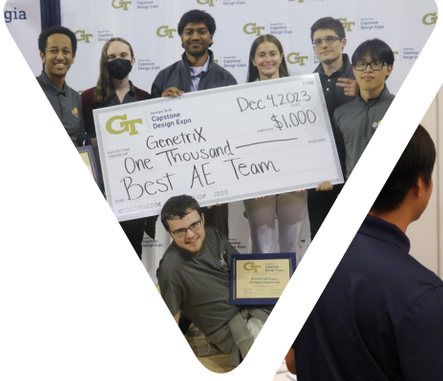

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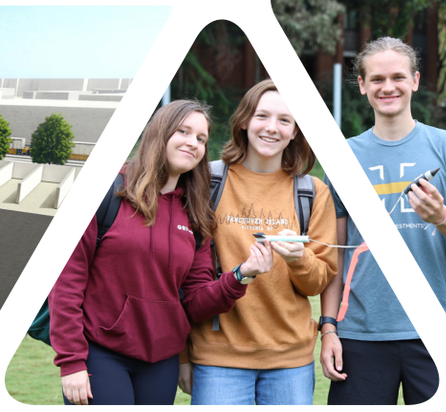

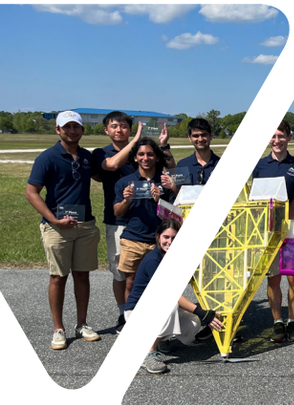

2023-24
ANNUAL
REPORT

Georgia Tech College of Engineering

Daniel Guggenheim School of Aerospace Engineering

Georgia Tech College of Engineering

Daniel Guggenheim School of Aerospace Engineering

Dear Students, Faculty, and Staff,

In January 2024, I started my journey as the Daniel Guggenheim School of Aerospace Engineering chair. I was honored to take this position after spending 19 years in the School, working with some of the best faculty and staff in the nation.

Our academic program is world-class and revered by industry partners and peer institutions alike. Through the remarkable efforts of our exceptional faculty, hard-working staff, engaged AE advisory council, a vast network of alumni, and ambitious students, our undergraduate program maintained its #2 position in September 2023, and our graduate program advanced to #2 in June 2024, as per the U.S. News and World Report.

Success comes from our collective effort and the strengths each of us brings. In my first three months, I met with every faculty member and with staff leadership to gain insight into every aspect of the School and hear their ideas on how to build the best future for our students. I've also actively pursued reconnection with the AE alumni base. Thanks to **Tim Lieuwen**, who served as the interim chair, and **Mark Costello**, who served as the chair for five years prior, I inherited a well-oiled machine.

We can't rest on our laurels; our School is growing academically and in numbers. We serve over 2,000 students in our graduate and undergraduate programs, the highest enrollment we've ever had, and 80% of our students are involved in undergraduate research before graduation. In 2024, we did $50 million in research. We remain steadfast in our core mission: to invest in student experiences and initiatives, create impact in our academic research, and stimulate entrepreneurial activity in our school.

Accordingly, we will continue to expand to align with new and established research. As I stated in my address to the School, our goal is 50 tenured/tenure-track faculty members. Currently, we stand at 45, and we are actively recruiting. This year, we welcomed professors **Hirabayashi Masatoshi**, **Bolei Deng**, and **Lu Gan**. Investing in our faculty is an investment in the student experience at Georgia Tech.

As you will read in this report, our students continue to earn awards, scholarships, competitions, and grants, in addition to internships (69% of our undergraduate students participate in internships before graduation) and impressive job offers. Our faculty are conducting impactful research, collaborating across the country and the world, winning prestigious awards, and shaping the minds of future aerospace engineers.

Preparing for tomorrow requires expanding our footprint. Our current endeavor includes building a 10,000-square-foot hangar in the North Avenue Research Area to enhance research and educational activities in advanced aviation technologies, including electric, hybrid, and autonomous flight systems. The facility is slated to be completed in the fall of 2025.

AE has a long history of inspiring brilliant young people in the classroom, labs, and through our varied research opportunities. To continue this legacy of success, we are preparing for the future demands of our students and the marketplace with the unwavering support of our alumni, friends, and partners.

Mitchell L.R. Walker II
William R. T. Oakes Chair
Daniel Guggenheim School of Aerospace Engineering

Computing Turbulence on the World's Fastest Computer

A quintillion — 1 followed by 18 zeroes — is a huge number, and a special one in computing. It marks the peak arithmetic operations per second that an exascale computer can perform. Just one such computer exists, and Professor **P.K. Yeung** in the Daniel Guggenheim School of Aerospace Engineering is getting access to it for his research.

The U.S. Department of Energy (DOE) has awarded coveted time on the supercomputer called Frontier. Yeung and other scientists will pursue computationally intensive research in science and engineering. Yeung has developed state-of-the-art computer codes to perform the world's largest direct numerical simulations (DNS) of unsteady and three-dimensional turbulent fluid flows — calculations governed by the notoriously difficult Navier Stokes equations of fluid dynamics.

"We live in three-dimensional space surrounded by fluids, and fluid dynamic phenomena lie at the core of the operation of airplanes, jet engines, wind power installations, and a wide variety of applications," Yeung explained. "Most of the time, fluid motions are turbulent, with disorderly fluctuations leading to great complexity."

He believes new simulations utilizing the power of Frontier, a one-of-its-kind $600 million computer, will be a game changer because engineers will be able to unlock many secrets that require a tremendous degree of detail never contemplated or deemed feasible before.

Exascale computers are used to model and simulate complex, dynamic systems that would be too expensive, impractical, and impossible to physically demonstrate. DOE expects the unprecedented computing power to help unlock more realistic models of Earth systems and climate, build fusion power plants, and study the universe in new ways.

Prof. P.K. Yeung

Yeung is working with co-investigators **Katepalli Sreenivasan** at New York University (NYU), **Charles Meneveau** at Johns Hopkins University, and **Daniel Livescu** at Los Alamos National Laboratory on the project, one of the 2024 Innovative and Novel Computational Impact on Theory and Experiment (INCITE) Awards.

"Professor Yeung has been among the most prominent leaders in DNS on a spatially periodic solution domain ideal for fundamental investigations almost ever since he started research, and it has been my privilege to collaborate with him over many of those years," said Sreenivasan, University Professor and Eugene Kleiner Chair for Innovation at NYU.

The INCITE award is Yeung's second large allocation of resources on Frontier in 2023 and 2024. The results that he is able to calculate, new datasets on the order of one petabyte (1,000 terabytes) in size from the new simulations, will be available to the public through the Johns Hopkins Turbulence Database project.

"Professor Yeung's simulations are precisely the kind of science that can be uniquely calculated on Frontier," said **Bronson Messer**, director of science at the Oak Ridge Leadership Computing Facility, which operates the supercomputer. "The extreme computational speed and memory required to study and model turbulence — the last great classical physics problem— is exactly why DOE has invested in exascale computing."

Growing Bacteria in Space with Astronauts

Georgia Tech researchers are working with NASA to study bacteria on the International Space Station to help define how scientists and healthcare professionals combat antibiotic-resistant bacteria for long-duration space missions.

In the Planetary eXploration Lab (PXL), researchers are working with astronauts living on the International Space Station as they collect air, water, and surface samples. Using testing methods created on campus, the astronauts and scientists collected and watched microbes grow to learn which bacteria are resistant to specific antibiotics.

The work is part of NASA's Genomic Enumeration of Antibiotic Resistance in Space (GEARS) study, led by **Aaron Burton** and **Sarah Wallace** from NASA Johnson Space Center. Marking SpaceX's 30th Commercial Resupply Services mission for NASA, the GEARS research launched on board a SpaceX Dragon cargo spacecraft from Cape Canaveral, Florida on March 21, 2024.

"Our lab has previously studied bacteria colonies from the International Space Station and found Enterococcus faecalis (EF) was resistant to many antibiotics," said **Christopher E. Carr,** director of the PXL and assistant professor in the School of Aerospace Engineering (AE) and the School of Earth and Atmospheric Sciences (EAS). "This particular bacteria species is a core member of the human gut and has evolved over the past 400 million years, making it a difficult pathogen to treat in humans and on surfaces."

EF is the second leading cause of hospital-acquired infections after Staphylococci. Much like hospital environments, the International Space Station is built in such a way that studying antibiotic-resistant microbes there could provide insight into how these organisms survive, adapt, and evolve in space and on Earth.

The GEARS sample collection, growth, and DNA sequencing supplemented the routine microbial surveillance testing conducted on the International Space Station with an antibiotic-resistant screening step. Astronauts onboard collected samples and observed microbes grown on their pre-treated contact slides, a rectangular-shaped petri dish.

The contact slides contain antibiotic-infused agar, a gel-like fuel source for bacteria, fungi, and other microorganisms. Therefore, anything that grows on the slides will be identified as antibiotic-resistant to that particular antibiotic. Astronauts used pipettes and other tools to carefully extract DNA from a bacterial colony and sequence it using the Oxford Nanopore Technologies MinION, nanopore sequencing device. With DNA sequence data, one can identify the microbe that is present. "If we found a new organism that we've never seen before, we'd be able to detect it, assemble its entire genome, and determine how it might be resistant to different types of antibiotics," said Carr.

Prof. Chris Carr

This new technology will allow humans to travel further - and longer - into space without having to send data back to Earth for processing. "For the purposes of this study and to maximize the science yield, these bacteria will travel back to Earth," said **Jordan McKaig**, PXL researcher and Ph.D. candidate in the EAS. "Then we can study them more extensively to better reveal their genomic features, how they are adapting to the built environment, and understand the risks – if any -- they may pose to astronauts."

Scientists and researchers at NASA Johnson will use this information to figure out what may make astronauts sick in space, how to optimize their health, and make plans for potential counter measures and treatments. This data is critical because astronauts' immune systems often become compromised due to space flight conditions. The GEARS mission will launch up to a total of four times over the next year to study bacteria international Space Station and data thoroughly. The second mission is currently targeting SpaceX-31, which is scheduled to launch in October.

Carr and the PXL team are preparing for their next study, EnteroGAIT, which will investigate thousands of mutants simultaneously to see what genes are involved in adapting to the space environment. It is currently in the experiment verification testing phase.

Professor Elizabeth Qian will Serve as Co-PI on DoE Energy Earthshots Project

Professor **Elizabeth Qian** is serving as co-PI on a U.S. Department of Energy (DoE) Energy Earthshots Initiatives (Earthshots) project that will develop computing methods to support design and operation of complex systems for carbon removal and renewable energy generation. The DoE initiative funds experts who are accelerating research and developing technology towards cleaner energy solutions by 2035.

Qian is working with researchers at New York University, Los Alamos National Laboratory, and the National Renewable Energy Laboratory on the new project, named ROME: Reduced modeling with extreme data.

The team's focus is on developing new mathematical and computational methods that learn fast predictive models from data. The learned models can then be used to issue rapid predictions to support design and operation decisions. The ROME team will specifically target two of the DoE's eight Earthshots, the Floating Offshore Wind Shot and the Carbon Negative Shot, but the research has cross-cutting impacts.

"Across all the Earthshots, the ability to rapidly simulate system behavior and performance is critical for both design and maintenance," said Qian, who holds a joint appointment in the Schools of Aerospace Engineering and Computational Science and Engineering.

Today, most methods for learning simplified models from data use a process called batch training; meaning all the data are gathered in one place and can be revisited as many times as necessary. Additionally, current methods assume that the data reflect all possible scenarios of interest.

But in many areas of science and engineering, especially in projects involving complex physics and uncertain environments – like Earthshots - things work differently.

Floating Offshore Wind Shot

About two-thirds of U.S. offshore wind energy potential exist over waters too deep for today's fixed-bottom wind turbines to be secured to the sea floor, they instead require floating platforms. The Floating Offshore Wind Shot seeks to drive down the energy costs associated with building and maintaining the platforms by 70% for deep water sites by 2035. According to the DoE's website, these future structures will be among the largest humankind has ever constructed.

"Designing these structures is challenging because their environments are subject to myriad uncertainties," said Qian. "From a design perspective you need to be able not only to predict nominal performance, but also unusual events that can cause damage and/or failure."

Prof. Elizabeth Qian

In these applications, important events and data that are not common in regular simulations are hard to find. This means that the data generated without specifically looking for these rare events may be inadequate for creating simplified models that can predict what happens in those critical situations. The ROME team will develop methods that actively gather data to better predict these rare events.

The Carbon Negative Shot

The Carbon Negative Shot is tasked with taking carbon dioxide (CO_2) from the air and ocean and storing it in large amounts (gigatons) for under $100 per metric ton. To put that into perspective, one gigaton of CO_2 is about one-fifth of the United States' annual CO_2 emissions in 2022. CO_2 removal can help address emissions from the hardest to decarbonize sectors and remove the emissions already warming the planet and affecting human health.

One method includes directly capturing the air, separating CO_2 from the ambient air, and then storing it deep underground in geological reservoirs or in products like concrete.

As an emerging field, different CO_2 removal approaches still require significant research, development, and demonstration to ensure CO_2 removal can be done responsibly, effectively, and affordably to meet the national and global net zero goals in the coming decades.

"Carbon removal systems are also subject to many uncertainties about how they will perform in different conditions and how they evolve over time," Qian explained.

"We will leverage reduced models to speed up parts of the overall computation process to then quantify these uncertainties and maintain accuracy guarantees in these otherwise unpredictable scenarios."

Read more: ae.gatech.edu/news

Taking Flight, With Your Help

The Daniel Guggenheim School of Aerospace Engineering is building a new hangar in the North Avenue Research Area (NARA) slated for completion in 2025. The 10,000-square-foot facility will house specialized laboratories, including an **electric powertrain laboratory**, a **propulsion system test cell**, an **avionics lab**, **composite fabrication areas**, and an area for **integrating prototype aircraft** with wing spans up to 20 feet. A particular focus area for the facility will be electric Vertical Takeoff and Landing (eVTOL) aircraft and other novel types of electric aircraft.

The first venture coming to the facility is the Research Aircraft for eVTOL Enabling technologies (RAVEN) project. Led by Professor **Brian German**, this collaborative effort with NASA will focus on designing, building, and flying an 'open source' eVTOL research aircraft in the half-ton weight class. The integration of the RAVEN aircraft will mark the beginning of its research activities. Two other projects are in the pipeline for the hangar; one centered on solar electric airplanes and the other on advanced air mobility.

This new space offers unique collaboration and partnership opportunities for industry leaders, researchers, and students to advance cutting-edge innovations in electric vertical flight and advanced aeronautics.

Join us: ae.gatech.edu/give

RESEARCH HIGHLIGHTS

A Georgia Tech Algorithm Went to the Moon

Prof. John Christian

Algorithms developed by Georgia Tech researchers landed a spacecraft on the Moon.

These algorithms are part of the Terrain Relative Navigation (TRN) software onboard Intuitive Machines' Nova-C lunar lander, Odysseus, which launched on February 15 and became the first American spacecraft to land on the Moon since Apollo 17 in 1972.

Aerospace engineering professor **John Christian** created the algorithm and helped Intuitive Machines' engineers transition the idea from theory to practice. Based on visual odometry, Odysseus used pictures of the terrain to help it land on the lunar south pole on February 22.

Christian's algorithm is based on over a decade of Optical Navigation (OPNAV) research.

Intuitive Machines' mission (IM-1) launched from NASA's Kennedy Space Center onboard a SpaceX Falcon 9, carrying NASA and commercial payloads as part of the Commercial Lunar Payload Services (CLPS) and Artemis program.

Odysseus began its descent towards the unexplored Malapert A crater, guided by Christian's algorithm.

In the last two years, Christian's algorithms have also played important roles in other lunar missions, including Artemis I and Lunar Flashlight. His research team follows a similar approach in each mission.

"When designing OPNAV algorithms, we consider the environment, vehicle dynamics, cameras, and celestial bodies involved," explained Christian.

Bridging theory and practice is Christian's favorite part of investigating OPNAV at Georgia Tech. While OPNAV seems practical, the algorithms succeed only if the foundational mathematics are correct. "Numerous cases required us to revisit derivations, but our expertise allowed us to solve these problems," Christian said.

OUTREACH HIGHLIGHTS

Celebrating Women in Aerospace Engineering

On a very long-distance call, students from Georgia Tech and an Atlanta elementary school wanted to know how two women floating 220 miles above the Earth's surface got there.

Not in the sense of strapping into a capsule atop a rocket, but rather how their passions and careers led them to be NASA astronauts aboard the International Space Station.

After all, it's not every day you can gather a little bit of career advice from an actual space traveler.

Students pose with astronauts onboard the International Space Station

"Find out what you really enjoy doing and pursue that thing," said **Tracy Dyson**, who arrived for her second stint aboard the space station a few days before the event. "I think about my own upbringing, and my parents never told me or my sister that there was anything we couldn't do or that girls didn't normally do. My parents just let us do the things that we enjoyed doing. So I think what I would say more is to the parents than to the kids: If they show an interest in something, help open the door and pave the way. And let's see what they can do."

Truthfully, the audience also asked about the physical journey to space along with the metaphorical one. They wanted to know about the food and life in orbit. And they asked about the science that's keeping the 10 astronauts currently aboard the space station busy.

The conversation with Dyson and crewmate **Jeannette Epps** was just part of a day-long celebration of women in aerospace hosted by the Women in Engineering (WIE) program and the Daniel Guggenheim School of Aerospace Engineering (AE).

The March 28 event gathered Georgia Tech students and approximately 50 elementary school students from Atlanta's Tuskegee Airmen Global Academy to celebrate and explore the journey of women in AE research, education, and industry.

The day began with a miniature rocket-building activity for the youngest students, who worked alongside Tech students from WIE and the Society of Women Engineers. It ended with a special banquet in honor of Professor **Marilyn Smith**, the first woman to join Georgia Tech's aerospace engineering faculty.

Smith is a three-time AE graduate and has taught AE students since 1997. She has secured more than $200 million in research funding through her work in the Guggenheim School and the Georgia Tech Research Institute.

Smith is director of the Georgia Tech Vertical Lift Research Center of Excellence, a multi-university team program that trains the next generation of aerospace engineers and researchers. A lunchtime panel discussion focused on the journeys of four other women from different corners of the aerospace industry. Leaders from Airbus, Amazon, NASA, and Relativity Space shared their stories and advice about navigating the field as a woman and how to get started.

Prof. Marilyn Smith

"Don't feel like you have to know exactly what you want to do for the rest of your life when you graduate," said **Sabrina Ussery**, a senior systems engineer at Amazon Prime Air who earned her AE master's degree from Georgia Tech in 2010. "Start with what you know. You may discover the things you thought you liked, you really don't really like. Or you may find out that there are things you have no idea about now that you will really love. Give yourself the flexibility to start and then pivot as you learn and grow."

NASA's **Trudy Kortes** shared advice she received when she was a graduate student co-op at NASA. The co-op group met with some of the agency's flight directors, including **Gene Krantz**, legendary mission control director of Mercury, Gemini, and Apollo missions.

"He said, 'If I can relate to you one thing, it's whenever I got assignments here, whether I liked them or not, I did them and did them to the best of my ability. And that was noticed. I didn't always hear it all the time, but hard work is noticed, and it's appreciated,'" recounted Kortes, now director of technology demonstrations at the space agency. "I think it's still the No. 1 thing that will get you far in your career. I'm trying to follow his advice, and it's certainly been true for me."

The afternoon included a flight competition for undergraduates organized by the Yang Aero Maker Space and a session on mentoring to help graduate students map out their current mentor network, find gaps, and create a plan to fill them.

"We wanted students to learn about the many doors that are opened by earning a degree in aerospace engineering," said WIE Director **Joy Harris**. "We hope they walked away thinking, 'With an AE degree from Georgia Tech, I can be a pilot or an astronaut. Or I can have a successful career at Amazon or in academia. With an AE degree, the sky is literally the limit.'"

FACULTY HIGHLIGHTS

• Professor **Mitchell Walker** was named AE School Chair on January 2, 2024.
• Professor **Dimitri Mavris** received Georgia Tech's Class of 1934 Distinguished Professor Award, which recognizes outstanding achievement in teaching, research, and service. It is the highest honor given to a Georgia Tech professor.
• Professor **Elizabeth Qian** was selected as Co-Principal Investigator (PI) on the Department of Energy (DoE), Energy Earthshots Initiatives Project. She is developing computing methods for the design and operation of complex systems for carbon removal and renewable energy generation.
• Professor **Yongxin Chen** developed a faster AI algorithm, connecting the power of machine learning, control, and robotics to develop more efficient and reliable AI systems.
• Professor **Koki Ho** will serve as the director and PI and Professor **Panagiotis Tsiotras** will serve as a Co-PI for a $5 million Space University Research Initiative (SURI) grant to enhance logistic frameworks in space. • Professor **Ho** has also been selected to join a NASA-funded consortium working to reimagine how space missions are planned and designed so that satellites, probes, and other vehicles can be repaired or upgraded in space. • Regents Professor **Tim Lieuwen** gave the National Academy of Engineering keynote on Net Zero Pathways. Lieuwen is also a Co-PI on a $3.25 million project titled "Omnivore Combustion System," led by GTI Energy, an Illinois-based technology company, along with Principal Research Engineers **Vishal Acharya**, and **Benjamin Emerson**.
• Professors **Wenting Sun**, **Sedina Tsikata**, and **Kyriakos Vamvoudakis** were elected into the 2024 Class of Associate Fellows by the AIAA. • Professor **Vigor Yang** was elected to the Indian National Academy of Engineering. Yang was the first foreign member to receive the election in aerospace engineering since 1997.
• Professor **Christos Athanasiou** was appointed a faculty fellow to the Brook Byers Institute for Sustainable Systems (BBISS) for a three-year term. BBISS is the Georgia Tech hub to enhance and use Tech's knowledge to create a sustainable future for everyone through collaborations between researchers across disciplines.
• Funded by the Office of Navel Research, Professor **Karen Feigh** is conducting a three-year study that will bring metro Atlanta emergency medical technicians (EMTs) to campus to interact with automated flying systems during simulated medevac situations.
• Professor **P.K. Yeung** received access to an exascale supercomputer, Frontier. He has developed state-of-the-art computer codes to perform the world's largest direct numerical simulations of unsteady and three-dimensional turbulent fluid flows—calculations governed by the notoriously difficult Navier Stokes equations of fluid dynamics.
• Professor **Álvaro Romero-Calvo** received the Thora Halstead Early Career Award from the American Society for Gravitational and Space Research (ASGSR) for his research on low-gravity fluid mechanics. He also received the NASA Innovative Advanced Concepts (NIAC) award to study New Magnetohydrodynamic Technology.
• Professor **John Christian** developed an algorithm that helped land a spacecraft on the Moon. The algorithm was a part of the Terrain Relative Navigation software onboard Intuitive Machine's Nova-C class lunar lander named Odysseus. • Professor **Glenn Lightsey** was named the John W. Young Endowed Chair for his expertise in space systems technology and his commitment to student development.

Prof. Mitchell Walker

Prof. Koki Ho

Prof. Tim Lieuwen

Prof. Sedina Tsikata

Prof. Karen Feigh

Prof. Álvaro Romero-Calvo

Prof. Glenn Lightsey

NEW FACULTY

Masatoshi Hirabayashi joined the AE School as an associate professor in August 2023. His research bridges planetary science mission technologies and planetary science to harmonize them on exploration missions. His expertise is in space operations, particularly exploring techniques to achieve both engineering and science requirements under mission constraints.

Prof. Masatoshi Hirabayashi

Bolei Deng joined the AE School as an assistant professor in December 2023. His research primarily focuses on employing artificial intelligence for the design and optimization of mechanical metamaterials across various scales. He has a keen interest in understanding and leveraging nonlinear behaviors, including nonlinear dynamics, multistabilities, and fracture. His work spans from developing ultra-strong and tough metamaterials to innovations in robotics, mechanical computing, and physical intelligence.

Prof. Bolei Deng

Lu Gan joined the AE School as an assistant professor in January 2024. She leads the Lu's Navigation and Autonomous Robotics (Lunar) Lab at Georgia Tech, and is on the core faculty of the Institute for Robotics and Intelligent Machines. Her research interests include robot perception, robot learning, and autonomous navigation. Her group explores the use of computer vision, machine learning, estimation, probabilistic inference, kinematics and dynamics to develop autonomous systems in ground, air, and space applications.

Prof. Lu Gan

STUDENT HIGHLIGHTS

• **Jeffrey Pattison** won first place in the Federal Aviation Administration Data Challenge. He received $25,000 for his research on drone safety in urban areas. • **Alexander Chipps**, **Satvik Kumar**, and **Preethi Mysore** received National Science Foundation fellowships for alien-hunting, drone, and flying robot research. • Team Taxi Rendezvous, & Taxi Launcher (TRTL) won first place at AIAA's Undergraduate Team Space Design Competition. Team members included: **George Blackwell**, **Jurist Chan**, **Sparsh Desai**, **James Farmer**, **Reid Fly**, **Aaron Hammond**, **Pessi Laensirinne**, **Eleanor Smith**, and **Lonnie Webb**. • Team Crewed Orbit and Ascent Surface Transport (COAST) took third place in the AIAA Undergraduate Team Space Design Competition. Team members included: **Tabitha D'Amato**, **Rebekah Geil**, **Lachlan Holliday**, **Landon Jarrel**, **Claire Keller**, **Michael Keraga**, **Braden Kerstin**, **Satvik Kumar**, **Jonathan Lin**, and **Kendall Seefried**. • Team Harpy won first place at the Vertical Flight Society's (VFS) 40th Annual Student Design Competition for their combat search and rescue mission. Team members included: **Abinay Brown**, **Walther Chong**, **Maxwell Hoem**, **Gray Simmons**, **Anisha Singh**, and **Andrew Sohn** from Georgia Tech, and **William Henry** from West Point. • Team Soteria placed second in the graduate category for their high-speed vertical take-off and landing vehicle at the Vertical Flight Society's (VFS) 40th Annual Student Design Competition. Team members included: **Kyle Carozza**, **Wei-Han Chen**, **Aaron Crawford**, **Aishwerya Gahlot**, **Gioele Marangoni**, **Melam Masters**, **Brenden Oates**, **Sheldon Salins**, **Pranav Sridhar**, and **Duncan Waanders** from Georgia Tech, and **Joelle Marangoni** from Sapienza University. • **Sonia Thakur**, attended the first-ever U.S. Space Forces-specific field training program for ROTC cadets held at Maxwell Air Force Base in Alabama. • **Ashish Cavale** received the AIAA Wernher von Braun Scholarship of $5,000 and **Ethan Traub** received the AIAA Ellis F. Hitt Digital Avionics Scholarship of $3,000. • **Dalton Luedke** created a model engine that is helping NASA lay a foundation for deep space exploration to the moon and Mars. During his summer internship, he worked with a team exploring new rocket designs that are more powerful but smaller. • **Siddharth "Sid" Suratia** won $100,000 in the Dr Pepper Tuition Giveaway. • Team Robotic Human Enabled Intelligent Aerial Analysis (RHEIA2) won the Aerospace Engineering Fall 2023 Capstone Design project with their unique concept to study Venus. Team members included: **Frank Huynh**, **Ezra Keto**, **Carolina Ramos Ocasio**, **Varun Roy**, **Basil Russell-McCorkle**, **Adil Shirinov**, **Oliver Thornhill**, **Banglue Wei**, and **Andrew Adams**. • **Mallika Misra** was named to the 2024 Aviation Week Network's 20 Twenties class. • **Sam Hart** won the Best Small Satellite Student Paper Award at the 2024 AIAA SciTech Conference for his paper that describes the preliminary hardware test used to characterize the performance of a Cubesat size thermal phase change propellant management device.

Jeffrey Pattison

Team Harpy

Ashish Cavale

Team RHEIA2

• **Connor Johnson** (Firefly Aerospace) and **Sabrina Mayor** (Blue Origin) were named fellows of the 2024 Matthew Isakowitz Fellowship Program class. • **Nina Otebele** (Amazon Prime Air) and **Ellen Wang** (Rocket Lab) were selected for the Brooke Owens Fellowship. • **Ihsaan El-Amin** (Lockheed Martin), **Deshawn Johnson** (Aerospace Corporation), **Papa Quainoo** (Airbus U.S. Space & Defense), and **Chanelle Taylor** (Aurelia Institute) were named to the 2024 Patti Grace Smith Fellowship cohort. • **Matteo Giacani** received the Domenica Rea D'Onofrio Fellowship. • The Aerospace Systems Design Laboratory's (ASDL) Design Build Fly (DBF) team took first place overall in the Micro and Advanced Class at the Society of Automotive Engineers (SAE) Design East Competition. The Advanced Class team included: **Ba Musa Khan**, **Cuong Nguyen**, **Kaci Wadsworth**, **Natalia García**, **Ryan Warner**, **Tilahta Agbere**, **Ira Rosner**, **Albert Lee**, **Malia Trask**, **Phillip Clendenin**, **Nicole Nguyen**, and **Max Kramer**. The Micro Class included: **Conor Thiels**, **Michael Francesconi**, **Cayetana Salinas**, **Deep Patel**, **Salil Sodhi**, **Avery Truax**, **David Shaji**, **Ethan Correa**, **Vedu Ruia**, **Max Kramer**, and **Martin Xiao**. • **Tarun Golla** won the best M.S. Thesis Award from Sigma Xi for his paper on developing a framework that eliminates flutter and related limit-cycle oscillations from a wing's flight envelope using a design optimization process. • Team Orbital Anomaly Recovery System (OARS), sponsored by Intelsat, won the most outstanding aerospace engineering project at Georgia Tech's Spring 2024 Capstone Design Expo for their project intending to direct spinning satellites back into the correct direction. Team members included: **Oscar Haase**, **Elliot Kantor**, **Vishal Rachapudi**, **Samuel Stoknes**, and **Aidan Wilson**. • 16 AE undergraduates were awarded Women in Engineering scholarships. Awardees included: **Suhanna Bamzai** (Boeing), **Madeline Barnes** (Benevity Fund), **Sana Churi** (Street Smarts Endowment), **Isabel De Los Santos Ramirez** (Boeing), **Sarah Dea** (Boeing), **Lauren Forcey** (Street Smarts Endowment), **Olivia Graham** (Street Smarts Endowment), **Morgan Gregg** (Boeing), **Jaffa Heryudono** (Boeing), **Nandini Kotamurthy** (Boeing), **Gracye Lamb** (Garrett Langley Endowment), **Emma Li** (L3Harris), **Gabriella Nichols** (L3Harris), **Rabia Shahid** (Boeing), **Rebecca Wang** (L3Harris), and **Abigail Yohannes** (Benevity Fund). • **Taylor Hampson** and **Jacob A. Knott** received the NASA Space Technology Graduate Research Opportunities (NSTGRO) Fellowship of $84,000 per year. • **Cayetana Salinas** was awarded the AE Outstanding Senior Award and $1,000. • **Fatema Waad Jalal** received the Donald Dutton Outstanding Senior award and $1,000. • RotorJackets, Georgia Tech's drone racing team, took third place at the Collegiate Drone Racing Championship.

Nina Otebele

Matteo Giacani

Team OARS

Sarah Dea, Nandini Kotamurthy, and Morgan Gregg

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