Smart Valet Parking Dispatch System Presentation (For Interview Round)

Slide 1: System Overview & Flow

Components Involved:

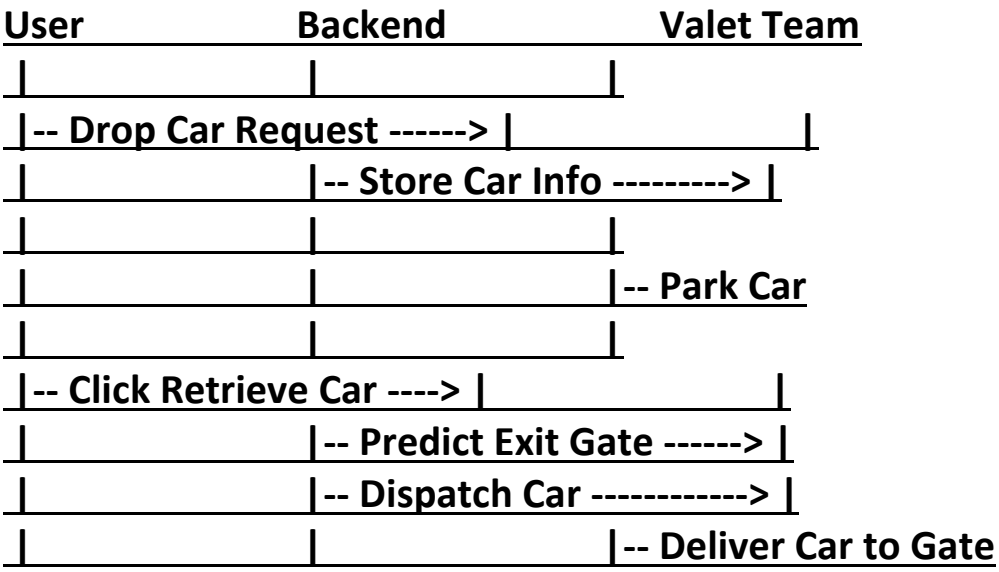
User App (Web/Mobile): Used by visitors to drop and request car pickup.

Backend Server: Receives requests, tracks users, predicts their exit gate, and dispatches valet instructions.

Gate Sensors (Optional): BLE beacons or Wi-Fi routers at gates to help with indoor positioning.

Valet Dashboard: Used by valets to receive car delivery instructions.

Flowchart:



Slide 2: Exit Gate Detection Logic

Technologies Used for Detection:

Wi-Fi / Bluetooth Beacons: Installed near gates; detects phone signal strength to estimate distance.

Geofencing: Virtual zones created at gate areas. If user enters a zone, it triggers gate prediction.

Motion Detection: Using phone's compass and accelerometer to estimate walking direction and speed.

Real-Time Updates: The system tracks direction changes and updates gate predictions accordingly.

Detection Logic:

If user enters geofenced area of Gate A:
Predict Gate A as exit
Else:
Use signal strength + walking direction to choose nearest gate
Continuously update if movement changes

Slide 3: Challenges & Assumptions

Challenges & Solutions:

GPS Inaccuracy (~15-20m indoors): Resolved using Wi-Fi triangulation and BLE beacons.

Changing Direction Suddenly: Real-time tracking updates gate prediction.

Congestion at Gates: Backend can reroute valet to less crowded gate.

Assumptions:

BLE/Wi-Fi beacons can be installed at gate exits.

Users have smartphones with internet and sensors.

Valet staff use devices to receive dispatch info.

Retrieval initiated via app link or SMS.