

## **Job Title**

Senior Robotics Engineer

## **Job Purpose**

ProtoInnovations is developing the next generation of autonomous and semi-autonomous robotic systems for the lunar surface and beyond. As a critical part of this small company, you will be pushed to your intellectual and creative limits as we develop cutting-edge technologies for mobility and manipulation in space.

## **Job Duties and Responsibilities**

As a Robotics Engineer you will contribute to many areas, but you will focus on algorithm and software development needed for reliable and effective space robotic system operations. Specific use-cases of focus include mobility and manipulation for excavation, construction, In-Situ Resource Utilization (ISRU), and extreme-environment science exploration.

You will leverage simulation and physical prototypes to test your work. Your work will mostly take place at ProtoInnovations' physical location in Pittsburgh, PA with some remote work flexibility as you get into a routine. While working here you will be given a great deal of freedom and autonomy with the expectation that this will allow you maintain a work/life balance while still providing significant contributions to the company mission. Some learning on the job is expected because of the nature of what we do at ProtoInnovations, but you will be expected to hit the ground running and start contributing immediately.

## **Required Qualifications**

### Personal Attributes

ProtoInnovations is only as good as its people. It is a requirement to have the following personal traits:

- Open and honest
- A team player and independent thinker
- Excited about learning new things
- Always looking to improve
- A good multi-tasker

### Education

- M.S. in a STEM field from an accredited university
  - A B.S. with additional work experience may substitute for an M.S.
- Ph.D. may also be desirable and will be evaluated on a case-by-case basis

### Experience

- 3+ years of work experience in industry
- Ph.D. lab experience may substitute for lack of work experience

### Technical Skills

- Basic knowledge of:
  - Cyberphysical systems
  - Electronics and electrical engineering principles
  - Mechanisms and mechanical engineering principles
  - Signal and data processing
- Familiarity with most if not all of the following:
  - Robotics fundamentals
    - Homogeneous transformations and linear algebra
    - Kinematics and dynamics
    - Manipulation and mobility

- Newtonian mechanics
  - o Software fundamentals
    - Linux
    - Version control (Git/Github/Bitbucket)
    - Test-driven development
  - o Software tools, middleware, and programming languages
    - Robot Operating System (ROS) 1 and/or 2
    - Python
    - C++
- Additional, focus and knowledge in at least one of the following:
  - o Perception, image processing, and sensors
  - o Sensing and state estimation
  - o Planning, dynamics, kinematics, and controls
  - o Machine learning and data processing
  - o Terramechanics
- Bonus:
  - o Flight software development experience
  - o Familiarity with flight software architectures