

Q&A

Chatting With Aerospace Professionals

It takes more than computer skills to be an aerospace engineer. We asked three young professionals what inspires them, what challenges them, and what they love about their jobs.

THE DEFENDER



NAME Shirali P.
JOB Cybersecurity Engineer
COMPANY Raytheon

What does being a cybersecurity engineer actually mean?

It means that **I'm a superhero who protects the Internet from evil and cybercrime!** My team comes up with solutions to make the Internet a safe place for our government as well as for the general public to use. We provide our expertise to help catch cybercriminals and also provide training for cyber-awareness and technical skills.

What inspired you to work in the aerospace field?

My parents motivated me to choose a career in a STEM field and inspired me to help others. Also, my international upbringing really impacted the type of work

I wanted to do and with whom I wanted to work. I've always been focused on security and protection of people and assets both domestic and abroad. Immediately following college, I joined the United States Air Force, where I worked on a satellite program for defense. After that I joined Raytheon, a company that develops technology to help make the country safe, supporting air defense, ground security, border protection, and now cybersecurity.

What is your favorite thing about your work?

I get to come in every day and work with bright people on the coolest technologies. It's an exciting time to work in cybersecurity. We are at the forefront, learning about different attacks, threats, viruses, and malware that haunt cyberspace. We develop solutions to fight against these threats, and make

the Internet a safer place for people around the world. If that's not a reason to come to work every day, I don't know what is.

What skills are the most important for your work?

I believe **the most important skills in the workplace are the 3 Cs—**Communication, Collaboration, and Critical Thinking.

Communication: Translating thoughts into simple speech that helps people understand your point of view is key.

Collaboration: Working with others in a team, building upon ideas to make them bigger and better, and knowing when to lead versus follow is important.

Critical Thinking: Being able to own your own thought process, work through problems, and come up with unique, out-of-the-box solutions is what makes you a STEM leader.

"I get to come in every day and work with bright people on the coolest technologies. It's an exciting time to work in cybersecurity. We are at the forefront."

THE INNOVATOR



NAME Cedric M.

JOB Embedded Software Engineer

COMPANY Raytheon

What does an embedded software engineer actually do?

I write lines of software code to program microprocessors to do complex computations and make decisions. You can think of a microprocessor as your brain and the software as the knowledge that your brain holds. Software is basically a set of instructions that tells a system how to make decisions and behave.

What are microprocessors? Where do we see them in everyday life?

Your desktop computer, laptop, video game console, cell phones, toaster ovens, microwaves, and maybe even the car your parents drive—they all have one or more microprocessor(s) in them.

Microprocessors are programmed with software instructions to manipulate 1s and 0s to solve problems and accomplish the task they are designed for. If you have ever purchased soda from a vending machine, you interacted with a device that uses a microprocessor to detect and count the money you put into the machine, then turns your push-button request into electrical signals that activate

and control hardware in the machine to dispense the drink you chose. The microprocessor knew exactly what to do because it was programmed with software by an embedded software engineer.

Tell us about an obstacle you faced during your career and how you overcame it.

Many people see failure as an obstacle. Early in my career, I was one of those people. Anytime I experimented, tried something new and failed, I became discouraged and gave up. But since then **I have come to learn that giving up is not an option. I learned to accept failure because anytime you are at the forefront of developing new technology, chances are you'll fail the first several times.** To overcome this, I have learned to look at every failure as an opportunity to learn—learn why you failed this time so you don't fail again the next time, keep on trying. Never give up. Hard problems tend to never get solved because sometimes failure turns people away. But for me, I find motivation, excitement, and satisfaction around experimenting and solving the “impossible” problems.

What is your favorite thing about your work?

My work feels like play. I compare stepping into work every day to stepping into a playroom as a child—but instead of a playroom full of blocks, toys, markers, and crayons, I step into a lab full of high-tech electronics, computers, and test equipment, all there to help my talented teammates and me design and build some of the most advanced, high-tech systems to keep our nation safe. I also enjoy the people I work with—it takes a team to be able to accomplish what we do—and

it is motivating to know that we are all putting in our best efforts to work together and achieve amazing things.

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How does your work impact the country and the world?

Everything we do here at Raytheon is about making the world a safer place. We bring some of the best and brightest individuals together and push the limits around science, technology, engineering, and math to devise innovative solutions that will keep our people and our nation safe.

What skills are the most important for your work?

Curiosity, problem-solving, teamwork, passion, attention to detail, creative thinking, leadership, tenacity, persistence.

THE PROBLEM-SOLVER



NAME Stephanie W.
JOB Airplane Jet Engine Performance Engineer
COMPANY Rolls-Royce

What does being an airplane jet engine performance engineer actually mean?

I am responsible for figuring out how all of the different parts of the engine work together to deliver performance. Engine performance includes the thrust and power produced for the airplane, how fast the engine spins, and the temperatures within the engine which would melt any metal without our superefficient cooling inside the engine. I have to make sure that the engine is delivering the thrust that is needed to keep the planes in the air, but not spinning too fast or getting too hot for all of the different hardware pieces inside.

What inspired you to work in the aerospace field?

I loved the technical challenge and problem-solving involved in designing jet engines and aircraft. The aerospace industry is also incredibly global and I loved the idea of getting to travel and work in different countries.

Tell us about an obstacle you faced while breaking into your career and how you overcame it.

I moved high schools when I was growing up and because of that,

was a bit behind in math when I decided to become an engineer in college. I had to take an extra math class to make sure that I was on the same page as the rest of the students and ready for my engineering classes.

Tell us about an obstacle you faced during your career and how you overcame it.

When I started in my current job, I was made responsible for an engine model that was written in a software code that I didn't know and hadn't learned in college. I tackled this obstacle by calling and setting up meetings with the experts on my team who were familiar with the program and could help me get up to speed. I picked up projects that my team needed done that I knew would help me learn and practice with the model.

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What is your favorite thing about your work?

I love getting to work as part of a team with members all over the world. We have engineering team members in Indianapolis, England, Spain, Arizona, Washington, and Singapore. Managing time zones and language barriers can be

difficult, but I enjoy getting to learn about the different cultures and I think our team is stronger for the diversity of its members.

What is the most exciting project you've worked on?

I was able to spend a few months as a flight test engineer on our flying test bed in Arizona. Our flying test bed is a large 747 aircraft with one of the four engines removed and replaced with the engine we're testing. It allows us to get data on our engine while it's actually flying around in the sky.

What skills are the most important for your work?

I rely on a lot of technical and nontechnical problem-solving skills to be successful. I use the technical skills I learned in college, such as computer coding, physics, numerical methods, and thermodynamics. But I also need to focus on communication, teamwork, and collaboration.

What advice would you give to someone thinking about entering the aerospace industry?

One of the best things about working in the aerospace industry is the exciting and complex technologies that we get to design and build. Because the technologies are so complex, engineers are always working as part of teams made up of people with different backgrounds and from different places. Building strong teamwork and communication skills is very important and can be practiced through middle school, high school, college, and as you start your career. **Having a good foundation in science and math will help you develop problem-solving skills, and having a strong team-working foundation will prepare you well for a career in the aerospace industry.**