

PREP Research Associate – Digital Image Processing for Measuring Solar Panel Degradation

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.

The position is in the Applied Economics Office (AEO), a part of the Engineering Laboratory (EL) at NIST, which provides economic products and services through research and consulting to industry and government agencies in support of productivity enhancement, economic growth, and international competitiveness, with a focus on improving the life-cycle quality and economy of constructed facilities and manufacturing processes that support social and economic functions. AEO is integrated within EL's major research thrusts: sustainability, energy conservation, community resilience planning, manufacturing, fire, smart grid, building construction, and safety. AEO delivers high quality research and tool development that informs and assists stakeholders in their decision-making processes. The position will collaborate directly with EL's Heat Transfer and Alternative Energy Systems (HTAES) Group that has expertise in PV electrical and opto-electronic characterization and optical metrology and operates a world-class hyperspectral imaging system and DIP experts from the Information Technology Lab (ITL) Information Systems Group.

We are looking for a high motivated graduate student to join our multidisciplinary team developing measurement science and tools for evaluating solar panel degradation. The ideal candidate will have a background in machine learning, specifically digital image processing, to evaluate images of solar panels to estimate solar cell degradation and compare the visual degradation to measured performance data of the solar panels.

The work will entail:

Key responsibilities will include but are not limited to:

- Developing a quantitative approach to evaluate solar panel degradation using images collected in the laboratory
- Compare the visual degradation to performance measurements from the laboratory
- Replicate the quantitative approach to in situ solar panel images
- Document code
- Draft documentation of the developed process
- Assist with additional machine learning related projects as assigned

Qualifications

- Graduate student in Computer science, Software engineering, Programming, or related field
- Proficient with Python or Java
- Familiarity with MatLab
- GPU programming, data visualization or AI experience a plus
- Logical thinking and problem solving
- Attention to detail
- Strong oral and written communication skills

Please upload the following (preferably in a single PDF) with your application:

- Cover letter
- CV/Resume

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.