Postdoctoral Position: Optical Metasurfaces for Sensing

IoT4Ag: The U.S. NSF Engineering Research Center for the Internet of Things for Precision Agriculture

The U.S. NSF Engineering Research Center for the Internet of Things for Precision Agriculture (IoT4Ag) unites an interdisciplinary team of faculty and students from the University of Pennsylvania, Purdue University, the University of California-Merced, the University of Florida, with partners in education, government, and industry. The IoT4Ag mission is to create and translate to practice Internet of Things (IoT) technologies for precision agriculture and train a workforce that will address the societal grand challenge of food, energy, and water security for decades to come. IoT4Ag is creating next-generation IoT sense-communication-response technologies and establishing engineered integrated systems for precision farming of tree crops and row crops, mainstays of the food supply chain.

The Kagan group at the University of Pennsylvania seeks a **postdoctoral fellow** with expertise in the **design, nanoscale fabrication, and optical characterization of dielectric metasurfaces, and in the architecture of devices and optical systems for sensing**. Our group combines simulation, scalable fabrication using colloidal nanocrystals, and optical measurement and instrument design to create metasurface-based sensing platforms. The fellow will develop metasurface designs and sensing methods that exploit diverse optical phenomena and imaging technologies. These devices are being developed into low-cost, highly distributable optical leaf sensors that indicate plant stress. The fellow will have the opportunity to learn about new materials and optical metasurfaces and their integration into sensing systems, and work across disciplines and IoT4Ag partner institutions to move sensor designs from the lab to the field. This work contributes to sustainable agricultural practices and the grand challenge of food, energy, and water security.

Applicants should submit a cover letter, curriculum vitae, and one representative publication of their work via email to kagan@seas.upenn.edu. Applications will be considered on a rolling basis, but applicants are encouraged to submit their materials prior to November 30, 2026.