

Radio Frequency Identification (RFID) is a well-known technology in wireless communication. It is hypothesized that the capabilities of RFID can be extended by reading an ID number and detecting movement around the reader during the read. Following regulatory standards, this study presents the foundation for a software defined RFID reader that may simultaneously detect and classifies the type of movement during the interrogation operation. A frequency hopping signal in unlicensed 5.8GHz can be analyzed using machine learning to extract a Doppler profile. We effectively collect information about an object through RFID by potentially detecting the speed of the object or classifying its size. This innovation could positively impact multiple industries. A few applications for this technology include: robust security mechanisms for RFID readers enabling reliable supply chains, ticketing speeding cars in the electronic toll lanes to enable safer roads, and enabling safer warehouses such that forklifts equipped with our RFID Doppler reader technology could detect human movement during inventory tracking.