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## TASK 1 - Careers

1/10/26

- Objective: Identify role that sparks my curiosity & Document my research.

- NASA Centers:

- 1) Jet Propulsion Laboratory: Robotic exploration
- 2) Johnson Space Center: Human Space flight,
- 3) Ames Research Center: Aeronautics Research

- Career #1: Navigation Engineer II at JPL

- Field: Engineering

- Responsibilities:

- Analyze & Capture NEO orbits
- Maintain Solar System Dynamics Group's Database
- Database upkeep
- Improve code optimization
- Estimate Spacecraft's orbits & Navigation
- Orbit Determination

- Working conditions:

- Good Work Life Balance

- 9/80 schedule w/ every other Friday off

- Requirements:

- Planetary Defense knowledge

- Statistics

- Researches Planetary Defense

- Mathematical Skills

- Self-motivated

- Leader

- SQL

- FORTRAN, Python, MATLAB, C/C++

- Software development

- Supports:

- JPL supports the Solar System Dynamics Group

- Ramifications: \$110 - \$130K

- Fields Interactions: Computer Science, Mathematics, Statistics, Data Science

- Ethics: No formal ethics. Employees should general show social responsible & not withhold key information

James H

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## Career #12: Space Flight Hardware Systems Engineer Spacecraft Software Development & Verification Engineer

- SSC

- Fields: Computer Science
- Responsibilities:

- Develop code software for mobile systems
- Author grants software testing & verification tools
- Analyze performance of functions
- Document functions & use cases
- Simulate environments to test software
- Develop tests

- Work Environment

- Can involve inside/outside work on task by tasks

- Requirements:

- Bachelor's & 3y exp
- Masters & 1y exp
- PhD. & 0y exp

- Tech Lead exp

- Knowledge of NASA spacecraft software

- Python, C/C++

- Event & data driven architecture

- TCP/IP network protocols

- Familiar w/ software development

- Earnings: Unknown

- NASA Programs

- Work for Amencor

- Support NASA JSC via JETS II program

- Other Fields:

- Uses Engineering & math in simulations to test code

- Ethics: No Export controls, generally follow good morals

Science X

## 14 Career #3: Computational Systems Biology Research

AMES  
Research  
Center

### Position:

#### - Field: Biology

- Responsibilities: Develop multi-scale modeling capturing for high precision therapies & diagnostics
  - Metabolic modeling of CAR-T cells
  - Signaling cancer cell networks

#### - Working Conditions:

- Multi-disciplinary cross country collaboration.

#### - Requirements:

- PhD in STEM Field

- Vast programming knowledge

- Familiar with an array of biological processes

#### - Salaries: \$75k - \$100k annually

#### - NASA Missions/Programs: Works directly w/ the computational materials group (CM)

#### - Field Interactions

- Programming & Package Distribution

- Work with Physics & Thermodynamics to model biological processes

#### - Ethics: No bullet points listed

- Generally would follow good morals & understand implications of research

### Reflection:

- 1) The 1st career is mainly a data analysis role. The second is more of a programming & management role, while the third is a primarily research role.
- 2) Every NASA mission is a collaborative effort, and mathematicians, scientists, and engineers support & cannot exist without each other. Mathematicians formulate ideas & formulas, engineers design flaws them, and scientists hypothesize, test, and analyze from all three play crucial roles in making a NASA mission work.
- 3) The Spacecraft Software Development & Verification engineer seems the most appealing to me because coding is a big aspect of it, and my code changes directly help real world NASA missions.

Janeen M

## Resume Review:

### Education & Requirements:

- Some form of engineering degree
- Likely Majors in Software Engineering
- Familiar in Python / C/C++
- AGILE Process
- TCP/IP protocol basics
- JIRA Confluence Slack, MS PP & Tents
- CCSDS / Telemetry Systems
- NASA Spacecraft Software Systems - NPPR 7150 or DOD-178

### Good Experiences:

- TRW Software Developer & Mission Operations Intern at the HOSC
  - Work on developing reference documentation
  - Software that is used for ZSS
  - Mission Control Data processing
  - Spacecraft operation
  - Leadership
  - Mission Operations
  - Communication
- Post Doctoral Work Scholar in Star & Planet Formation Theory: NRA Center for Astrophysics
  - Hydrodynamic, MHD, Radiation-MHD simulations
  - Chemistry on interplanetary boundaries
- Linux Automation Intern - General Dynamics Mission Systems Inc
  - Develop scrappy solutions for Linux environments
  - System Integration & Management
  - Work in AGILE Environment

## Reflection:

- 1) I could definitely see myself going on a pathway like this, but the journey would be long and arduous. Although it is achievable, I think it's the hardest job I would be getting in to any of these jobs or internships. A lot of them say they has already found potential candidates.
- 2) No jobs mentioned any ethical codes. Ethics in this field involves honesty, integrity, public awareness, proper treatment of intellectual property, and privacy. I think the biggest dilemma someone in this field might face is when, if at all, to publicize code, methods, methods, data, and findings. Open versus closed source has been a never-ending debate, and the ethical line's gray.
- 3) These types of jobs are huge in terms of collaboration. Almost all of them have some sort of collaborative tools or frameworks as their requirements. A lot of them involve leading, managing, or working with a large team. There is strength in numbers, and distribution of work in odd leads to better accuracy & efficiency.

James M