

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.

A postdoctoral fellow is sought for a position in Structural Engineering to contribute to cutting-edge work on the development of a relational database for structural components. The researcher will collaborate closely with a multidisciplinary team to create a unified database of the seismic performance of structural components to inform the development of future codes and standards. This open-source SQL repository will capture experimental and reconnaissance data on damage, capacity, and repair needs for various structural systems, with the potential to extend to other hazards. This opportunity is part of a high-impact research effort focused on advancing the science of seismic performance and data integration for next-generation codes and standards, directly supporting research transparency and data reuse in performance-based earthquake engineering.

Key Responsibilities:

- Synthesize knowledge and extract design, response, damage, and repair data for structural components from experimental programs and reconnaissance reports.
- Develop and manage a robust relational database focused on the seismic performance of structural components.
- Develop consequence models for various structural systems to demonstrate the real-world application of the unified database.
- Design and implement front-end tools or user interfaces to facilitate data accessibility for researchers and practitioners.
- Leverage data analysis to unify underlying structural data used to develop design limits by codes and standards for functional recovery and other performance targets.
- Develop computational workflows of U.S. building code design requirements to quantify the impact of proposed updates to building design.
- Prepare high-quality research papers for peer-reviewed journals, and present findings at national conferences.

Qualifications

- U.S. citizenship is preferred.
- Ph.D. in Civil/Structural Engineering or a closely related field, with a strong understanding of the behavior of structural systems.
- Strong background in both experimental testing and numerical analysis of various structural components and systems.
- Strong understanding of U.S. codes and standards.
- Proven experience in advanced data analysis and the development of relational databases (SQL database development required).
- Experience developing and managing Python codebases in git.

- Demonstrated capability or familiarity with developing front-end software tools and user interfaces.
- Excellent written and oral communication skills.
- Strong publication record in leading peer-reviewed journals.

Please upload the following with your application:

- Curriculum vitae

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.