PREP Research Associate

This position is part of the National Institute of Standards (NIST) Professional Research Experience (PREP) program. NIST recognizes that its research staff may wish to collaborate with researchers at academic institutions on specific projects of mutual interest, thus requires that such institutions must be the recipient of a PREP award. The PREP program requires staff from a wide range of backgrounds to work on scientific research in many areas. Employees in this position will perform technical work that underpins the scientific research of the collaboration.

Research Title:
AI Researcher: Engineering Biology

The work will entail:
Plan and conduct research to advance measurement capabilities to aid in the predictive engineering of biological systems, such as proteins, as part of the NIST Engineering Biology Program. Develop artificial intelligence and machine learning analysis pipelines to support automation and protocol development for wetlab procedures, as well as development of platforms for new, quantitative measurements and validated methods for evaluating the functional performance of engineered biological parts and systems. Develop automation workflows for bottleneck processes in biosecurity screening and synthetic biology. Support NIST's mission through service as a subject matter expert in the application of artificial intelligence and machine learning to measurement innovation in synthetic biology. Engage stakeholders and identify opportunities for standards development.

US Citizen Preferred

Key responsibilities will include but are not limited to:

- Perform measurement analysis using artificial intelligence and/or machine learning
- Generate and maintain analysis software, along with documentation
- Conduct analysis and assist staff in conducting analysis
- Maintain and administer hardware solutions for project and group compute tasks
- Advise Division and NIST management as a subject matter expert
- Organize, conduct, and attend relevant meetings, and provide written summaries or other documentation to NIST management and stakeholders
- Obtain and provide relevant information to inform NIST management and stakeholders
- Maintain deep technical knowledge of advances in the application of artificial intelligence and machine learning to measurement challenges in synthetic biology, such as those relevant to biosafety and biosecurity
- Demonstrate attention to detail
- Execute novel technical research
- Support sequence to function research for protein engineering
- Develop and apply infrastructure for data analysis
- Establish and document standard operating procedures for analysis pipelines

<u>Qualifications</u>

- A Ph.D. in Computer Science, Engineering, Manufacturing, or a related field.

- 2 years of relevant experience.
- Familiarity with DevOps and CICD pipelines.
- Ability to work with real-time event data at scale.
- Familiarity with multiple scripting languages.
- Ability to develop prototypes of tools needed to analyze data.
- Strong oral and written communication skills.

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 of the information you submit for the purpose stated.