

SDR Based Anti-Drone System with 2.4GHz

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Abstract— This paper studied the feasibility of an anti-drone system with a full cycle of operation based on commercial Software Defined Radio (SDR). This proposed system will consist of a detection system with Frequency Modulated Continuous Wave (FMCW) used for drone detection by measuring position, direction, and speed to identify incoming objects. The second process is Radio Frequency classification (RF-classification) using Convolutional Neural Networks (CNNs) on the control signal emitted by both the drone and its operator to classify the type of received signal in the ISM band widely used in commercial drones. The last process is Jamming the ISM band control signal using a highly transmitted power jamming signal to prevent a drone from being recognized and controlled by its operator and spoofing the Global Positioning System (GPS) in the L1 band commonly used in a non-military application for drone neutralization. In the future, the proposed system design will be tested in various possible environments and situations so that the test results can be used for further improvements and corrections.

Keyword— Drone, UAV, Anti-drone, SDR, Radar, Jamming, RF-classification



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