2020 was a year unlike any other, and now that it has ended, I cannot help but look back and be amazed and grateful for how well it was handled by the Woodruff School community. Like everyone, we had to adapt our operations on the fly; address a number of evolving challenges, stay true to our goal of educating our incredible students, and use our talents to help society in the face of uncertainty. I can assure you that our students, faculty, staff, alumni, and partners rose to the occasion.

In the early days of the coronavirus pandemic our community came together to quickly design and fabricate protective equipment for first responders to fill the gap while the manufacturing supply chain ramped up to meet global shortages. Our students, faculty, and staff along with local doctors and corporate partners got to work designing face shields, intubation boxes, assistive-breathing vests, and low-cost ventilators to meet the needs of the medical community. Faculty and staff quickly pivoted to take classes online when necessary and make sure our students continued to receive a quality educational experience, and our advising team, which won a national advising award this year, guided our students through one of the most trying times of their academic careers.

Amid the changes and uncertainty, we were still able to accomplish many great things that we have come to expect from the Woodruff School of Mechanical Engineering. Before the pandemic began, we officially dedicated the Wepfer Design Commons, a design, learn, and build space that has become the central hub that brings together the Montgomery Machining Mall, Flowers Invention Studio, electronics shop, IDEAS Lab, and wood shop within our school. The Wepfer Design Commons has become a key communal space where students can collaborate, study, socialize, and invent together.

The Capstone Design Expo, a key part of our curriculum and a longstanding tradition, continued in a virtual format in the summer and fall, with our students demonstrating how adept they have become at collaborating online. The virtual format platform used was Gatherly which was co-invented by a current ME undergraduate student and is now being used nationally. This platform gave alumni and judges from across the country the chance to participate, allowing us to engage with people who may not have been able to attend in person.

In another example of student adaptability and ingenuity, Wreck Racing took home first place at the Grassroots Motorsports $2000 Challenge this fall, despite having minimal time to prepare their vehicle. Thinking quickly, they were able to use materials salvaged from the demolition of the student center to make several of the components that boosted the performance of the vehicle.

With the academic world adjusting to remote work we were still able to set records for school research funding, and our faculty found ways to connect in meaningful ways with colleagues across the nation. Our faculty are making exciting and innovative contributions to a broad range of fields including bioengineering, materials, thermal and energy sciences, design, and advanced manufacturing. I’m particularly proud of the role the Woodruff School played in founding two national webinar series—the Frontiers in Mechanical Engineering and Sciences Webinar and the Future Leaders of Mechanical and Aerospace Engineering Webinar. These webinars have proven to be incredibly valuable career development opportunities for our young faculty and will continue to pay dividends for years to come.

Through all of the challenges of the last year, the Woodruff School has stood tall. I am proud of the way we came together under challenging circumstances to continue our mission to develop the students and technologies that will change our future. Please take the time to look through this report to learn more about a year we will never forget. Thank you to everyone who helped make this year a success, and I look forward to seeing what we can accomplish in 2021.

Best Regards,
Samuel Graham, Jr.
Eugene C. Gwaltney, Jr. School Chair and Professor

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**About the Woodruff School**

The first degree offered at the Georgia Institute of Technology was the Bachelor of Science in Mechanical Engineering. Today, the George W. Woodruff School of Mechanical Engineering offers:

- **2** bachelor of science programs
- **7** master of science programs
- **6** doctor of philosophy programs

**ENROLLMENT, FALL 2020**

- **1,802** undergraduate students
- **856** graduate students

- **429** women
- **180** international
- **174** distance learning
- **173** women
- **237** international

**DEGREES AWARDED, 2019-2020**

- **591** B.S. Degrees
- **245** M.S. Degrees
- **62** Ph.D. Degrees

**RANKINGS, U.S. NEWS & WORLD REPORT**

- **No.2**
  - national ranking of ME undergraduate program, released Fall 2020
- **No.5**
  - national ranking of ME graduate program, released Spring 2020
- **No.9**
  - national ranking of NRE graduate program, released Spring 2020

**FACULTY**

- **97** full-time, tenure-track faculty
- **12** non-tenure track faculty
- **35** adjunct appointments
- **72** research faculty

- >25% senior faculty with endowed or distinguished chairs
- 1 faculty member with new NSF Early CAREER Award
- 6 NAE members including adjunct or emeritus appointments
- 72 staff members

**FINANCES**

- **FY20 Expenditures**
  - **$44.6M**
    - FY20 new sponsored research awards
  - **$39.5M**
    - FY20 expenditures

- **$39.5M**
  - FY20 research expenditures
  - **$3,719,407**
    - Sponsored Research
  - **$38,862,382**
    - State
  - **$29,772,634**
    - Basic

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Awards & Promotions

FACULTY

Alexander Alexeev – promoted to Full Professor
Costas Arvanitis – NIH MERIT Award
Naznin Bassiri-Gharb – named Harris Saunders Jr. Chair
Bert Bras – ASME Kos Ishii-Toshiba Award
Hailing Chen – promoted to Associate Professor
Baratunde Cola – named Faculty Athletics Representative
Kenneth Cunefare – named GT Diversity and Inclusion Fellow
Brandon Dixon – promoted to Full Professor
Anna Erickson – elected to ANS Board of Directors; Mary Jane Oestmann Professional Women’s Achievement Award; selected for Georgia Tech Emerging Leaders Program
Alper Erturk – elected to Fellow of SPIE
Katherine Fu – Class of 1934 Outstanding Service Award
Caroline Genzale – NASA Innovative Advanced Concepts Award
Martina Hatzell – ONR Young Investigator Award; Sloan Research Fellowship; CTL/BP Junior Faculty Teaching Excellence Award; 2020 Grainger Foundation Frontiers of Engineering Grant
Yuhang Hu – EML Young Investigator Award
Kyriaki Kalaitzidou – named Associate Chair for Faculty Development; GT Diversity and Inclusion Fellow
Dan Kotlyar – CTL/BP Junior Faculty Teaching Excellence Award
Tom Kurfess – elected to National Academy of Engineering
Timothy Lieuwen – named Fellow of American Physical Society
Matthew McDowell – Young Faculty Award; Georgia Tech Alumni Association 40 Under 40
Julien Meaud – promoted to Associate Professor
Kristi Meahfey – promoted to Senior Academic Professional; NACADA Outstanding Advising Program Award
Raghurama Pucha – Scholarship of Teaching and Learning Award
Farzad Rahmam – named Editor of Nuclear Science and Engineering
Devesh Ranjan – promoted to Full Professor; named GT Diversity and Inclusion Fellow
Suresh Sitaraman – named Regents’ Professor
Richard Simmons – Georgia Tech Class of 1934 CIOs Award
Sharon Sonnenblum – Principal Research Scientist
Jun Ueda – promoted to Full Professor
Yan Wang – promoted to Full Professor
Wayne Whitman – Zeigler Outstanding Educator Award
Levi Wood – NSF Career Award
Shuman Xia – ASME Eshelby Mechanics Award
W. Hong Yeo – Sensors Young Investigator Award

STAFF

Ashley Clay Andrews – promoted to Mechanical Engineer II
Lenna Applebee – Process Improvement Excellence Award; NACADA Award
Louis E. Boulanger – promoted to Instrument Maker III
Daphne Brown – promoted to Faculty Support Coordinator
Craig Burns – promoted to Administrative Assistant II
Shinao Cho – promoted to HR Consultant
Scott Elliott – College of Engineering Culture Champion
Melody Foster – promoted to Unit Administrative Officer
Michelle Graham – promoted to Faculty Support Coordinator
Mifly Grayson – promoted to Financial Admin Lead
Shana D. Hefferon – promoted to Program & Operations Manager
Mary Helen Hayes – promoted to Financial Manager II
Amy Huttenhoff – Process Improvement Excellence Award; NACADA Award
Shiraz Karra – named GT Diversity and Inclusion Fellow
Kristi Meahfey – NACADA Award
Hillary Sutherland – Process Improvement Excellence Award; NACADA Award
Lauren Swindell – promoted to Financial Manager II
Laura Toller – Process Improvement Excellence Award; Outstanding Undergraduate Academic Advising Award; NACADA Award
Biye (Amy) Wang – promoted to Electrical Engineer II

ALUMNI

Robert “Bobby” Henebry (B.S. ’03) – Georgia Tech Alumni Association 40 Under 40
Christopher Hermann (B.S. ’06, M.S. ’11, Ph.D. BioE ’12) – Georgia Tech Alumni Association 40 Under 40
Kemper Lewis (M.S. ’94, Ph.D. ’96) – appointed Dean of the College of Engineering, University at Buffalo

STUDENTS

Arielle Berman – NSF Graduate Research Fellowship
Jasmine Chrisp – bp Scholar
Gian C. Rivera Crespo – First Generation Fellow
Andrew Galassi – Astronaut Scholarship
Andrew Hintzman – bp Scholar
Kyle Jian – NSF Graduate Research Fellowship
Coral Kazaroff – 2020 Innovations in Nuclear Technology R&D Award
Brian J. Kelly – First Generation Fellow
Zoe Klesmith – NSF Graduate Research Fellowship
Emily Kliewer – NSF Graduate Research Fellowship
Jairo Y. Maldonado-Contreras – First Generation Fellow, Ford Foundation Fellowship
Dean Molinar – NSF Graduate Research Fellowship
Ben Musci – LNL HEDP Fellowship
Olivia Plumb – Brooke Owens Fellowship
Juan Rubio – NSF Graduate Research Fellowship
Kinja Ruecker – Brooke Owens Fellowship
Megha Tippur – NSF Graduate Research Fellowship

New Faculty & Staff

Ankur Singh
Associate Professor
began July 2020

Vanessa Smet
Assistant Professor
began Apr. 2020

Aaron Stebner
Associate Professor
began July 2020

Courtney Adams
Mail Clerk

Lula Baker
Asst. Dir. - Admin. Ops.

Daniel Duff
ITSP II

Diamond Giles
Admin Professional III

Dale Loyd
ITSP II

Benjamin Morris
Financial Admin I

Sharmistha Mukhopadhyay
RSEL Mgr

Tammy Putsal
Financial Mgr I

Aubreyana Rogers
Faculty Support Coord

Max Stocksiger
Research Engineer II

Courtney Sykes
Dev Assistant Sr

Belay Tekeste
Grants Administrator

Tory Thurman
Financial Admin II

Deosha T. West
Faculty Support Coord
Treatment of medulloblastoma, the most common malignant childhood brain tumor, includes surgery, whole brain and spine radiation, and chemotherapy, which leads to serious side effects, including profound neurocognitive deficits. In particular, the sonic hedgehog subtype of medulloblastoma, which represents approximately 30% of medulloblastoma, is associated with treatment failure and poor outcome in older children and those with metastatic disease.

Associate Professor YongTae (Tony) Kim has developed a biomimetic nanoparticle technology for advanced targeted drug delivery to medulloblastoma cells as a promising alternative strategy to treat the pediatric tumor with minimal adverse side effects.

Flickering Light Mobilizes Brain Chemistry That May Fight Alzheimer’s

For over a century, Alzheimer’s disease has confounded all attempts to treat it. But in recent years, perplexing experiments using flickering light have shown promise.

Now, Assistant Professor Levi Wood, along with Kristie Garza and Annabelle Singer, has tapped into how the flicker may work. The team of researchers discovered in the lab that the exposure to light pulsing at 40 hertz – 40 beats per second – causes brains to release a surge of signaling chemicals that may help fight the disease.

Though conducted on healthy mice, the study is directly connected to human trials, in which Alzheimer’s patients are exposed to 40 Hz light and sound. Insights gained in mice at the Georgia Institute of Technology are informing the human trials in collaboration with Emory University.

One of the surging signaling molecules in the new study on mice is strongly associated with the activation of brain immune cells called microglia, which purge an Alzheimer’s hallmark – amyloid beta plaque, junk protein that accumulates between brain cells.
Nestled in the constellation Taurus, a spectacle of swirling cosmic gases measuring half a dozen light-years across glows in shades of emerald and auburn. The Crab Nebula was born of a supernova, the explosion of a giant star, and now, a lab machine the size of a double door built in Professor Devesh Ranjan’s lab replicates how the immense blast paints these astronomical swirls into existence.

A concise detonation in the machine’s tip thrusts a blast wave toward the top, and in the middle of the machine, the wave passes through two layers of gas, making them mix turbulently into swirls like those left by supernovas. Laser light illuminates the swirls, and through a window, a high-speed camera with a close-up lens captures the beauty, along with data on a centimeter scale that can be extrapolated to astronomical scales using well-established physics math.

Pancreatic islet transplants, which revive insulin production to treat type 1 diabetes, only last an average of three years. By learning from a groundbreaking cancer treatment strategy based on a recent Nobel Prize-winning discovery, the labs of Professor Andrés García at Georgia Tech and Professor Haval Shirwan at the University of Missouri have developed a new microgel drug delivery method that could extend the effectiveness of pancreatic islet transplantations — from several years to possibly the entire lifespan of a recipient.

Working across multidisciplinary teams using an animal model, researchers have developed a new biomaterial microgel that could deliver safer, smaller, and more cost-effective dosages of an immune-suppressing protein that could lead to better long-term acceptance of islet transplantations within the body.

By varying the energy and dose of tightly focused electron beams, researchers in lab of Professor Andrei Fedorov have demonstrated the ability to both etch away and deposit high-resolution nanoscale patterns on two-dimensional layers of graphene oxide. The 3D additive/subtractive “sculpting” can be done without changing the chemistry of the electron beam deposition chamber, providing the foundation for building a new generation of nanoscale structures.

Based on focused electron beam-induced processing (FEBID) techniques, the work could allow production of 2D/3D complex nanostructures and functional nanodevices useful in quantum communications, sensing, and other applications. For oxygen-containing materials such as graphene oxide, etching can be done without introducing outside materials, using oxygen from the substrate.
Developed in the lab of Eugene C. Gwaltney Jr. School Chair and Professor Samuel Graham, a room-temperature bonding technique for integrating wide bandgap materials such as gallium nitride (GaN) with thermally conducting materials such as diamond could boost the cooling effect on GaN devices and facilitate better performance through higher power levels, longer device lifetime, improved reliability, and reduced manufacturing costs. The technique could have applications for wireless transmitters, radars, satellite equipment, and other high-power and high-frequency electronic devices.

An unexpected property of nanometer-scale antimony crystals — the spontaneous formation of hollow structures — could help give the next generation of lithium ion batteries higher energy density without reducing battery lifetime. The reversibly hollowing structures could allow lithium ion batteries to hold more energy and therefore provide more power between charges.

A research team including Assistant Professor Matthew McDowell has discovered that particles a thousand times smaller than the width of a human hair spontaneously form hollow structures during the charge-discharge cycle without changing size, allowing more ion flow without damaging the anodes.

Associate Professor Susan Thomas and Chair of the School of Chemistry and Biochemistry M.G. Finn have combined nanoparticles (developed in the Thomas lab) which are rapidly conveyed to draining lymph nodes after administration in peripheral tissues, with programmable degradable linkers (developed in the Finn lab), to overcome lymphatic and intra-lymph node transport barriers.

Essentially, the Thomas-Finn team has developed a way to deliver small, therapeutic molecules in a programmable manner, with the precision of a laser beam, ultimately improving immunotherapeutic effects.

Spontaneous Formation of Nanoscale Hollow Structures Could Boost Battery Storage

Georgia Tech Team Targets Drug Delivery to Lymph Nodes

Room-Temperature Bonded Interface Improves Cooling of Gallium Nitride Devices
Patients recovering from spinal cord injuries or who have mobility disorders related to spinal nerve compression are frequently treated by the conditioning of the Hoffmann's reflex via non-surgical electrostimulation therapy. To track the progress of the treatment, electromyography (EMG) is used to record the amplitude of the patient's muscle twitch response.

Accurate EMG recording requires precise positioning of electrodes; thus, the existing systems have to use too many electrodes to cover the target skin. In addition, the current systems are relying on rigid and bulky metal electrodes, strong adhesives, and skin-irritable conductive gels. These system constraints increase error instances across sessions in experimentation, as well as requiring lengthy set-up times.

To address these issues, The Bio-Interfaced Translational Nanoengineering Group, under the direction of Assistant Professor W. Hong Yeo, have created a nanomembrane electrode EMG array for use on large epidermal areas that has the potential to reduce greatly these problems in critical therapeutics for rehabilitation.

The Georgia Institute of Technology will be one of four schools participating in the Nuclear Energy eXperimental Testing Research Alliance- NEXTRA-which is being led by Abilene Christian University and Natura Resources LLC. The consortium's goal is to "design, license and commission the first university-based molten salt research reactor, which ACU will host and own."

Georgia Tech's involvement will include Nuclear and Radiological Engineering and Medical Physics Program Chair and Professor Steven Biegalski, program chair for nuclear and radiological engineering and medical physics, Professor Bojan Petrovic, nuclear and radiological engineering, and Professor Preet Singh from the School of Materials Science and Engineering.

Machine-learning techniques are applied more and more frequently to the analysis of complex behaviors in materials research. While significant advancements have been made over the last decade, the continuous progress in such techniques has often resulted in an increase in complexity without an increase in efficiency or interpretability.

In a paper published in Advanced Materials titled “Better, Faster, and Less Biased Machine Learning: Electromechanical Switching in Ferroelectric Thin Films,” Professor Nazanin Bassiri-Gharb discusses simple clustering and dimensional reduction analysis methods as a way to overcome some of these challenges.
Professor Levent Degertekin and his colleagues have received a $1.65 million grant from the National Institutes of Health (NIH) to develop novel sensors to reduce the risk of RF-induced heating during MRI scans. The need for the technology is growing as implanted medical devices become more common.

Novel Sensors Could Make MRI Scans Safer

Professor Ting Zhu has developed a new process that could help guide such efforts. Their approach involves building an atomic resolution chemical map to help gain new insights into individual high-entropy alloys and help characterize their properties.

Atomic-Level Imaging Could Offer Roadmap to Metals with New Properties

High-entropy alloys, which are made from nearly equal parts of several primary metals, could hold great potential for creating materials with superior mechanical properties. But with a practically unlimited number of possible combinations, one challenge for metallurgists is figuring out where to focus their research efforts in a vast, unexplored world of metallic mixtures.

A team of researchers led by Professor Ting Zhu has developed a new process that could help guide such efforts. Their approach involves building an atomic resolution chemical map to help gain new insights into individual high-entropy alloys and help characterize their properties.

Tiny Magnetic Particles Enable New Material to Bend, Twist, and Grab

A team of researchers from the Georgia Institute of Technology and The Ohio State University, led by Professor Jerry Qi, has developed a soft polymer material, called magnetic shape memory polymer, that uses magnetic fields to transform into a variety of shapes. The material could enable a range of new applications from antennas that change frequencies on the fly to gripper arms for delicate or heavy objects.

The material is a mixture of three different ingredients, all with unique characteristics: two types of magnetic particles, one for inductive heat and one with strong magnetic attraction, and shape-memory polymers to help lock various shape changes into place.
Across the world, people young and old, close to home and far away, go to bed hungry. Moderate or severe food insecurity affects more than 25 percent of the global population, or about 2 billion people. In order to help alleviate this food scarcity, the world demand for fertilizers is consistently on the rise, having increased nearly every year for the last two decades. Estimates show that foods produced from nitrogen fertilizer support about half of the world’s population.

Some of the concerns surrounding this reliance are that nitrogen fertilizer is challenging to make and has a negative impact on the environment. The base of most nitrogen fertilizers is ammonia, which can only be made at about 100 locations around the world. This current system requires a huge infrastructure for both manufacturing and shipping, and it can be highly dangerous as well — the explosion at a warehouse in Beirut in August 2020 involved the storage of ammonium nitrate.

Enter Assistant Professor Marta Hatzell whose current research looks at how to make nitrogen-based fertilizer easier and safer, as well as how to make its use more sustainable and environmentally friendly.

Enter Assistant Professor Marta Hatzell whose current research looks at how to make nitrogen-based fertilizer easier and safer, as well as how to make its use more sustainable and environmentally friendly.

A machine learning framework developed by graduate student Matthew C. Barry under the direction of Associate Professor Satish Kumar and Professor Surya R. Kalidindi at Georgia Tech, and Research Scientist Kristopher E. Wise at NASA LaRC, offers opportunities to greatly improve the success, efficiency, and cost of identifying new materials and chemicals.

The Voxelized Atomic Structure (VAST) deep learning framework for ML-based interatomic potentials enables the study of complex physics which cannot be accurately modeled with empirical potentials and would be computationally infeasible to model using first-principles methods.

Researchers at the Georgia Institute of Technology, led by Assistant Professor Michael Varenberg, have developed, in a new study, a method of making gecko-inspired adhesive materials that is much more cost-effective than current methods. It could enable mass production and the spread of the versatile gripping strips to manufacturing and homes.
Andrew Schulz Takes an Inclusive Approach to His Innovative Research on Elephant Biomechanics

Ph.D. student Andrew Schulz has been dedicated to unpacking the elephant trunk. He has scrutinized the biomechanics of the pachyderm’s muscular marvel and translated his discoveries into not only robotic applications but also conservation measures to safeguard African elephants in the wild. Through his research in Professor David Hu’s Laboratory for Biolocomotion, collaborations with Zoo Atlanta, outreach with an elephant sanctuary in South Africa and creation of the GaTech4Wildlife course, Schulz is a role model for research that’s equally innovative and conscientious.

Planetary Exploration Rover Avoids SandTraps with “Rear Rotator Pedaling”

A “Mini Rover” designed and built at Georgia Tech uses a unique locomotion technique that could help future rovers get through problematic fine granular materials common on the Moon and Mars. Woodruff school undergraduate Siddharth Shrivastava was co-author of the research paper detailing the work, which earned the cover story of Science Robotics.

Wreck Racing Wins Grassroots Motorsports Magazine $2000 Challenge

Wreck Racing, the Georgia Tech Student Competition Center’s production car-based automotive engineering team, won the 2020 Grassroots Motorsports Magazine $2000 Challenge. The team, comprised of 45 student members from 12 different majors, ended up using materials salvaged from the Student Center demolition to help keep the car under the strict $2000 budget.

Georgia Tech Students Win ASME Hackathon

Georgia Tech graduate students consisting of mechanical engineering Ph.D. students Su Yu and Changxuan Zhao and computer science and engineering master’s student Muyang Guo won the ASME-CIE Hackathon by building a machine-learning tool for predicting industrial equipment wear and tear in 24 hours. All three team members started their academic careers at Georgia Tech as mechanical engineering undergraduates.
Mechanical engineering students Tyler Boone and Jayce Delker (team Aerodyne) won second place and mechanical engineering student Sims Pettway (team Canary) won the People's Choice Award in the 2020 InVenture Prize competition.

Aerodyne received $10,000 for their self-deploying attachment for tractor-trailers that cuts drag and boosts fuel economy by 5%. Canary, chosen by the live audience and viewers at home as the winner of the People's Choice Award, received $5,000. They created a review site for internships and co-op placements.

Student Profile: Quinnell Smith

During her time as a mechanical engineering undergraduate student at Georgia Tech, Quinnell Smith was a part of Pi Tau Sigma Honor Society, involved in the Black Student Recruitment Team and Georgia Tech Society of Black Engineers, and served as an Edge Leader for the Office of Minority Education and Development, OMED, where she mentored about 30 freshmen and transfer minority students every year.

After graduating in the spring, Quinnell went on to be a Business Technology Analyst with Deloitte in Houston.

Georgia Tech's Entrepreneurship Program CREATE-X Reaches Milestone of First Exit

CREATE-X at Georgia Tech announced that Crescendo, an AI-powered interactive music trainer that facilitates focused practice and immediate feedback, has been acquired by Ultimate Guitar, the world's largest guitar community that provides chords and tabs for more than 1.1 million songs to 240 million users. Ultimate Guitar will leverage the artificial intelligence within Crescendo's app to enhance user experience within a suite of apps for aspiring musicians. The app was created by Seth Radman (BS ME '17) and is the first company from the CREATE-X program to be sold.

"As a mechanical engineer from Georgia Tech, I never dreamed I'd be impacting the lives of so many people who love music, and CREATE-X gave me the confidence to pursue my startup idea and, ultimately, the support and resources I needed to get acquired," said Radman.

ME Students Win Second Place, People's Choice Award at InVenture Prize Competition

Mechanical engineering students Tyler Boone and Jayce Delker (team Aerodyme) won second place and mechanical engineering student Sims Pettway (team Canary) won the People's Choice Award in the 2020 InVenture Prize competition.

Aerodyme received $10,000 for their self-deploying attachment for tractor-trailers that cuts drag and boosts fuel economy by 5%. Canary, chosen by the live audience and viewers at home as the winner of the People's Choice Award, received $5,000. They created a review site for internships and co-op placements.
Travis and Troy Nunnally: In Their Own Words

Travis (MS ME ’09) and Troy Nunnally (MS ECE ’09 and PhD ’14) are known as the “Tech Twins” in the Atlanta entrepreneurial community. They are native Atlantans and identical twins who earned engineering master’s degrees from Georgia Tech and went on to build their own company, Brain Rain Solutions – which specializes in combining augmented reality and the Internet of Things technology to help companies design, develop and deploy mobile web applications. In addition to running their company, Travis and Troy have several initiatives to help other minority entrepreneurs get their ideas off the ground.

Dean McLaughlin had a virtual chat with Travis and Troy discussing their company, entrepreneurship culture in minority communities, and their time while studying at Tech.

Company Founded on Innovation Forms Partnership with Leading Compression Garment Manufacturer

A small company built around technology developed by researchers in the Petit Institute for Bioengineering and Bioscience at Georgia Tech is realizing some big dreams with the announcement of a new business partnership.

Georgia Tech alumni Nate Frank (BS ISyE, MBA) and Mike Weiler (BS BME, MS ME, PhD Bioengineering), co-founders of LymphTech, announced their partnership with medi® to launch medi vision, a new compression garment measuring experience that creates a fast and accurate digital scan for patients affected by edema and other conditions requiring medical compression.

Alumna Sophia Velastegui Playing Integral Role in the Development of AI at Microsoft

Businesses across the world are quickly being shaped and redefined by new applications in artificial intelligence (AI). Sophia Velastegui (BS ME) is playing an integral role in the development of AI across different business units at Microsoft. She is currently serving as the chief technology officer for operation applications at Microsoft. In addition, Velastegui has received numerous awards and accolades for her contributions to the technology industry, including being recognized by Business Insider as one of the ‘Most Powerful Female Engineers in the World’ for her work in advanced technology at Google and then again for her work in AI at Microsoft.
Covid-19 Response

Over the course of the coronavirus pandemic, the Woodruff School community has stepped up and leveraged its expertise to address a variety of needs. Our students, staff, and faculty worked with the medical community and industry partners to design and manufacture face shields and respirators to fill the gaps during shortages while posting designs online to make them available for anyone to use. They also designed and fabricated intubation boxes that hospitals are using to keep healthcare workers safe from aerosolized coronavirus.

We are incredibly proud of how our community has come together under pressure to help in the fight against Covid-19. Here are some of those stories.

1.8 Million Face Shields Delivered to Protect Medical Workers from Covid-19

Early in the pandemic, a dedicated group of faculty, staff and students in the Woodruff School began producing simple yet effective face shields to fill the gap during the PPE shortage. What started as a project in the Flowers Invention Studio grew to a large manufacturing endeavor through Georgia Tech's Global Center for Medical Innovation as the Georgia Tech design was used to produce more than 1.8 million face shields for the medical community.

Inspired by Parents, Georgia Tech Student Helps Build Lifesaving Equipment to Battle Covid-19

Doctoral student Kentez Craig’s parents, Kenneth and Jackie Craig, met working together at Grady Hospital, and both have served as first responders across the metro Atlanta area.

That experience as the son of first responder played a role in Craig getting involved in the development of face shields, ventilators, and intubation boxes that have been used by healthcare workers during the pandemic.

“It really feels like I’m helping my parents and my parents’ friends,” he explained, “and all the mothers and fathers out there that are in the line of fire and then having to return home to their families and children.”

Emory and Georgia Tech Create Protection Devices for Use During Covid-19

Some of the riskiest moments for medical staff on the front lines of the Covid-19 pandemic come when they are inserting and removing breathing tubes, procedures that create a spray of respiratory droplets. Georgia Tech and Emory University teamed up to create barrier protection devices designed to contain that droplet spray and aerosol with a goal of reducing the risk of disease transmission.

Made of clear polycarbonate material, the four-sided box is placed on a bed over the patient’s head and shoulders. Protected hand openings allow physicians or other health care personnel to reach into the box to perform procedures such as intubating a patient who needs to be placed on a ventilator.
On Friday, January 17, 2020, alumni, donors, faculty, staff, and students gathered outside of the Flowers Invention Studio to honor Dr. Bill Wepfer for his years of service and celebrate the completion of the Wepfer Design Commons. Construction of the Wepfer Design Commons, which includes the Montgomery Machining Mall, Flowers Invention Studio, IDEA Lab, and Electronics Lab, began during Dr. Wepfer’s tenure as Chair of the George W. Woodruff School of Mechanical Engineering and was completed in 2019.

Dr. Amit Jariwala, who oversees the space, opened the celebration and was followed by Dr. Samuel Graham, Eugene C. Gwaltney Jr. School Chair, who thanked donors for their support of the school’s commitment to providing students with unparalleled resources to design, test, and build almost anything they can conceive of. Mr. Keith Chambless spoke on behalf of the School’s external advisory board and alumni, followed by Dr. Wepfer who expressed his appreciation for the celebration and the contributions of those who made the Design Commons possible. Prior to the unveiling of a commemorative plaque Dr. Wepfer was presented with a unique Buzz statue made in the Flowers Invention Studio. Attendees were also given coaster keepsakes which were also made in the Design Commons. The event concluded with a reception and tours of the facilities.
Acknowledgements

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