AIAA

CAREERS IN AEROSPACE

A Guide for Navigating Your Education and Career Path

American Institute of Aeronautics and Astronautics
800-639-AIAA

aiaa.org

What Does a Career in Aerospace Look Like?

The future of aerospace is exciting and challenging. In your lifetime, aspiring aerospace professionals are likely to see extensive space exploration, space-based solar power stations, small electric vertical take-off and landing (eVTOL) aircraft to transport passengers and cargo in urban areas, more sustainable and clean energy sources, and the ability to travel to any point on Earth in a matter of hours. As an aerospace professional, you could be a major factor in this development.

Today's aerospace professionals design, develop, test, and supervise the manufacture of aircraft, spacecraft, satellites, missiles, and more. They develop new technologies for use in aviation, defense systems, and space exploration, often specializing in areas such as aerodynamics; structural design; guidance, navigation, and control; thermal dynamics; propulsion; information systems; and production methods—just to name a few. They use computer-aided design software, robotics, lasers, and advanced electronics.

Many people picture an astronaut in a spacesuit when they think of a career in aerospace. But the truth is there are hundreds of jobs in the aerospace field. One of them may be perfect for you.

A career in the aerospace industry does not necessarily require a four-year college degree

The aerospace industry involves a substantial number of workers with a variety of skills to bring a project or mission to completion. Not all occupations in the aerospace industry require a four-year degree. There are many occupations that require skilled training or a two-year degree. Skilled training can be acquired through apprenticeships supported by aerospace companies or from organizations that offer training through various technician schools. Learn more about specific apprenticeship opportunities in the resources section on pages 9–10.

What is AIAA?

The American Institute of Aeronautics and Astronautics is the world's largest technical society dedicated to the global aerospace profession. Our community ignites and celebrates aerospace ingenuity and collaboration, and its importance to our way of life. We are shaping the future of aerospace in the areas of Aeronautics, Aerospace R&D, and Space by:

- Convening events where aerospace professionals exchange information, present findings, collaborate, and network
- Publishing cutting-edge journals, books, and technical conference papers
- Educating through courses on technically relevant topics with expert instructors
- Advocating for aerospace issues at the federal and state levels by delivering extensive technical expertise and policy guidance.

You can find information on the numerous initiatives and programs of AIAA at AIAA.org.

Although AIAA has the word American in the title, the organization is highly international. **There are members from 91 different countries**.

Student Branches

- Student Branches are a base of operations for undergrad and graduate students — a place to meet peers who share your passion and interest in aerospace. Student branches foster opportunities for collaboration with engineering students from other departments and aid in the educational development of their members.
- AIAA currently has more than 240 student branches, including 35+ international student branches, with a total active membership of over 8,000 students worldwide.

For more information and to see if there's a student branch at a school you are interested in attending, scan this QR code or visit **aiaa.org/studentbranches**

Regions & Sections

- There are 57 AIAA Sections throughout the world organized into seven AIAA Regions. Each Section offers programs and activities tailored to local aerospace professionals, students, and educators.

To find your region and section, scan the code or visit **aiaa.org/regions-sections#faqs**

Committees

- AIAA has a variety of volunteer committees that consist of worldwide experts in their fields. There are different types of committees and they accomplish tasks such as: developing, supporting, and administering student design contests, technical programs for forums/events, publications, standards, and awards; cross-disciplinary integration; and outreach efforts.

AIAA High School Members are eligible to join the High School Subcommittee of the STEM K-12 Outreach Committee.

For more information, scan the code or visit **aiaa.org/HS-subcommittee-interest-form**

Also see Stephanie Simerly's Q&A on **page 14** and Jared Long-Fox's Q&A on **page 22**.

Resources for High School Students

AIAA has free membership for high school students. High school members can:

- Apply for scholarships offered for high school seniors ($10,000 each)
- Receive an online subscription to AIAA's magazine, Aerospace America, which informs you about critical aerospace technology and policy issues
- Utilize opportunities for leadership as part of the High School Subcommittee
- Attend exclusive webinars and network with fellow aerospace enthusiasts
- Access discounts on local, regional, and national event registrations
- And more!

SIGN UP!
Scan the QR code or visit aiaa.org/HS-Student-Membership

AIAA also has free membership for K-12 Educators with benefits and resources including awards and $40,000 distributed each year in classroom grants for STEM activities. Scan the QR code or visit **aiaa.org/educator-membership**

The World of Aerospace

The term “aerospace” involves a lot of different fields and topics of expertise. Here are just a few areas that make up the aerospace industry.

Aeronautics

Aeronautics is the science or practice of flight. Innovators are pushing technology to deliver new products and services for the benefit of society. In the next few years, many new capabilities will be introduced, and the next generation will experience flight in ways we are just starting to imagine. Just around the corner is urban flight, integrating ground and air vehicles in new ways. The industry is building on the advances made since the early 20th century taking us further, while being faster, safer, and cleaner.

- **Advanced Air Mobility (AAM)** – AAM is an air transport system concept that integrates new, transformational aircraft designs and flight technologies into existing and modified airspace operations.
- **Carbon Emissions & Sustainability/Clean Energy Sources** – The global community is focused on achieving net-zero greenhouse gas emissions from the aviation sector by 2050. This will only be possible with innovation and dedication from aerospace professionals working in this field. Sustainable aviation includes both design components and improving ways we measure carbon emissions.
- **Hypersonics & Supersonics** – High-speed transportation is fast becoming a reality. Integrating hypersonic and supersonic flight into the national and global airspace will require attention to operational detail, safety through certification, and environmental and societal impacts (such as noise and emissions).

Learn more about Aeronautics by scanning this code or visit aiaa.org/domains/aeronautics

Aerospace Research & Development (R&D)

Aerospace R&D has been a driving force for innovation, pushing major tech advancements that have redefined transportation, led to incredible discoveries, and guided a fourth industrial revolution—digital transformation. Interdisciplinary work fostered by collaboration promises to yield even more breakthroughs in aeronautics and aerospace systems over the next few years.

Across aeronautics and astronautics, we are often information rich, but knowledge poor. We need smart collaboration between people and their machines and tools to harvest the data.

- **Autonomy/Artificial Intelligence/Machine Learning** – Shifting routine (and sometimes more advanced) tasks to machines will allow our workforce to focus on tackling the next generation of technology challenges. But this needs to be done with careful moral, ethical, and legal considerations.
- **Advanced Manufacturing & Materials** – How do we incorporate necessary materials, create lighter systems through new materials and new manufacturing techniques, and accelerate the certification of new materials and processes to be sure they're effective and safe?
- **Cybersecurity** – Reliable cybersecurity is important for all types of technology, but it's particularly essential when it comes to critical infrastructure such as airplanes and satellites. Key areas of need for cybersecurity expertise and solutions include application security, disaster recovery plans, and oversight in the supply chain.

Learn more about Aerospace R&D by scanning this code or visit **aiaa.org/domains/aerospaceRandD**

Space

Space is becoming an essential part of our everyday lives and there are more and more entities getting involved, making space more congested and complex, as well as exciting with brand new possibilities. Today there is a need for bright people to problem solve for a vast array of challenges — ranging from logistics of commerce and economic growth, to exploration out into the solar system and beyond.

- **Space Traffic Management & Coordination** – With the ever-growing presence of objects in space, there are needs for norms, rules, and principles to guide the use of outer space if we are to preserve it for current and future generations.
- **Space Sustainability** – How can we best use space to protect and manage our planet's resources, people, and property and to address the climate crisis?
- **Space Exploration** – How can we sustainably explore our solar system and beyond? What are the roles and responsibilities given the capabilities of the many new companies and countries that have spacefaring expertise and ambitions?

Learn more about Space by scanning this QR code or visit **aiaa.org/domains/space**

After High School

Engineering requires a strong foundation in science and math. While in high school, take as many math and science courses as possible. These subjects provide the foundation for coursework in college and/or working in an engineering or technical field.

Additionally, you can start preparing for after you graduate by:

- Talking with your teachers and counselors for resources.
- Finding engineers and scientists in your community and talk with them about their jobs.
- Using the AIAA webpage, aiaa.org/StudentBranches, to find a list of chartered AIAA student branches at U.S. and international colleges/universities, along with contact information for faculty advisors and student branch chairs who can help answer your questions about programs at specific schools.

Choosing a college with the right program for you

Make sure the colleges you are considering have ABET accredited engineering programs. ABET is the recognized accreditor for college and university programs in applied science, computing, engineering, and technology. It is a federation of professional and technical societies that represent these fields. ABET accreditation determines whether an engineering program meets quality standards for courses, faculty, and facilities. An accredited program will enhance your employment opportunities in the future.

Find information about accredited colleges at abet.org. Ask yourself, “is the school doing things that I am interested in?” Some schools are heavily into research. Others are known for their internships and opportunities in the local community. Some have excellent master’s and doctorate programs. These are all things to consider based on what is best for you.

Paying for College

The AIAA Foundation offers scholarships to graduating high school seniors and college students. In addition, Design Competitions award prizes to individuals and teams of undergraduate and graduate students. Graduate awards provide financial rewards and professional recognition. Student paper competitions are another way to gain financial and recognition benefits.

Visit the AIAA website for current scholarship and award information. Consult the financial aid advisors at your high school or at the colleges you are considering. They can provide information and applications for other sources of financial assistance, such as scholarships, grants, and loans.

Learn more about available scholarships by scanning this code or visiting **aiaa.org/HighSchoolScholarships**

Resources for Alternative Career Journeys

As mentioned earlier, a career in aerospace doesn't necessarily require a 4-year college degree. A skilled training program or apprenticeship can be a great way to get into the field.

What is an Apprenticeship?

An apprenticeship program trains you to become skilled in a particular trade. Apprenticeships combine hands-on work with classroom learning to train the apprentice. As the apprentice is learning, they are also applying the lessons through working.

Learn more about alternative career paths and view a list of apprenticeship opportunities, scan this code or visit **aiaa.org/skills-training-and-apprenticeship-info**

Profiles and Q&A

The best way to learn about different aerospace career options is to hear from those who are currently doing it.

Moriba Jah

COLLEGE

- Embry–Riddle Aeronautical University in Prescott, Arizona (Bachelor's, Aerospace Engineering)
- University of Colorado Boulder (Masters and Ph.D., Aerospace Engineering sciences)

HOMETOWN

Grew up in Caracas, Venezuela. Currently lives in Austin, Texas.

JOB TITLES

- Associate Professor of Aerospace Engineering and Engineering Mechanics at University of Texas at Austin
- Co-Founder and Chief Scientist, Privateer Space
- Co-Founder and President of Moriba Jah Universal

In my role as Chief Scientist of Privateer I look at all the different sciences and technologies that the company could use to reach our goals. It's mostly about getting data and information widespread across humanity.

As far as my role as president of Moriba Jah Universal (MJU), that company is about getting into arts and entertainment. Things like public speaking, TV, film, and media.

Q & A

Q: What advice would you give to a student who is interested in studying space environmentalism or aerospace in general?

A: First, always cultivate curiosity and don't stop trying to understand what is around you. Always try to understand the underlying principles behind why things work and how they work. And then just focus on being a critical thinker.

Q: What are the biggest misconceptions people have about your career and work?

A: Resource constraints. People think I don't need resources and that I have plenty of money but that's not true. I spend a lot of time writing proposals to try to get grants. Actually, sometimes I feel like I'm always fundraising.

Q: What is your favorite thing about your work?

A: Interacting and engaging with people of all walks of life. And getting to see initial results from an idea that you had that seems to be panning out, that's very exciting.

Q: What path did you take to get to the career you have now?

A: After high school in Venezuela, I came back to the United States and I enlisted in the Air Force. I was a security guard in Montana, guarding nukes. I would look up at the night sky and see satellites going above the silo – that's the thing that got me curious to study aerospace engineering.

So, I started studying aerospace engineering at the age of 23, what you might call a "late bloomer" when it came to that. I wasn't a straight-A student by any means. Mostly a B student. But even though my GPA wasn't really that good, the late George Born at University of Colorado gave me a chance to demonstrate what I was made of and what I could do.

I worked six years at NASA's Jet Propulsion Lab and then my family wanted to try living on Maui. I left JPL and got a job working for the Air Force Research Lab there. After four years we relocated to Kirtland Air Force Base in New Mexico, Albuquerque. After six years I left to try this academic thing. I've been at the University of Texas at Austin since 2017. It seems like every four to five years I've pulled some lever to do something different.

Q: How did you first get involved with AIAA?

A: I got involved with AIAA when I was an undergrad student. My first-ever research papers were presented at AIAA conferences. And that's where I met the person who ended up being my advisor, George Born. I'm an astrodynamicist by education, which means I focused on understanding the behavior of things in space and AIAA is definitely a strong community for that. And as a place for expanding and developing new fields. For example, space environmentalism – it's not a field that's global yet, and I think that there are people within AIAA that are interested in space environmentalism.

Q: How would you like to see the aerospace sector change or evolve in the near future?

A: I think embracing other sectors. Space people sometimes tend to be very insular. There is work done on lands, ocean and air, and there are things that we can borrow from each other to help inform sustainable ways of doing stuff in space. And always remember to embrace mainstream humanity.

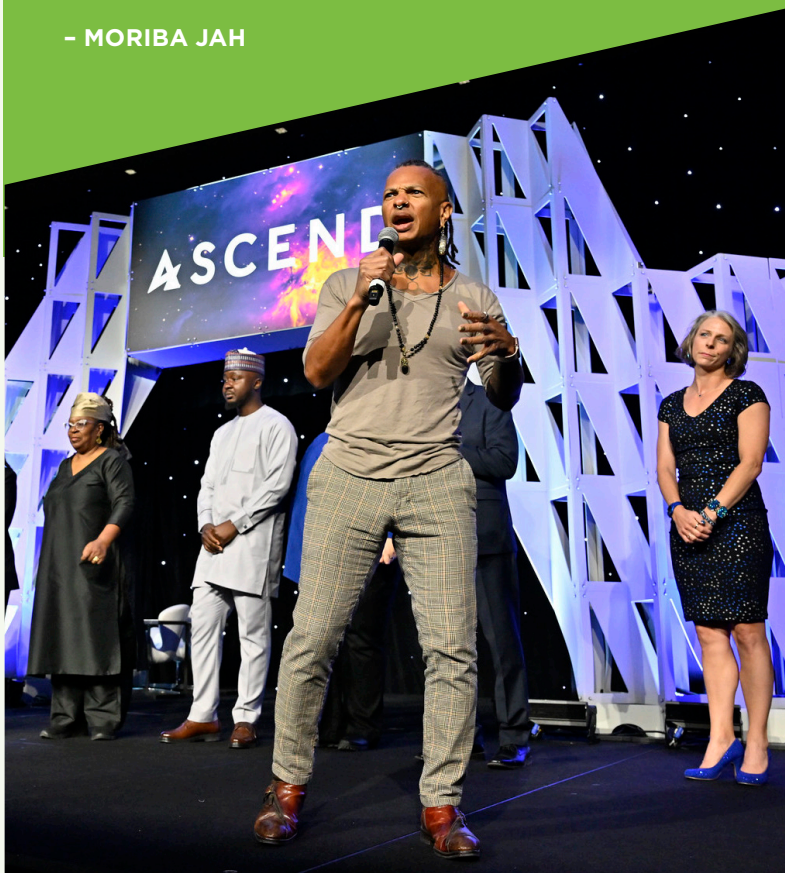
Q: You have a style that doesn't always conform with what some people view as a traditional scientist, engineer, or aerospace professional. For anyone who is struggling with how to exist in the world in a way that's honest for them, while also doing serious work, what advice do you have?

A: I toed the status quo line for a while and then eventually I thought, "You know what? I'm good at what I do. I'm not going to be afraid. Let me see how much of me can I be before somebody tells me to get on my bike and leave. So I started coming out of my own shell, expressing my true self. So far, I haven't been told to leave. I think being able to express yourself for who you are and not being able to make progress/ move up is a false dichotomy. It's probably better to know who you're dealing with up front, plus, then you tend to attract things to you based on the signals that you put out there. It's good to attract opportunities that are aligned with who you are. And I think people just need to express themselves genuinely and authentically. There's no sense in not being who you are.

AIAA has conferences specifically for students.
To learn more, **scan this code** or visit aiaa.org/studentconferences

"I want to approach life with an understanding of interconnectedness amongst all things. I try to see myself as a steward, a custodian and view myself as a caretaker — of not only myself, but all things in my environment — to whatever extent possible."

– MORIBA JAH



Stephanie Simerly

COLLEGE
Purdue University (Aerospace Engineering)

HOMETOWN
Louisville, Tennessee, and Cleveland, Ohio

JOB TITLE
Wind Tunnel Test Engineer at NASA Glenn Research Center

Q & A

Q: Why is wind tunnel testing important?

A: Computer algorithms and simulations have come a long way over the years and that's been great for new technologies and testing new flight theories. But computer simulations aren't perfect. You really need to fly something to really see how it performs.

Researchers and project managers need real-world situations to test and validate that their algorithms are right or correct them to create a better result. Simulation ground testing is the middle ground between computer simulation and flight testing in air, so ultimately they use us to get a more advanced design that will allow them to go build it and fly it in real life.

Q: What advice would you give a student who is interested in studying the same field as you or aerospace in general?

A: The biggest thing is simply don't give up. In college I went to every job fair. I prepared with notecards on every company for years. I knew my stuff, I knew how to study, but my grades weren't always the perfect grades that people were looking for. But I kept working hard. I tried over and over until I got hired at a position at NASA Glenn – they hired me because of my dedication and effort that I had gone through. They valued my tenacity.

Now I love what I do. Some people are very smart, have great critical thinking skills, but are bad at test-taking or might struggle in a specific class. Unfortunately, lots of people give up because they felt discouraged. My advice is keep going. Keep at it.

A second piece of advice I would recommend is: learn to work in a team and learn to value, or at least be open to, other people's opinions.

Q: What is the biggest misconception people have about your job or the work you do?

A: Probably the assumption that it can be done with a computer. There's a drive to replace wind tunnel testing with analytical computational solutions because it's cheaper. But those tool sets are just not evolved enough, which I guess is good for us because wind tunnel testing is a lot of fun.

Q: What is your favorite thing about your job?

A: There's such a cool variety to what we get to test. Things you might not realize need testing. For example, we've done low speed side testing for a baseball stadium in Florida. I've done testing for aerial refueling drogues that refuel long term aircrafts in air. And, of course, a lot of airplanes. Cyclists can sit in a tunnel on their bike and test their aerodynamics. Luge sledding too, they test that at the San Diego wind tunnel. If you can think of it, wind tunnels can test it.

Q: What career path did you take to get to where you are today?

A: Like a lot of people, I wanted to be an astronaut, but I don't have great eyesight and I have asthma so I figured that probably precluded me from joining the Air Force and becoming a pilot, then an astronaut. So I thought, "I like critical thinking. I like to build things and take things apart. Maybe I should become an engineer?" I like to know how things work, so it was a perfect fit for me.

After I got my Bachelors of Science in aerospace engineering from Purdue, I got a job with a contract with NASA, because NASA contracts lots of its services out to private companies. My plan earlier hadn't been to become a wind tunnel test engineer, but this was the route to working at NASA, and then once I started working on solving the types of problems that come up in this position, I realized I loved it.

Lots of people like me think "I want to be an astronaut," but NASA is really big and there are lots of opportunities for exciting and experimental aero-work. It's definitely not only space that NASA is focused on.

Q: What is the atmosphere in the facility like when you're testing?

A: There are definitely times where you have to buckle down, but it's also fun. One good thing about working in a facility like ours is you all become a tight group. Like a family because you spend so much time together and you deal with problems together, but also have laughs together. It's a lot of ups and downs and so you really get to know each other on a personal level.

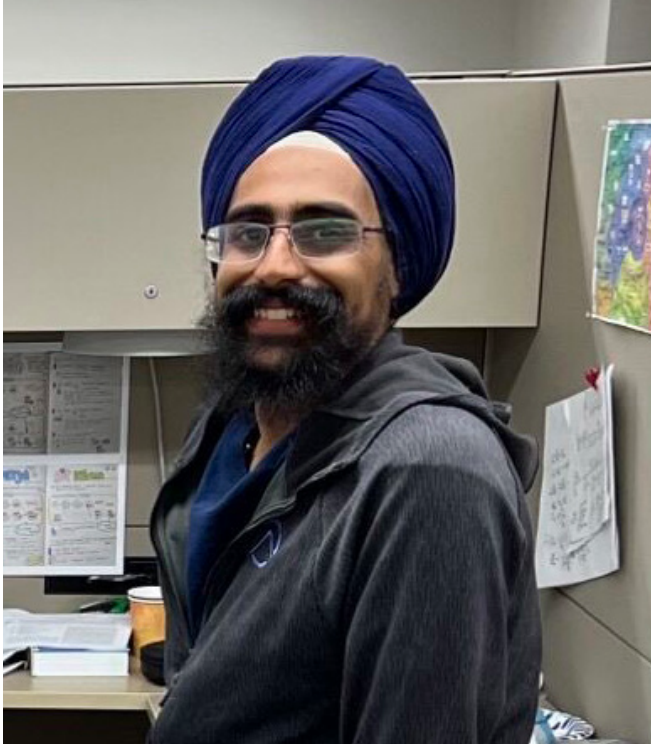
Q: How did you first get involved with AIAA and what about the community is important to you?

A: I really got involved when I came here to NASA Glenn Research Center. The person who hired me happened to be the Chair of the AIAA Ground Testing Technical Committee (GDTTC), and when it was time for him to roll off of that position he saw my work ethic, drive and curiosity, and suggested that I replace him. I have been on the Ground Testing TC ever since, including time as the Chair.

For those who aren't familiar with AIAA's technical committees, they provide services and support to AIAA and the aerospace community as a whole. Different TCs focus on providing various valuable content and papers for forums/events, or they provide awards for notable accomplishments in aerospace fields. But we also provide support documents to help people learn how to do things. We've written a series of standards, guides, and recommended practices that people can access to learn how to do things in the best possible way.

I learn so much from this TC and I meet all these people who do similar work to me, that have different knowledge, different experiences. It gave me a strong network of people that I was able to tap into and learn. That has helped us improve our facility. And ours is just one of many TCs in AIAA.

Puneet Singh



COLLEGE

- IIT Kanpur (B.Tech., Aerospace Engineering)
- University of Michigan Ann Arbor (Masters and Ph.D. in Rotorcraft Aeromechanics)

HOMETOWN

Chandigarh, India

JOB TITLE

Staff Engineer, Flight Dynamics and Control Laws at Overair

Q & A

Q: What advice would you give to a student who is interested in studying the same field as you or aerospace in general?

A: Learn to dive deep into things you learn in school. Often it seems like the knowledge presented in courses is complete, but in reality there is a lot of unchartered territory that is waiting to be investigated because real aerospace systems are very complex and need innovative solutions. Participate in student team projects. It builds communication skills and teaches you how to respond to real engineering challenges. Also, learn from others. A good engineer will not struggle with the same problem by themselves, but look for solutions others have used and improve on them. It's important to read multiple books and papers on the subjects you are interested in and not rely solely on a single resource.

Q: What is the biggest misconception people have about your job?

A: That you have to be a math genius and be able to do huge calculations in your head. In reality, you have to be good at using your engineering software tools, be organized with your data and processes. That's what prevents you from making mistakes and allows you to be very good at your job.

Q: What is your favorite thing about your job?

A: There are very interesting multidisciplinary challenges in building an electric Vertical Take-Off and Landing (eVTOL) aircraft. I love coming in to work every day and seeing an aircraft being built and my work having an immediate impact on its design.

Q: What career path did you take to get to your current role?

A: I was interested in building model airplanes as a kid. I chose to study Aerospace Engineering for my undergraduate degree at IIT Kanpur. I enjoyed my summer research projects so much that I continued my education to get a masters and then a Ph.D. in rotorcraft aeromechanics at the University of Michigan. After my Ph.D., I joined Overair as a Vehicle Dynamics Engineer and kept building my skills with both computational and experimental work.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: I am hopeful that the eVTOL aircraft market will continue to grow and usher in a new era of innovation for aerospace, and make it easier for more people to enjoy flying. I also hope that we continue to move toward more sustainable and green aviation technologies.

Ethan Och

COLLEGE
University of Minnesota, Twin Cities
(B.S. in aerospace engineering and mechanics; minors in computer science and astrophysics)

HOMETOWN
Swanville, Minnesota

JOB TITLE
Software engineer at Northrop Grumman

I support the development of engineering and manufacturing. I work in the enterprise services sector, which is like the backbone of the company. You can think of it as the infrastructure for all the other sectors.

Q & A

Q: What advice would you give to a student who is interested in software engineering and/or aerospace?

A: I would say first and foremost is to push yourself. Take classes that are harder and if you feel like you're always staying in a comfortable zone in terms of education, you're not achieving all that you can. When you push yourself, you can open a lot of doors through those experiences.

Also, if there aren't any resources around to help you learn formally, find time to engage with people with similar interests. There were no advanced STEM classes in my small high school, so I self-taught myself in a lot of areas like programming and other things that interested me. At that time my high school didn't have a robotics team, and I ended up working with a neighboring high school that did.

Lastly, don't give up when things get hard or challenging. I think pretty much everyone who goes into any profession, especially in STEM, at some point feels like "this type of work is too hard." It's common to feel that way. But don't let it discourage you.

Q: What is the biggest misconception people have about your job?

A: The biggest misconception people have is relating to the phrase, "It's not rocket science." People believe aerospace professions are unapproachable by "regular people" as they say. That you need to be a genius to participate. But I'm of the belief that anyone can understand topics and aerospace if you break it down into easier to digest little pieces.

The concept of building a rocket seems impossible, but if you break it down into subsystems, like propulsion and electrical and mechanical, etc., you can keep breaking things down into smaller and smaller pieces until it's approachable and understandable.

Q: What's your favorite thing about your job?

A: I think my favorite thing about my job right now, is that I'm learning things that I didn't exactly go to school for. In school I studied aerospace specific stuff, and while that sometimes works its way into my job now, a lot of what I'm doing is working on software systems that I've never heard of before.

Sometimes I have to learn them completely on the job. It's always a new learning experience. It's never a dull moment and there are so many opportunities to branch out into new things.

Q: What is the career path that led you to your current role?

A: Back in 6th grade I was really interested in robotics and that traveled up through high school. It evolved from robotics to software engineering to game development to eventually aerospace. I hadn't really considered aerospace as a profession. But I knew I wanted to go into a challenging STEM profession. Then a friend of mine introduced me to a video game called Kerbal Space Program, which is all about spaceflight and simulation. That's what really pointed me in the direction of aerospace engineering, which is what I ended up studying in college.

It was a little tough at the end of my senior year because that's when COVID happened. I had a job lined up but then that fell through because of the pandemic. I spent a year and a half doing mentorship programs, informational interviews, and applying for jobs. I ended up getting an offer from Northrop Grumman in their space sector. And after a year and a half there, I was moved to the enterprise services sector, and that's where I've been ever since.

I think it's funny when people are dismissive of games. There's a lot that goes into them, and a lot to learn from them. In game development there are visuals and physics to model. And if you think of spaceflight simulation or just simulation tools that exist, they have such complex and interesting elements.

Q: How did you first get involved with AIAA?

A: My first introduction to AIAA was when I was on campus, there was a student branch and I got involved in some projects with them. When I graduated, I was looking for work and wanted to network and connect with people in the field. So that's when I became a Young Professional member and through there, through people I've met, I was introduced to the AIAA Diversity Working Group, which seeks to increase the amount of diverse representation in aerospace. To me, it's important because, as a person who has a disability, there's not a lot of representation of disabled people in the aerospace industry at the moment, at least for physical disabilities, so it's important to address that. The Diversity Working Group is a venue for me to help contribute ideas on ways to make this field more inclusive for everyone.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: I think with the recent renewed interest in space exploration there is more excitement than ever about going back to the moon and Mars after that. There is a lunar space station in development currently that Northrop is involved with.

There's so much happening that it's an amazing time to get involved with aerospace because everything is evolving so quickly. You'll never know just what you might be working on next, and that's quite exciting.

Rayon Harris

COLLEGE
University of Central Florida
(B.S. in Aerospace Engineering; M.S.
in Engineering Management)

HOMETOWN
Miami & Lakeland, Florida

JOB TITLE
Senior Systems Engineer – Air Vehicle
Integration at Lockheed Martin Skunk Works

Q & A

Q: What advice would you give to a student who is interested in studying the same field as you or aerospace in general?

A: Let your creativity, passions, and ambitions guide you to success. Don't let anyone tell you that you can't achieve your goal based on background. And have the viewpoint that it's not a matter of IF but WHEN. Have goals but don't have hard dates on them. Life happens so be sure to stay the course. Also, surround yourself with people who are either as passionate as you or support your ambitions. No one can do anything alone. It takes a village to raise a future engineer.

Q: What is the biggest misconception people have about your job or career?

A: The type of people that work on these aerospace marvels. I used to think the aerospace community was full of experienced professionals in their 40s+ who make all the design decisions for these various products. Little did I know that you can be months removed from college in your 20s making a huge impact on design decisions of a system.

Q: What is your favorite thing about your job?

A: The creative freedom needed to accomplish the tasks. Whenever someone asks me what my job is like I usually ask them if they've participated in Design/Build/Fly (DBF). If the answer is yes, I usually follow up by telling them that my job feels as if I'm on a college design team like DBF with the creative freedom to throw ideas and experiment solutions to achieve certain goals. With a slightly larger budget of course.

Q: What career path did you take to get to your current role?

A: I studied aerospace engineering at the University of Central Florida and got involved in design projects and leadership roles in student organizations like AIAA. In these roles I developed the interest to learn all the various aspects of the aircraft design process which led me into Lockheed Martin's Engineering Leadership Development Program. I spent three years working in various rotations on different teams understanding the inner workings of what it takes to get an aircraft from a concept to reality.

"Continue to shoot for the stars, it's only rocket science ya know?"

– RAYON HARRIS

Q: What ways do you imagine the aerospace sector changing in the near future?

A: In the case of aeronautics, I see advancements in high-speed aircraft, improvements in gas turbine aircraft fuel efficiencies as well as the introduction of electric propulsion aircraft on the horizon.

In the case of space, I continue to see improvements to get people back to the moon and beyond while also seeing more opportunities for space tourism growth.

Q: What does AIAA mean to you?

A: If it were not for AIAA, I would not be in the position that I am in today. As an AIAA Rising Star in Aerospace, I was sponsored to attend the AIAA AVIATION Forum where I met some Lockheed Martin executives. It was because of our shared passions that I got my foot in the door and was able to acquire my position at the Skunk Works.

To learn more about the AIAA Rising Stars in Aerospace Program scan this QR code or visit **aiaa.org/RisingStarsInAerospace**

To learn more about the Design/Build/Fly competition scan this code or visit **aiaa.org/general-information**

Left: Rayon Harris attending 2024 Design/Build/Fly with high school students he is now mentoring.

Jackelynne Silva-Martinez

COLLEGE

- Rutgers University (B.S. Mechanical and Aerospace Engineering)
- Drexel University (Certificate in Engineering Management)
- Embry-Riddle Aeronautical University (M. in Aeronautical Science, Human Factors and Space Studies)
- Georgia Institute of Technology (M.S. Aerospace Systems Engineering, Human Systems Integration)
- Carolina University (Ph.D., Leadership, Organizational Management)

HOMETOWN

Cusco, Peru

JOB TITLE

Human Systems Engineering and Integration Manager for the Lunar Gateway Program at NASA Johnson Space Center

Q & A

Q: What advice would give to a student who is interested in studying the same field as you or aerospace in general?

A: Make short- and long-term goals with plenty of backup plans. Also, take leadership roles in organizations that deal with your career interests – and always be an explorer and continuous learner.

Q: What is the biggest misconception people have about your job?

A: Some people ask, "why should we be spending money on space exploration when we have many problems on Earth?" However, it is important to understand that when we are researching for space exploration, we are also advancing technology for applications on Earth that help solve many problems. Examples include health care, navigation, energy, public safety, telemedicine, information technology, and much more all for the benefit of humanity.

Q: What is your favorite thing about your job?

A: There is always a new problem to solve, and I have the opportunity to develop others as leaders.

Q: What career path did you take to get to your current role?

A: I studied Mechanical and Aerospace Engineering, worked in industry and government, unmanned and human spaceflight programs, across different phases of the lifecycle of various projects, always advocating for the human operator behind the hardware or software in a given environment.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: I believe we will be embracing artificial intelligence to exponentially help with our endeavors, but will only be able to sustain our efforts collaboratively across different countries, agencies, academia, commercial, and government entities.

Jared Long-Fox

COLLEGE

- South Dakota School of Mines and Technology (Bachelor's in Geology – Geospatial Technology and Mathematics minors; Master's in Geology – Geophysics emphasis).
- University of Central Florida (Current Ph.D. student)

HOMETOWN

Rapid City, South Dakota

JOB TITLE

Planetary Exploration Research Scientist, Department of Physics, at the University of Central Florida

Q & A

Q: What do you do in your current job?

A: My research focuses on characterizing the physical properties of the surface of the moon. In other words, I build, test, and computationally model scientific tools and instruments to help us determine the best places on the moon to build bases, launch/landing pads, roadways, and more. I also work to develop methods to help NASA prepare sites for construction using robotic arms as well as to optimize excavation (digging) on the moon to make resource acquisition and construction efforts safer and more efficient.

Q: What advice would you give to a high school student who is interested in studying aerospace?

A: Never stop being curious, and effort is at least 90% of success, innate talent is 10% or less. In other words, hard work and persistence is the key to nearly everything. Also, gain as many different experiences as you can and meet as many different people as you can. It's all about who you know.

Q: What is the biggest misconception people have about your job or career?

A: The biggest misconception is that you need to be a genius or from a privileged background to do science or engineering. Many scientists and engineers are just normal people who try really hard and are passionate about what they do. It is not easy work, but these are not prerequisites. The things you actually need are drive, passion, tenacity, perseverance, and curiosity.

Q: How has being on the autism spectrum influenced or affected your professional life?

A: I've had to learn to be a bit more extroverted. I'm naturally very introverted. Talking to people didn't always come easily. I had to discover that a big motivation for not talking to people or not

AIAA and Club for the Future's Resilient Student Scholarship was created in 2023. This scholarship is specifically designed to empower and inspire students who have faced unique challenges: students with disabilities; from underrepresented backgrounds or disadvantaged socioeconomic circumstances; and first-generation college students. Scan the code or visit aiaa.org/ClubForTheFuture to learn more.

asking questions of my teachers came from a fear of rejection.

A lot of people call it a disability, and it absolutely can be disabling – both for internal reasons as well as societal expectations and perceptions. But I've never been one to encourage people to let society define you. Do what you do. Learn to use the hand you're dealt to your strengths. For me personally, and a lot of other people on the spectrum that I've talked to, determination is actually a really big commonality. Use that determination to your benefit as much as you can.

Q: What is your favorite thing about your job?

A: My favorite thing about my job is that I get to do things that have never been done before. I get to work with cool tools and computers to help humanity explore and live on the moon, Mars, and beyond.

Q: What career path did you take to get to your current role?

A: In my 8th grade Earth Science course I was fascinated with volcanoes and earthquakes and this love inspired me to go to college for geology. In college I wanted to make computer models of volcanoes and earthquakes, so one of my professors (who later became my Master's advisor) told me I needed to take a Mathematics minor as well to get the technical skills needed to go to graduate school in Geophysics. I worked with this professor on developing rovers to explore volcanoes here on Earth for the rest of my Bachelor's degree, which made me very interested in space exploration as well since there are so many rovers used for space. My graduate degree in Geophysics focused on high-performance computational modeling of volcano magma chambers and eruption schedules. After I graduated with my Master's, I started working at the University of Central Florida as a Planetary Exploration Research Scientist. My background in Earth Science, robotics, and computer programming prepared me well for working in space exploration.

> "Being on the autism spectrum isn't something that needs to define you or your possibilities in life."
>
> **– JARED LONG-FOX**

Q: How did you get involved with AIAA?

A: I got involved with AIAA when I attended the Space Resources Roundtable conference in 2022 and the AIAA Space Resources Technical Committee (SRTC) held a meeting that I attended. During this meeting, they announced that they were looking for people to get involved in Education and Outreach. I volunteered and was elected to be one of the heads of Education and Outreach for the TC.

It is important to me to be involved with AIAA because it gives me a chance to use my passion for outreach to teach others about how cool science is. This is a very fulfilling role for me and helps me give back to the community.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: With NASA's Artemis program and other organizations interested in permanently living and exploring on the moon, Mars, and beyond, I see the aerospace sector having to develop new technologies that allow us to easily reuse and refuel rockets, use local resources on other planetary bodies, and develop bases in extreme space environments.

Another cool aspect of these changes is that some of the technologies we develop for aerospace will benefit life on Earth through more efficient excavation, mineral processing, and so on. We even saw this a few decades ago with a technology called Velcro that was developed by NASA to help make equipment stay in place even in the intense vibrations during flight (and we use it for plenty of other stuff here on Earth).

Arthur Brown

COLLEGE

- University of Toronto (Bachelor's, Engineering Science)
- Massachusetts Institute of Technology (Masters and Ph.D., Aeronautics and Astronautics)

HOMETOWN

Toronto, Canada

JOB TITLE

Postdoctoral Research Associate, Massachusetts Institute of Technology

Q & A

Q: What advice would you give to a high school student who is interested in studying aerospace?

A: First, make sure you're passionate about aerospace. Secondly, do well in math and science classes. And finally, participate in activities or projects related to aerospace, or to engineering in general. For example, you could assemble furniture; build paper or model airplanes (I got my start this way); and/or learn to code.

Q: What is the biggest misconception people have about your job or career?

A: One misconception is that academic research is theoretical or abstract. The truth is the problems on which I work have a real-world use case. For example, my current research concerns electroaerodynamic (EAD) aircraft propulsion. EAD uses strong electric fields to ionize and accelerate air, generating thrust. EAD thrusters have no moving parts, and are therefore almost silent; they may therefore be useful for aircraft propulsion in applications where silence is valuable, such as surveillance or package delivery missions. As part of my research, I design, build, and test fly EAD-powered aircraft.

Q: What is your favorite thing about your job?

A: My favorite thing about my job is the opportunity to work on problems in which I am interested, and whose solutions could change the world. EAD is a technology that has the potential to change the world, and I feel very fortunate to be able to work on such an exciting problem.

Q: What career path did you take to get to your current role?

A: After my first year of graduate school, I discovered that I enjoy doing groundbreaking research, designing airplanes, teaching, and service. Academia seemed like the best place to combine all four interests into a career. After finishing my Ph.D., I was offered the opportunity to stay in the same research lab as a postdoctoral associate. In this role, I would be able to continue my EAD aircraft design research, work on other research problems in which I am interested and prepare for tenure-track faculty applications. It seemed to be the perfect position at this stage in my career, and I accepted.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: I believe that electric propulsion and autonomy will enable all sorts of new flight vehicles, for applications including urban package delivery, powerline inspection, crop spraying, etc. I also believe that the biggest question facing the aviation industry is: how do we make air travel environmentally sustainable, without contributing to climate change?

Lauren Smith

COLLEGE
Case Western Reserve University
(B.S., Aerospace Engineering and Mechanical Engineering; M.S., Mechanical Engineering)

HOMETOWN
Pittsburgh, Pennsylvania

JOB TITLE
Senior Program Manager, Satellite Servicing at Northrop Grumman Corporation

Q & A

Q: What advice would you give to a student who is interested in studying aerospace?

A: Pursue your interests outside of just math and science. My interests in music, art, and history have all helped me to be a better-rounded engineer and leader. And communication and collaboration skills are essential to working in a complex field like aerospace. The best engineers on my team know how to explain complex ideas simply and work well with others to accomplish big things. Also, don't be afraid to take risks or try things that don't come easily to you. Being in this field means that we are always pushing the envelope of what is currently possible!

Q: What is the biggest misconception people have about your job or career?

A: Many students may not realize just how versatile a degree in engineering can be. Whether you want to perform analysis all day, lead and manage teams, solve technical mysteries, or be hands on in a lab building spacecraft, being an engineer opens the door to so many different types of careers. Given the diversity of engineering roles, we need a diverse workforce with a variety of talents and personalities to serve as our future engineers!

Q: What is your favorite thing about your job?

A: The people and the missions. I work with amazing teams, and I couldn't be prouder to serve missions that preserve freedom and advance human discovery. I also love that I am learning and growing every day. In my role, no two days are the same, and I am always challenged by something new.

Q: What career path did you take to get to your current role?

A: I have engineering degrees in mechanical and aerospace engineering with a specialty in robotics and mechanisms. I performed my thesis work at NASA Glenn Research Center and worked there after graduation before joining Northrop Grumman. At Northrop, I started out in advanced concepts as an engineer and have progressed to increasing levels of responsibility over many roles and multiple different cities. With every new role, I was doing something I had never done before! After working on the James Webb Space Telescope and other programs, I now manage a portfolio of

programs focused on In-Space Refueling. I never set out to be a program manager from the start, but it is a role I grew into over my career. I am responsible for the cost, schedule, and technical performance as well as team leadership for my programs.

Q: What ways do you imagine the aerospace sector changing in the near future?

A: The space industry specifically is becoming increasingly more international. It is exciting to see more nations developing space agencies! This also means that we will have interesting growth in policy and legal jobs in space as we determine what laws govern our use of space as a global community.

"As a student, it can seem like there is always a 'right answer' to a problem. In the aerospace industry, we are constantly faced with problems that have no answer in the back of a book. Our missions require us to be trailblazers, risk takers, and out-of-the-box thinkers!"

– LAUREN SMITH

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