National Aeronautics and Space Administration

Simulation Engineer

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Simulation Engineer & Graphics Programmer

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I communicate with the principal researchers about what they need, whether it is a particular display or a particular simulation. I write up a description of what I think the researchers have described, and submit it to them for feedback. I design algorithms and equations to describe the behavior of the system I am working on at the moment, and then I implement those algorithms and equations in a computer language. I test and debug the code and integrate it into the rest of the simulation. I continue to communicate with the researchers about the progress and about any changes that are needed.

Areas of expertise:

- Cockpit graphics programming

How I first became interested in this profession:

I have been an airplane nut for as long as I can remember. My grandfather has been an aircraft mechanic since before my mother was born, so you could say that it runs in the family. In high school, I became an avid computer user and programmer.

What helped prepare me for this job:

I believe that one of the things that helped prepare me for this job was that I took a wide variety of subjects in school. I concentrated on mathematics and computer classes, obviously, but I also took a number of writing courses that have proven to be very helpful over the years. And even the art classes that I took have been useful when working on the graphics programs.

My role models or inspirations:

My grandfather has been something of both to me. I used to visit my grandparents frequently when I was growing up, and they both had a tremendous influence on my life. I still remember climbing over the stacks of airplane parts in their garage, and helping Gramps work on some of them.

My education and training:

I have a Bachelor of Arts in Computer Science from Knox College in Galesburg, IL. I have attended many workshops and classes on programming techniques and methods of presenting data, but have not received a formal degree from those classes.

My career path:

I was hired as a Cockpit Graphics Programmer directly out of college. I have since taken on more responsibilities, ranging from creating out-the-window scenery for the simulators to programming the mathematical models describing an aircraft's behavior to being in charge of a simulation and running it from the control room.

What I like about my job:

I really like most of the people that I work with—some of them are amazingly smart. I like the notion that I am working on ideas and concepts that may be flying soon. I like working on computers, and making them draw the correct pictures. I like the nearly instant feedback that working with images gives you. And sometimes, I even get to fly the simulators!

What I don't like about my job:

I dislike many of the ways in which "red tape" affects my job. I dislike when I know there is a simple solution to a problem I am facing, but I cannot see it. I dislike when I make a mistake that sets back the progress of a simulation.

My advice to anyone interested in this occupation:

Get a thorough grounding in mathematics and programming. Make sure that you take enough writing classes that you can communicate effectively. And don't forget to encourage your artistic side.

Additional Resources:

- American Institute of Biological Sciences
  http://www.aibs.org
- American Physiological Society
  http://www.faseb.org/aps
- American Society for Biochemistry and Molecular Biology
  http://www.biophysics.org/biophys/society/biohome.htm
- American Society for Microbiology
  http://www.asmusa.org
- Astrobiology Summer Academy
  http://academy.arc.nasa.gov/
- Biotechnology Industry Organization
  http://www.bio.org/welcome.html
- Earth to Orbit: Engineering Design Challenges
  http://eto.nasa.gov/
- Education Pays Calculator
  http://www.educationpays.org/calc.asp
- Graduate Student Researchers Program
  http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Graduate.Student.Researchers.Program.Brochure/.index.html
- MATHCOUNTS Competition
  http://mathcounts.org/
- Minority University Research and Education Programs
  http://mured.nasaprs.com/
- NASA Cooperative Education Program for college students
  http://spacelink.nasa.gov/Educational.Services/NASA.Education.Programs/Student.Support/NASA.Cooperative.Education.Program/.index.html
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Office of Life and Microgravity Sciences and Applications
  http://www.hq.nasa.gov/office/olmsa/
- NASA SHARP Internship Program for high-schoolers
  http://www.mtsibase.com/sharp/
- NASA Student Employment
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Student Involvement Program student contests
  http://www.nsip.net/index.cfm
- Order NASA career videos such as "Engineers: Turning Ideas into Reality," "Careers: Aerospace Engineer" or "Reaching for the Stars" from NASA CORE.
  http://core.nasa.gov
- Revolutionary Vehicle Concepts and Systems student competition
  http://avst.larc.nasa.gov/competitions.html
- Student's Guide to Astrobiology
  http://www.astrobiology.com/student.html
- Tech-Interns.com
  http://www.tech-interns.com/

Please take a moment to evaluate this product at:
http://ehb2.gsfc.nasa.gov/edcats/educational_topic

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Thank you.