carleton Lang Jr., ME 69, of Chester, Va., on Nov. 1. He began his engineering career at Westinghouse, then worked at Allied Chemical Company. He retired in 2009 as the company’s maintenance manager. He served as financial secretary of Chester Presbyterian Church.

Jon Thomas Moore, EE 65, of Fall Branch, Tenn., on Oct. 17. He worked for 29 years as a research fellow at Eastman Chemical Company before retiring.

Clarence Porter Neese, IM 60, of Clarksville, Va., on Nov. 3. He served in the U.S. Navy during the Korean War. He was a school administrator for Sheet Metal Workers Local Union 100 for more than 50 years before his retirement.

Mallie Lewis Price Jr., CerE 62, of Brunswick, Ga., on Oct. 22. While at Tech, he was a member of Kappa Sigma and played baseball, lettering in 1960 and 1961. He worked most recently as chief financial officer of Sea Palms Golf and Tennis Resort.

Allan O. Wesley Jr., Text 62, of Atlanta, on Oct. 7. At Tech, he was a member of Kappa Alpha. He worked in commercial real estate.

1970s

Paul James “Jim” Abernathy, BM 73, of Roswell, Ga., on Oct. 23. His career as an investment banker for Ernst & Young and Investcorp took him to Saudi Arabia, England and Egypt, and he lived for 13 years in Manama, Bahrain. He is survived by, among others, son Phillip Jason Abernathy, Mgt OD.

Henry McCanless, Phys 72, of Laguna Hills, Calif., on Oct. 7. Survivors

A professor in Tech’s School of Electrical and Computer Engineering, he taught more than 2,880 students in 83 classes.
include his brother Ed McCanless, IE ’78.

**Gregory Stewart Miller, CE ’77**, of Portland, Ore., on Oct. 19. He was commissioned as a second lieutenant in the U.S. Army Corps of Engineers and was awarded the Ranger and Airborne patches. His first tour of duty was in Berlin shortly after the Berlin Wall was constructed, and he then volunteered for a tour of service in Vietnam, followed by another tour of Europe. He achieved the rank of lieutenant colonel and was awarded the Legion of Merit, Bronze Star, Meritorious Service Medal and a number of commendation medals. Among numerous professional appointments, he worked on the second powerhouse at Bonneville Dam on the Columbia River, taught military science at Tennessee Technological University and was employed by Washington County, Ore., in the Land Use and Transportation Department.

**Edward Arlo Sheldahl, CE ’76**, of Alexandria, Va., on Oct. 24. His career as a civil highway engineer was spent with the Federal Highway Administration until his retirement in 2010.

**Michael Edward Smith, MgtSci ’74**, of Eudora, Kans., on Oct. 8. He served in the U.S. Air Force during the Vietnam War. He worked in marketing at IBM for more than 20 years.

**1980s**

**Russell William Crosby Jr., ME ’82**, of Gordon, Ga., on Oct. 20. He was an engineer with Technicon.

**Matthew Moynihan, IM ’82**, of Atlanta, on Nov. 16. He was a member of Kappa Alpha.

**1990s**

**John Mather Siegel Jr., ME ’90, MS ME ’92, PhD ME ’94**, of Huntsville, Ala., on Oct. 22. He was the creator and CEO of Stockworm, Inc., and was a biomedical researcher at SAIC.

**2010s**

**Alexander L. Schmitt, MS ME ’11**, of San Antonio, Texas, on Nov. 13, from injuries sustained in a motorcycle accident.

**Friends**

**Paul Joseph Marsiglia**, of Stone Mountain, Ga., on Oct. 12. He was employed as a senior network support engineer at the Georgia Tech Research Institute and previously worked for the Office of Information Technology.

**James Weldon McCarty**, of Charlotte, N.C., on Nov. 3. He was a professor of textile engineering at Tech for more than 25 years.

A professor in the School of Electrical and Computer Engineering, Mr. Wills taught more than 2,880 students in 83 classes during his time on the Tech faculty. His wife, Linda Wills, whom he met while working on his doctorate in electrical engineering at the Massachusetts Institute of Technology, is also a professor at Tech, and together they collaborated on a number of research projects focused on surveillance technology, co-leading the Mobile Vision Embedded Systems (MOVES) research group.

Mr. Wills was a Yellow Jacket himself, graduating in 1983 with an undergraduate degree in physics before returning to teach in 1991.

Mr. Wills served on a number of boards at the Institution level, including the Joint College of Computing/College of Engineering committees, which formed the Computational Science and Engineering Program and the Software Engineering certificate. In 2009, Mr. Wills’ students honored him with the Richard M. Bass/Eta Kappa Nu Outstanding Teacher Award, one of the highest accolades a Tech professor can attain.

Scott Wills — Passionate Educator and Surveillance Researcher

Upon his death on Dec. 2 from the melanoma cancer he’d battled for years, Dr. Scott Wills, Phys ’83, was remembered by the Tech community as a passionate educator, a tireless supporter of his students and a relentlessly curious researcher.
Want to join the Tech 100 Business Club? Contact Holly Green at (404) 894-0765 or holly.green@alumni.gatech.edu.
Want to join the Tech 100 Business Club? Contact Holly Green at (404) 894-0765 or holly.green@alumni.gatech.edu.
Fellow alumni,

Georgia Tech enjoys a global reputation of distinction today that extends far beyond the wildest aspirations of its founders more than 125 years ago. That reputation is built on fundamental strengths that existed from our modest beginning and continue to this day. Those strengths include a remarkable work ethic, amazing analytical and problem-solving skills, implacable determination, a drive to succeed and a passion for excellence and learning. While much has changed, those values continue to be instilled in our students today.

Fiscal year 2011 was a remarkable year in many ways. And in large part, we owe that to you, our loyal alumni. Your Association has finished its 103rd year in support of this great Institute. And what a year it has been! We had terrific performance in fundraising and engagement despite the tough and volatile economic climate. Our annual fund, Roll Call, raised a record amount of money, from a record number of alumni and supporters, and we continue to outperform our peer universities in alumni philanthropic participation. Thank you very much for your loyal financial support of Georgia Tech.

Our engagement of Tech’s alumni continues to grow by leaps and bounds. One amazing highlight—with the re-launch of our Student Alumni Association, we saw 2,056 students make a gift of $10 to Tech to join. It was twice the number we expected.

Under the aegis of the SAA program, we saw our Mentor Jackets program explode to more than 400 alumni engaged in mentoring more than 400 Tech students. Mentor Jackets is one of the crown jewels of the new SAA. And we hope that you will volunteer to be a mentor to a Tech student today. Believe me, it is one of the most satisfying experiences you can have.

What your Alumni Association is really about is building relationships that matter. We help foster and build relationships between Georgia Tech and its alumni, between all of you and each other. And those relationships benefit everyone. In my time as a leader here at the Association, I’ve met so many of Tech’s amazing alumni, and I’ve found a common theme. Tech challenged us all to become the people we are through academic rigor and shared experiences. That bond spans generations of Tech alumni.

In the end, Georgia Tech is OUR school. Long after the professors and administrators are gone, we as alumni “carry the flag” for Tech. As alumni, we’re an asset to the growth of Georgia Tech and its global reputation. Thank you for all that you have done for Georgia Tech and for all that you will do in the future.

Finally, I’d like to thank our remarkable staff here at the Association. Having been involved with many nonprofits in my lifetime, I can assure you that these are the most creative, smart and friendly professionals.

Sincerely and warmly,

AL TRUJILLO, AE 81
CHAIR
GEORGIA TECH ALUMNI ASSOCIATION

### PROGRAM FUNDRAISING

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
<th>CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll Call Donors</td>
<td>31,620</td>
<td>29,062</td>
<td>8.8%</td>
</tr>
<tr>
<td>Roll Call Dollars</td>
<td>$8,262,475</td>
<td>$8,043,509</td>
<td>3.9%</td>
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### ENGAGEMENT

<table>
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<th></th>
<th>2011</th>
<th>2010</th>
<th>CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Engagement</td>
<td>631,088</td>
<td>573,605</td>
<td>10%</td>
</tr>
<tr>
<td>Supportive Engagement</td>
<td>5,599,494</td>
<td>5,559,444</td>
<td>1%</td>
</tr>
<tr>
<td>Return for Every $1 Spent</td>
<td>$1,684</td>
<td>$1,648</td>
<td>2%</td>
</tr>
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</table>
ASSOCIATION FINANCES  FISCAL YEAR 2011

REVENUES

<table>
<thead>
<tr>
<th></th>
<th>BUDGET</th>
<th>ACTUAL</th>
<th>VARIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT Foundation</td>
<td>4,297,592</td>
<td>4,297,592</td>
<td>0</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>126,663</td>
<td>136,537</td>
<td>9,874</td>
</tr>
<tr>
<td>Advertising &amp; Sponsorships</td>
<td>230,000</td>
<td>307,450</td>
<td>77,450</td>
</tr>
<tr>
<td>Career Services</td>
<td>165,000</td>
<td>246,175</td>
<td>81,175</td>
</tr>
<tr>
<td>Tours</td>
<td>100,000</td>
<td>97,891</td>
<td>(2,109)</td>
</tr>
<tr>
<td>Merchandise Sales</td>
<td>35,780</td>
<td>38,143</td>
<td>2,363</td>
</tr>
<tr>
<td>(Net of Cost of Sales)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties</td>
<td>370,000</td>
<td>787,150</td>
<td>417,150</td>
</tr>
<tr>
<td>Events</td>
<td>130,180</td>
<td>142,083</td>
<td>11,903</td>
</tr>
<tr>
<td>Other Sources of Revenue</td>
<td>152,500</td>
<td>148,328</td>
<td>(4,172)</td>
</tr>
<tr>
<td>Allocation from Cash Reserves</td>
<td>2,000</td>
<td>96</td>
<td>(1,904)</td>
</tr>
<tr>
<td>Total</td>
<td>$5,609,715</td>
<td>$6,201,445</td>
<td>$591,730</td>
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EXPENDITURES

<table>
<thead>
<tr>
<th></th>
<th>BUDGET</th>
<th>ACTUAL</th>
<th>VARIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>$ 2,066,004</td>
<td>2,400,788</td>
<td>334,784</td>
</tr>
<tr>
<td>Career Services</td>
<td>255,475</td>
<td>230,433</td>
<td>(25,042)</td>
</tr>
<tr>
<td>Communications</td>
<td>770,015</td>
<td>733,385</td>
<td>(36,630)</td>
</tr>
<tr>
<td>Alumni Relations &amp; Tours</td>
<td>375,500</td>
<td>433,961</td>
<td>58,461</td>
</tr>
<tr>
<td>Roll Call &amp; Business Development</td>
<td>786,880</td>
<td>777,844</td>
<td>(9,036)</td>
</tr>
<tr>
<td>Campus Relations</td>
<td>328,570</td>
<td>332,992</td>
<td>4,422</td>
</tr>
<tr>
<td>Event Management</td>
<td>924,850</td>
<td>894,960</td>
<td>(29,890)</td>
</tr>
<tr>
<td>Marketing Services</td>
<td>407,555</td>
<td>396,251</td>
<td>(11,304)</td>
</tr>
<tr>
<td>Total Expenditures</td>
<td>$5,914,849</td>
<td>$6,200,614</td>
<td>$285,765</td>
</tr>
<tr>
<td>Excess (Deficiency) of Revenue Over Expenses</td>
<td>($305,134)</td>
<td>$831</td>
<td>$305,965</td>
</tr>
</tbody>
</table>

ASSETS

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and Cash Equivalents</td>
<td>$ 413,556</td>
<td>676,367</td>
</tr>
<tr>
<td>Accounts Receivable Less Allowance for Doubtful Accounts of $3000 in 2011 and $3000 in 2010</td>
<td>168,162</td>
<td>178,947</td>
</tr>
<tr>
<td>Prepaid Expenses</td>
<td>36,770</td>
<td>13,615</td>
</tr>
<tr>
<td>Inventory</td>
<td>7,771</td>
<td>2,806</td>
</tr>
<tr>
<td>Property, Plant and Equipment, Net</td>
<td>213,974</td>
<td>259,934</td>
</tr>
<tr>
<td>Antique Ramblin’ Wreck</td>
<td>12,500</td>
<td>12,500</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$852,733</td>
<td>$1,144,169</td>
</tr>
</tbody>
</table>

LIABILITIES AND NET ASSETS

LIABILITIES

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts Payable</td>
<td>$ 104,769</td>
<td>117,945</td>
</tr>
<tr>
<td>Accrued Expenses</td>
<td>343,290</td>
<td>312,381</td>
</tr>
<tr>
<td>Deferred Revenue</td>
<td>0</td>
<td>310,000</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>$448,059</td>
<td>$740,326</td>
</tr>
</tbody>
</table>

UNRESTRICTED NET ASSETS

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expended for Property, Plant &amp; Equipment</td>
<td>$ 226,474</td>
<td>272,434</td>
</tr>
<tr>
<td>Available for Operations</td>
<td>178,180</td>
<td>131,409</td>
</tr>
<tr>
<td>Total Unrestricted Net Assets</td>
<td>$404,654</td>
<td>$403,843</td>
</tr>
<tr>
<td>Total Liabilities and Net Assets</td>
<td>$852,733</td>
<td>$1,144,169</td>
</tr>
</tbody>
</table>
In June 1951, Charles E. Johnson earned his bachelor’s degree in industrial management from Georgia Tech. It was a proud moment for the young man from Charleston, S.C., but he wasn’t the only member of his family to be honored that day. His wife, Colleen, though not a student, was also awarded a Tech degree: “mistress of patience in husband engineering.”

“It was quite a nice thing to do,” Colleen Johnson recalls, admiring the document, now framed on the wall of her and Charles’ kitchen in James Island, S.C. “I felt very proud to receive it.”

Tech began awarding the honorary “mistress of patience” degree around 1946 to recognize the efforts of women who provided support—financial, academic, emotional—to their enrolled husbands. For a time, it was one of very few degrees women could obtain from the Institute: Although female students had first been admitted to the Evening School of Commerce in the late 1910s, women weren’t allowed to officially enroll at the Institute until 1952, and some programs held out on matriculating female students until 1968.

According to Marilyn Somers, Director of the Alumni Association’s Living History program, male students could apply through the dean of students’ office to see that their wives received the mistress of patience degree. Incomplete records were kept as to how many were given and to whom, though it’s known that Blake R. Van Leer was the first president to confer the honors. “President Harrison apparently signed some, too,” Somers says, “but the demand for them faded and they stopped being available.”

From afar, the mistress of patience degree resembles a normal Tech diploma, but up close, key differences are clear. The bottom left-hand corner bears not the Institute’s official seal but the symbol of two rolling pins crossed over an early (very pre-Buzz) rendering of a yellow jacket.

And in lieu of the standard copy, a mistress of patience diploma declares that its recipient has “successfully persevered for many months despite the necessity of encouraging and supporting a husband, the endless unintelligible conversations concerning formulae and point averages, the excuses, the blame placed on the imaginary injustice of professors, and the long hours of burning midnight oil, and has at last accomplished the graduation of afore-said husband.”

In a way, Colleen Johnson entered into her degree program before her husband began his. The day after she and Charles arrived in Atlanta, she picked up a copy of the Atlanta Journal and promptly found a secretarial job.

“I was able to get a little bonus right at first and so we used that and lived in the officers quarters of the Naval air station,” she remembers. “I’d come home, get out of the car,
Tech Artifact
Colleen Johnson’s 1951 “Mistress of Patience” degree.
and he’d jump in the car and go down to his night studies at Georgia Tech, and that was our routine.”

During that first summer, Colleen cooked her and Charles’ meals on a one-burner hot plate in their one-bedroom apartment, where they shared a dormitory bathroom with other families on the airbase. Drawing on her secretarial experience with the U.S. Army ground forces (she’d previously worked on a weaponry project at Ft. Bragg that was so top-secret she had to remove her typewriter ribbon and stash supplies in a vault every night), she worked for the Atlanta Journal for a time, then for Coca-Cola.

“It was tight—we just had to do what we had to do,” Johnson says. “We would go to Piedmont Park and I would coach him in all of the things he needed to learn, like chemical equations, all kinds of math and English questions. I’d go over the studies with him and he remembered them by rote after two or three months of just drilling.”

It wasn’t all work, though. Charles joined Alpha Tau Omega, which “took care of the social activities.” During the couple’s first year in Atlanta, Colleen won the Blueprint’s annual “beauties of Tech” contest, that year judged by Li’l Abner creator Al Capp, and appeared in the yearbook. And she found some time to take classes herself, enrolling in music and art courses at Emory University.

After Charles’ graduation, the couple moved to Florida, where he was stationed at Tyndall Air Force Base. Johnson spent the next few years raising children and doing volunteer work. And though she took a few more art and music classes, she never earned a “real” college diploma.

Still, she’s as proud of her mistress of patience degree as any official Yellow Jacket. “The Tech experience helped me tremendously,” she says. “It gave me a place where I fit in, where I could sit in and feel part of something. It enabled me to be more of the strong individual that I’ve become.”

**TIME MACHINE**

**5 years ago, in 2007,** the Georgia Tech women’s tennis team claimed the Institute’s only NCAA team championship after a win against UCLA. For an interview with coach Bryan Shelton, see page 32.

**10 years ago, in 2002,** the Campus Recreation Center’s outdoor swimming pool, built for the 1996 summer Olympics, was enclosed. An upper floor of multi-purpose courts was added above the pool, setting a world record for the largest suspended concrete structure.

**25 years ago,** in 1987, Tech hired Bobby Ross as the head football coach. Three seasons later, Ross led Tech to an 11-0-1 record, an ACC title and a share of the national championship.

**50 years ago,** in 1962, the Alumni Magazine featured “The Tech Student Coloring Book” in a section on campus humor. The caption to this illustration reads, “There is a handsome football player. He is on the left. There is a cheerleader. She is on the rest of the page. Color her quickly. Now burn the page.” Yikes.
years ago, in 1937, the Blueprint included this photo of what is labeled as an initiation. The caption offers only this explanation: “More Skull and Keys at the football game.”

years ago, in 1912, the Blueprint included a survey of the senior class that listed such superlatives as the “biggest bootlicker” (that would be A.W. Hill), the “biggest tightwad” (H.T. Ross), and the man with the “biggest feet” (“Bob” Mell).

years ago, in 1887, developer Richard Peters donated a four-acre plot bounded by North Avenue on the south and Cherry Street on the west and sold five adjoining acres to the state for $10,000 as a location for the Georgia School of Technology.

Have a Tech memory to share? Send written pieces to Editor, Georgia Tech Alumni Magazine, 190 North Ave. N.W., Atlanta, GA 30313, or by email to publications@gtalumni.org. Entries will be selected for publication in the magazine and at gtalumnimag.com.
DEAR GEORGE,
What student holds the record for the most continuous quarters of education at Tech?

TOM EARNEST, EE 68, GREENSBORO, GA.

DEAR TOM,
Depends on what you mean by “education.” Taken liberally, I’m sure no one can challenge my 81-year run. Now, if you’ll excuse me, I have a class to skip. G.P.

DEAR GEORGE,
Why is Drownproofing no longer offered at the Institute where it was developed?

BILL BROCKMAN, MGT 73, ATLANTA

DEAR BILL,
Fred Lanoue’s Drownproofing class stopped being offered at Tech in 1987. It was brought down by an unprecedented partnership between Helicopter Parents and the Fun Police. G.P.

DEAR GEORGE,
What is your GPA?

DAVID L. BATCHelor, IM 70
SPICEWOOD, TEXAS

DEAR DAVID,
Tech’s esteemed researchers are still developing technology capable of detecting numbers that small. They seem to think graphene could be the solution, but I’m not convinced. G.P.

DEAR GEORGE,
As a former coed on the Georgia Tech campus, I was wondering if you ever asked a female student on a date. And if you went on the date, how did it go?

CATHERINE DOWLING VON DULLEN, ARCH 74, WILLIAMSBURG, VA.

DEAR CATHERINE,
You mean before I married Ramona in 1958, I assume. Let’s not give the former Ms. Cartwright any suspicions. You don’t want to see her with her hackles raised. Or her hackles lowered, for that matter. But from 1952, when they finally admitted women to Tech, to 1958, I had the run of campus. There were tens of women to date! G.P.

DEAR GEORGE,
Someone told me the other day that Atlanta city ordinances allow Tech’s neighbors to have up to 24 chickens and a maximum of one rooster in their yard. Can this be true? What do you make of it?

RALPH CARTER, IE 79, ROCHESTER, N.Y.

Dear Ralph, That sounds like one tired rooster. What do I make of this? Chicken stew, fried chicken, chicken curry, lemon-glazed roast chicken and, if there’s any poultry left over, white chicken chili. G.P.

Have a burning query for George P.? Email him at georgep@gtalumni.org, post them on Facebook (facebook.com/pages/Georgia-Tech-Alumni-Association/94410350506) or Tweet them to @gtalumni.

Joe Ciardiello
"My conversations with alumni give me a greater appreciation for my opportunities here and make me even prouder to be a Yellow Jacket."

-NICK DONALDSON, 4TH YEAR MANAGEMENT STUDENT

"I really enjoy the personal connection with alumni, and the sharing of our experiences and love for Georgia Tech."

-ZURI HUDSON, 3RD YEAR BIOLOGY STUDENT

Zuri & Nick are outstanding students at Georgia Tech, and both are very involved with many programs on campus. They are also both student callers for Roll Call’s phonathon program, and enjoy reaching out to alumni and sharing their experiences. They know first-hand how much of an impact Roll Call donations make at Georgia Tech, and are extremely thankful to the thousands of donors who help make Roll Call a success.

So next time you get a call from one of our student callers, pick up the phone, share your Tech story, and pledge your support to Roll Call.

We’re looking forward to talking to you!

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