

## Project Description

Demand for radio spectrum space is growing quickly, spurred by the explosion of emerging technologies such as the Internet of Things (IoT), Unmanned Aircraft Systems (UASs), and 5G networks. Unfortunately, the growth of active wireless systems often increases radio frequency (RF) interference (RFI) in science observations. As it stands, very little of the RF spectrum is dedicated to science, and the small amount of spectrum available can fall victim to neighboring RFI or re-allocation for commercial use in the wake of the growing demand for bandwidth in commercial applications. This project focuses on changing the paradigm of remote sensing methods and developing next generation technologies and ideas that are more spectrum efficient, more effective, and meet the challenges of present and future spectrum congestion. In particular, the project will recycle existing RF communication and navigation signals to enable new remote sensing methodologies at these commercially protected bands for scientific use in a myriad of practical solutions for precision agriculture, forestry, water conservation. This project will demonstrate new, low-cost sensing technologies in practical settings and contribute to the agriculture economy. The developed technology aims to usher in a host of precision irrigation for agricultural applications in the nation and worldwide with emphasis in economically distressed areas and developing countries.

Post-doctoral associate will primarily work in one of the following areas: microwave remote sensing, unmanned vehicle platforms, field data collection, and data analysis for GNSS-R, GNSS-T, and radiometer data. The associate will assist advising the graduate students and support the analysis of microwave sensors used in the effort, the mounting and integration of the sensors on different unmanned vehicle platforms, the integration and validation of the platform communication system, and the generating of the presentations and publications.