



Smart Train Seating

Real-time seat detection for faster boarding

Project description:

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

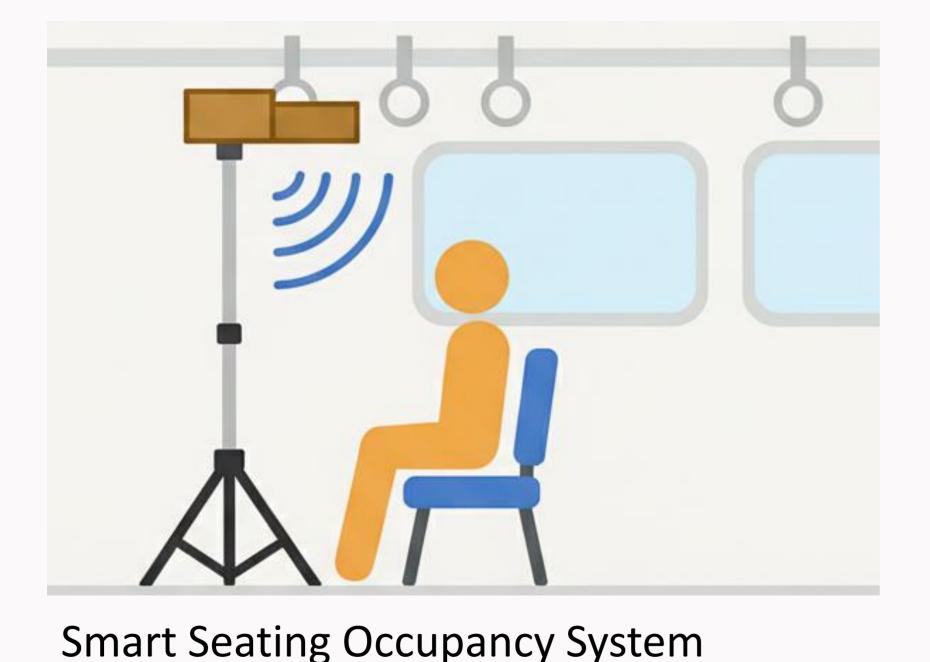
Our project is a real-time train seat monitoring system that uses an ESP32 DevKit V1 and an HC-SR04 ultrasonic sensor to detect seat occupancy and display the results on a web interface.

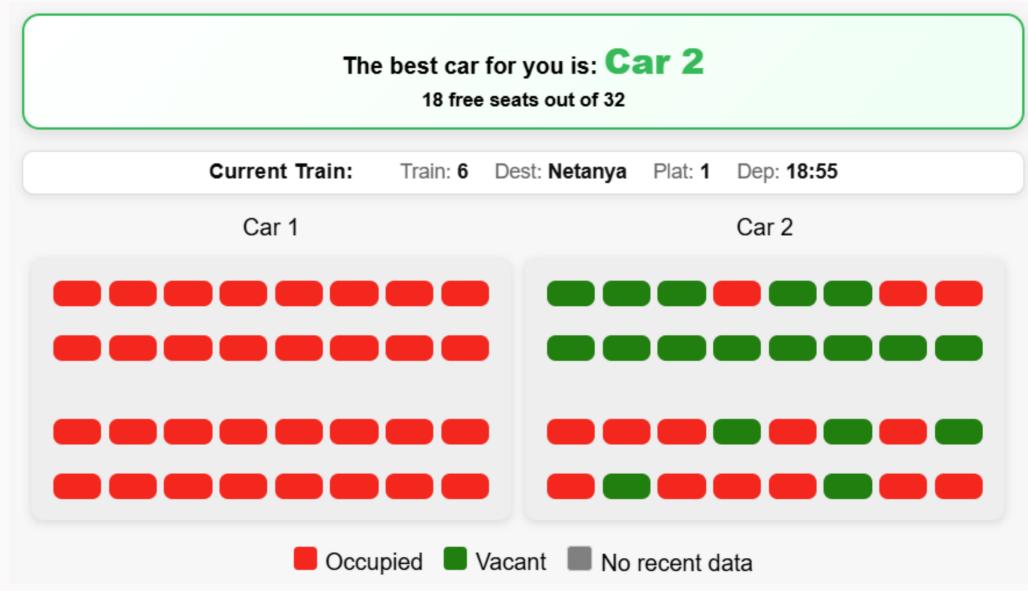
Main features:

- 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.





Real-time train seat occupancy user interface

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