ParkMate

THE PARKING SPACE FINDER AND BOOKING SYSTEM

Phase 1 Documentation

02-02-2025

Problem Statement

Finding parking spaces in crowded city areas is a major challenge, leading to increased traffic congestion, fuel wastage, and frustration among drivers. Many urban areas experience high demand for parking, especially near commercial zones, shopping malls, offices, and public places. Drivers often spend excessive time searching for an available parking spot, which contributes to unnecessary traffic, vehicle emissions and delays.

Additionally, many existing parking lots operate on a first-come, first-served basis without an efficient digital system for reservations. This lack of a structured parking management solution leads to inefficiencies, disputes, and revenue loss for parking operators.

Evidence of the Problem:

- Reports from traffic management authorities highlighting congestion due to parking searches.

- Surveys indicating that drivers spend an average of **15-20 minutes** searching for parking in busy areas.

- Complaints from drivers and commuters about parking availability issues.

Stakeholder Identification

A parking spot finder and booking system affects multiple stakeholders. The key stakeholders include:

Primary Users:

- **Drivers & Commuters**: People who drive cars and motorcycles looking for convenient parking.

- **Tourists & Visitors**: Individuals unfamiliar with an area who need an easy way to locate parking.

Secondary Users:

- **Parking Lot Operators**: Businesses and municipalities managing parking spaces that need a digital system for slot allocation and payments.

Interview Questions

To understand the pain points and needs of stakeholders, the following interview questions will be used:

For Drivers & Commuters:

1. How often do you face difficulty in finding parking?

2. How much time do you typically spend searching for parking in busy areas?

3. Have you ever abandoned a trip due to parking unavailability?

4. What methods do you currently use to find parking?

5. Would you prefer a pre-booking system for parking? If so, what features would you find useful?

For Parking Lot Operators:

1. What challenges do you think your business face?

2. Would you be interested in a digital platform to optimize finding parking slots?

3. What concerns do you have regarding digital payments for parking?

4. Would you be open to a reservation system for parking?

Stakeholder Interviews

An interview was conducted with a **local driver** who frequently faces parking issues in urban areas. The interview has been recorded and uploaded as a YouTube video.

Another interview was conducted with a **parking lot operator** who has parking lots in Calicut city. The interview has been recorded and uploaded as a YouTube video.

YouTube video link - https://youtu.be/MswL5xI6Nck?feature=shared

Initial Requirements

Based on stakeholder insights, the preliminary functional and non-functional requirements are:

Functional Requirements:

1. Secure authentication for drivers and parking lot operators.

2. Display available spots based on location and time.

3. Allow users to pre-book a parking spot.

4. Enable online payments through multiple modes (UPI, credit/debit cards, wallets).

5. Allow parking operators to manage slot availability.

6. Users can rate parking locations for service quality and safety.

Non-Functional Requirements:

1. **Scalability:** System should handle a high number of users in peak hours.

2. **Data Security:** Ensure secure transactions and protect user information.

3. **User-Friendly Interface:** Intuitive design for seamless booking and navigation.

Specifications

1. **User Authentication & Access Control**

   o Secure registration and login system for drivers and parking operators (email/phone).

   o Role-based access (e.g., drivers, operators, admins).

2. **Real-Time Parking Availability Tracking**

   o Location-based display of available parking slots, filtered by price, and proximity.

   o Integration with parking lot owners to ensure accuracy.

3. **Slot Reservation & Management**

   o Pre-booking functionality with time.

   o Cancellation and modification policies (e.g., grace periods, fees).

4. **Multi-Channel Payment Gateway**

   o Seamless integration with UPI, credit/debit cards, digital wallets (Paytm, Google Pay).

   o Automated payment receipts.

5. **Operator Dashboard**

   o Real-time management of slot availability, pricing, and operational hours.

6. **User Feedback System**

   o Rating and review mechanism for parking facilities (safety, cleanliness, accessibility).

   o Flagging system for reporting issues (e.g., broken equipment, safety hazards).