PREP Research Associate

This position is part of the National Institute of Standards and Technology (NIST) Professional Research Experience Program (PREP). NIST recognizes that its research staff may want to collaborate with researchers at academic institutions on specific projects of mutual interest and, therefore, requires those institutions to be recipients of a PREP award. The PREP program involves staff from a wide range of backgrounds conducting scientific research across various fields. Individuals in this position will perform technical work supporting the collaboration's scientific research.

Research Title: ROBOTICS AND PERCEPTION SYSTEMS ENGINEER

U.S. Citizen Preferred

Position Description: The Intelligent Systems Division at NIST is investigating the performance of 3D vision systems for various manufacturing and automation applications. The research will focus on conducting experiments and analyzing data to understand the performance of these systems. This will support the development of performance metrics for these systems for various industrial applications.

Duties:

- Conduct experiments to realize several existing and novel test methods for 3D vision systems.
- Research the effects of various physical properties of an object and sensor settings on the test metrics.
- Program collaborative robot arms for conducting various automation tasks.
- Use metrology systems (e.g., laser trackers, CMMs, etc.) for establishing reference measurements.
- Use analysis software (e.g., Python, MATLAB, Spatial Analyzer, Polyworks, Excel, etc.) to interpret results and produce visualizations.
- Write reports and contribute to peer-reviewed publications.
- Work with commercial bin-picking systems.
- Assist in the development of demonstrations for trade shows and conferences.
- Assisting in performing market research for purchases required for the laboratories.
- Using CAD software to design parts, end-of-arm tooling, and fixtures.
- Working with NIST and/or external resources to have parts fabricated.
- Recording knowledge and best practices to help improve efficiency and productivity.
- Write reports and contribute to peer-reviewed publications.
- Work schedule: On-campus (Gaithersburg, MD), Full-time (40hrs/week)

Qualifications:

Not all the qualifications below are required.

- Education: Engineering majors with bachelor’s/master’s degree, or in final or penultimate years of bachelor’s/master’s degree.
- Experience with working on robotic systems such as robot arms, mobile manipulators, etc.
- Experience with CAD software such as SolidWorks
- Experience using MATLAB and Python.
- Basic understanding of using PyTorch, TensorFlow

- Programming experience in one or more of the following computer languages: C++, Java
- Experience using 3D printers.
- Basic understanding of 3D sensors such as LiDAR or RGBD cameras
- Basic understanding of the Unix/Linux operating systems
- Working knowledge of 3D point cloud data processing techniques, CloudCompare, or other similar tools

What is PREP?
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Privacy Act Statement

Authority: 15 U.S.C. § 278g-1(e)(1) and (e)(3) and 15 U.S.C. § 272(b) and (c)

Purpose: The National Institute for Standards and Technology (NIST) hosts the Professional Research Experience Program (PREP) which is designed to provide valuable laboratory experience and financial assistance to undergraduates, post-bachelor's degree holders, graduate students, master's degree holders, postdocs, and faculty.
PREP is a 5-year cooperative agreement between NIST laboratories and participating PREP Universities to establish a collaborative research relationship between NIST and U.S. institutions of higher education in the following disciplines including (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical science, physics, and statistics. This collection of information is needed to facilitate administrative functions of the PREP Program.

Routine Uses: NIST will use the information collected to perform the requisite reviews of the applications to determine eligibility, and to meet programmatic requirements. Disclosure of this information is also subject to all the published routine uses as identified in the Privacy Act System of Records Notices: NIST-1: NIST Associates.

Disclosure: Furnishing this information is voluntary. When you submit the form, you are indicating your voluntary consent for NIST to use the information you submit for the purpose stated.