R2012125 Interface Developer for Autonomous Robots

Software Engineer III

Vinh To – Hiring Manager

This position is for a software developer on the Integrated System for Autonomous and Adaptive Caretaking (ISAAC) project. ISAAC is developing technology to fill a critical gap in caretaking of human space vehicles during uncrewed periods, by enabling autonomous robots inside the vehicle to interoperate with vehicle systems and provide capabilities for robots to assess vehicle status, transfer and stow cargo from uncrewed cargo vehicles, and diagnose and repair faults such as leaks or fires. This technology is targeted for use on the Gateway space station near the Moon, as well as future Mars missions. During development, it will be tested using the Astrobee free-flying robots and the Robonaut mobile manipulator robot on the International Space Station (ISS). The successful candidate will be part of a 8-10 person team implementing and testing the software, and conducting simulations and tests both on the ground and on the ISS. One major task for this position will be to assist in developing a new user interface that will visualize a 3D model of the ISS interior as it is dynamically updated with robot sensor data. The model will include both geometry and multiple sensor data layers (e.g. temperature from a thermal infrared camera, acoustic noise from a microphone array, etc.), and will link this 3D model to other types of information (e.g. click on a sensor's 3D location to pull up the live sensor telemetry feed and a schematic of how the sensor is linked to the rest of the module power subsystem).

Required Skills and Traits:

- Education: Minimum B.S.
- 4 years of experience
- Background in robotics
- Web development experience with JavaScript and Linux
- 3D interfaces for real-time data visualization

Other Desired Skills:

Robotics & autonomous systems
- Perception, mapping, anomaly & change detection
- Automated planning & execution
- Fault diagnosis & recovery
- High-level autonomy systems

Aerospace
- UAVs or robotic free flyers

Distributed systems
- Robot-robot and/or robot-infrastructure teams

Support tools
- Experience with browser-based 3D visualization platforms such as WebGL, Cesium.js
- Jupyter Notebook

- Robot Operating System (ROS) Gazebo simulation environment Git version control system CMake build system
- Android app development
- Agile software development

Additional languages

- Python
- Java