The NSF Engineering Research Center for the Internet of Things for Precision Agriculture (IoT4Ag) seeks undergraduate applicants for its Research for Undergraduate Experience (REU) Program for summer 2024.

This program offers undergraduate students the opportunity to work with scientists from either Purdue University, the University of Florida, or the University of Pennsylvania on research to address the grand societal challenge of food, energy, and water security by advancing technologies that increase crop production while minimizing the use of energy and water resources and the impact of agricultural practices on the environment. Projects will focus on the creation of internet of things (IoT) technologies from sensors, robotics, and energy and communication devices to data-driven models constrained by plant physiology, soil, weather, management practices, and socio-economics. These technologies will be integrated into systems that capture the microclimate and spatially, temporally, and compositionally map heterogeneous stresses allowing for better outcomes in crop production.

IoT4Ag Breakthrough Technologies

• Multi-mode, low-cost, distributable, environmental and soil sensor technologies

• Autonomous aerial and ground-based robots

• Energy-harvesting, energy storage and power electronics for in-the-field operations

• Ag-specific wireless data communications

• Biophysically-constrained data analytics and AI/machine learning to produce decision Ag interventions and improve agricultural outcomes

Students will be matched to projects based on their background, interests, location preference, and the project needs and requirements. All projects will provide the opportunity to learn next generation approaches and to develop experience working in at least one of the research facilities using state-of-the-art equipment. Students will gain experience with substantial aspects of doing science: experimental design, data collection, and communication of results. Students will also participate in activities that complement the lab research and help to develop broader scientific and career skills: seminars, paper discussions, career sessions and skills workshops.

Student participants will earn a stipend and, for in-person experiences will have housing accommodations and travel allowances that depend on each university's policy for summer research in 2024, that prioritizes student safety during the pandemic.

Program at-a-glance:

Focus: Research opportunities across a wide range of disciplines from agronomy, agricultural engineering, chemical engineering, electrical engineering, environmental science, mechanical engineering, materials science, mechanical engineering, robotics, sensors, and data science.

Dates and Locations: Participants will be assigned to one of three IoT4Ag partner sites:

Purdue University, West Lafayette, IN, May 25 – August 2, 2024

University of Florida, Gainesville, FL, May 25 – August 2, 2024

University of Pennsylvania, Philadelphia, PA, May 25 – August 2, 2024

Eligibility: You must be an enrolled undergraduate student, who will not graduate before September, 2024. You must be a U.S. citizen or permanent resident to participate in this program.

The program values diversity and seeks talented students from diverse backgrounds. We strongly encourage students from underrepresented groups in STEM, including women, racial and ethnic minorities, individuals with disabilities and veterans to apply.

Application Components: a) online application form, b) personal statement (1-page), c) one letter of recommendation, d) transcript from your current school and from all colleges you have attended and e) resume (1-page). These components are described in the application form below.

Letters of recommendation should be from faculty members or supervisors who can address your academic and/or research abilities and potential.

Application Deadline: The application will open on November 10, 2023. Complete applications, including recommendation letters, are due by February 15, 2024. (Applicants will be notified of the status of their application by April 29, 2024).

Application Portal: Access the application - https://www.nsfetap.org

Questions: Please email the following address and you will receive a response within 48 hours: iot4ag@seas.upenn.edu