



## **Now You See Me, Now You Don't!**

**Required skills:** desire to learn and change the world in the process!

### **Background**

There has been an age-old debate between radio-frequency (i.e. radar) versus optical (camera, lidar) sensing. The excitement on this debate has significantly increased in recent years because of the autonomous application space as well as physical security. There is an ever-greater demand for more/better sensor data to support higher identification and discrimination/classification with acceptable confidence levels. The main advantages of RF sensors (over optical) are: the “all-weather” capability, the lack of a privacy issue, and large FOV. They can also provide velocity and distance. The main down-side would be spatial resolution.

### **Objective**

There is an urgent need to evaluate available RF COTS solutions and identify/develop possible alternatives designs and/or improvements that can yield significant improvements in this sensing domain. The required innovation will be in both the sensing hardware as well as the signal processing. It is anticipated that the team will install one or more sensors on campus to collect and analyze the data as well as to develop and experiment with new designs and/or improvements. There is also potential to integrate the sensor(s) on mobile platforms such as drones to possibly evaluate the solutions in more dynamic environments such as the neighboring street to the campus.

It would not be an overstatement to claim that a viable sensor (cost, size, weight, power versus performance) solution would be a game changer to the world of autonomy, security, and other applications. If you inspire to be part of the next technology revolution that will have a wide-ranging impact, this is your opportunity to join us!

The sponsor for this project is Advanced Electronics, Northrop Grumman.