



Real-time seat detection for faster boarding

Project description:

Modern train systems often face boarding delays caused by uneven passenger distribution along the platform.

Our project is a real-time train seat monitoring system that uses an ESP32 DevKit V1 and an HC-SR04 ultrasonic sensor to detect seat occupancy and display the results on a web interface.

Main features:

- Real-time detection of free and occupied seats using ultrasonic sensors.
- Automatic data transmission from ESP32 to a cloud-hosted web dashboard.
- Statistical analysis of passenger flow to check boarding efficiency.

Main Advantage:

By informing passengers about available seats before boarding, the system helps distribute them evenly along the platform — reducing train dwell time and improving schedule accuracy.



Libi Kogan, Boaz Maron, Zohar Abramovich
With the mentor: Ido Ram

A Project in Internet of Things (IoT)