Drone Detection Dilemma

SPONSORING ORGANIZATION
Bureau of Diplomatic Security (DS), Office of Security Technology, Division of Security Systems Integration

CHALLENGE
Security engineering officers in U.S. Embassy Baghdad need a better way to detect and locate non-US autonomous drones within 1/2 kilometer of the US Embassy Baghdad in order to prevent adversaries from surveilling and harming the people inside the embassy.

TEAM RECOMMENDED SKILLSETS
Computer science, electrical engineering, GPS, drones

RELEVANT CONTEXT
- Terrorist organizations and other adversaries build drones that are either user-operated via handset, self-controlled by AI, or operate fully autonomously by following pre-programmed GPS instructions
- Security engineering officers can easily detect the location of human-operated drones by intercepting the radio frequency (RF) of signals being transmitted between the handset and vehicle; however, in fully autonomous and self-controlled drones, these signals are not present
- The Department of State's counter drone program has a rough $25 million budget, had dedicated an interagency working group to improving the program, and works actively with private industry partners
- Current attempts at solving this problem include visual tracking, which requires expensive camera equipment and consistent line-of-sight, and radar blasting. Radar blasting is an unreliable method because it cannot discern differences between drones and other flying objects like birds and planes.
- Many diplomatic facilities worldwide can benefit from increased drone detection capabilities. In particular, research can be done on the need for a solution to the drone protection problem in Kiev, Ukraine.

IMPACT
A reliable means of detecting automated drones in the vicinity of U.S. Embassies would mean closing a security gap and preserving the safety of the staff inside all 280 embassies and consulates worldwide, with potential for further government-wide implementation.

POTENTIAL BENEFICIARIES
Security engineers, radar operators, computer scientists, electrical engineers