JOB POSTING FOR RESEARCH ASSISTANT

This **Research Assistant** job posting is for a position with Dr. Kshitij Jerath's research team in the School of Mechanical and Materials Engineering at Washington State University. This position is related to an upcoming project titled **Macroscopic observability analysis of self-organized multi-agent systems**. The project entails a theoretical study of self-organizing systems (such as traffic jams, group of robots, neural systems etc.) and analyzing the observability of their global behavior. Over the course of the project, the selected applicant will be expected to:

- Instrument the lab with sensors (including LIDARs, cameras, time-of-flight cameras) to track ground robots in the research lab,
- Prepare the fleet of ground robots for communication with a centralized control system,
- Simulate self-organized or swarming behavior of ground robots,
- Replicate such behavior in experimental scenarios in the research lab,
- Perform linear and non-linear observability analysis of a group of ground robots exhibiting self-organized dynamics or swarm behavior,
- Generate analytical results that help quantify the observability of macroscopic dynamics of the system,
- Use data collected from simulations and lab experiments to validate analytical results from the theoretical approach.

Qualifications

The selected applicant is expected to have the following qualifications:

- Strong background in the fields of control of dynamical systems and probability theory
- Knowledge of mechatronics and embedded systems
- Coding experience in at least one of Python, C++, Java or MATLAB
- Good writing and communication skills
- Arduino and ROS experience is preferable, but not required

Duties

The selected applicant will be expected to:

- Identify new areas of inquiry in the domain of multi-agent systems,
- Carry out independent research on assigned tasks,
- Maintain accurate records of research (theoretical and experimental)
- Discuss these records and results in meetings with the advisor
- Contribute to the research community by writing papers, developing code to be used by open-source communities, and writing code in a manner consistent with standards set by the research community
- Present their work at major conference venues,
- Publish the scientific approach, results and validation experiments in major journals