ABSTRACT

The rapid evolution of warehouse operations demands innovative solutions to enhance efficiency, accuracy, and safety. This project, titled "Enabling Autonomously Intelligent Warehouses: V2X-Based Autonomous Drones and Robots for Enhanced Operations," presents a comprehensive system that integrates autonomous drones and mobile robots to streamline the logistics workflow within warehouses. Utilizing Vehicle-to-Everything (V2X) communication, this system automates the process from receiving goods to storing them, while also incorporating indoor drones for surveillance and fire detection. Upon a driver's arrival and notification via a mobile application, the base station dispatches an autonomous drone to retrieve and identify packages from the truck using QR code recognition. These packages are then transferred to a mobile robot, which navigates to the designated storage location, where an elevator system places them into assigned cells, updating the database with real-time location information. This advanced integration of autonomous technology aims to significantly enhance the operation.