# PARKit

*A marketplace for connecting drivers with parking space ns*


**Sri Kiruthika R**

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M.Sc Data Science

## Step 1: Prototype Selection

## ABSTRACT

The unavailability of parking spaces in urban cities, as well as Tier 2 cities during peak times, has become a pressing concern for drivers. Simultaneously, there are numerous empty parking spaces owned by individuals who could potentially rent them out during seasonal periods to earn supplemental income. This report details about the development of a Parking space Marketplace to address these challenges and bridge the gap between drivers in need of parking spaces and owners with available parking spots.

We are suggesting a Marketplace app called PARKit which can potentially address these challenges. By leveraging machine learning and artificial intelligence, PARKit connects drivers with available parking spots, optimizing utilization and reducing congestion. Through its intuitive user interface, PARKit connects drivers with suitable parking spaces based on their preferences and requirements, providing accurate and up-to-date information on availability, location, and pricing. By analyzing historical data and user feedback, the app can provide personalized suggestions, ability to predict parking availability trends ensuring a seamless and efficient parking booking process and allowing users to plan their journeys and secure parking spaces in advance. This report provides insights into PARKit's development and highlights its potential to revolutionize urban parking

## 1) PROBLEM STATEMENT:

Finding available parking spaces in crowded urban areas is a significant challenge for drivers. This challenge is also applicable in Tier-2 cities especially during some events. The lack of visibility into parking availability often leads to wasted time, increased frustration, and environmental impact due to unnecessary driving in search of parking. The goal is to create a platform that connects individuals with available parking spaces to those in need of parking, addressing the problem of limited parking options.It aims to streamline the process of finding and securing parking spaces, promote optimal utilization of available parking resources, reduce traffic congestion, and enhance the overall urban mobility

experience.Therefore, there is a need for a parking space finder app that addresses these issues by offering a reliable and user-friendly solution. The app should provide real-time data on parking availability, location, pricing, and other relevant details, enabling users to find and secure parking spaces quickly and efficiently. It should also integrate with mapping services to offer seamless navigation, reducing the time and effort spent searching for parking. Additionally, the app should support features like user reviews and ratings, reservation options, and convenient payment integration to enhance the overall parking experience.

## 2) MARKET/CUSTOMER/BUSINESS NEED ASSESSMENT:

The target market includes drivers in urban areas, commuters, visitors, and event attendees who struggle to find convenient and affordable parking options. The marketplace caters to small businesses and individuals who have unused parking spaces and seek additional income by renting them out.

### A. Market Need:

- Urbanization and increasing vehicle ownership have led to a growing demand for efficient parking solutions in crowded cities.
- Lack of available parking spaces and difficulty in finding suitable parking spots contribute to traffic congestion and inconvenience for drivers.
- There is a need for a centralized platform that aggregates parking space information, provides real-time availability, and offers convenient booking options.

### B. Customer Need:

- Drivers require a user-friendly and efficient solution to locate available parking spaces quickly and conveniently.
- Customers seek transparency regarding parking space availability, pricing, and other relevant details.
- There is a need for personalized recommendations based on user preferences, location, and real-time data to improve the parking experience.

### C. Business Need:

- Parking space providers need a platform to effectively market and monetize their available parking spaces.
- There is a business opportunity to optimize the utilization of parking resources and maximize revenue potential for providers.
- A centralized marketplace can facilitate transactions, improve customer

engagement, and create a streamlined process for managing parking spaces.

## 3) TARGET SPECIFICATIONS AND CHARACTERIZATION:

**Location:** Parking spaces in urban areas with high demand.

**Availability:** Information on the availability of parking spaces, including specific dates and times.

**Pricing:** Clear pricing structure for parking space rentals, which may vary based on location, duration, and additional features.

**Additional Features:** Options for covered parking, reserved spots, electric vehicle charging stations, or other amenities.

## 4) EXTERNAL SEARCH:

Conducted research on existing parking space marketplaces, studying their business models, user interfaces, pricing strategies, and user feedback. Explored successful platforms like

- ParkWhiz
- SpotHero
- JustPark

## 5) BENCHMARKING ALTERNATE PRODUCTS:

Alternate products in the market have been benchmarked to understand the current product and market maturity. Some of the prominent similar applications have been benchmarked with key highlights detailed below:

**1. ParkWhiz:**

- Real-time parking availability information

- Advanced search filters for price, distance, and amenities

- In-app navigation integration

- Secure payment integration

**2. SpotHero:**

- Pre-booking feature for parking reservations
- Real-time availability and price comparisons
- User reviews and ratings for parking spaces
- Navigation assistance

**3. ParkMobile:**

- Mobile parking payment solutions
- Digital receipts and session extensions
- Real-time availability and location information
- Integration with mapping services

**4. JustPark:**

- On-street and off-street parking options
- Search, book, and pay functionality
- Real-time availability and location details
- Navigation support

**5. BestParking:**

- Nationwide coverage in major cities
- Pricing comparisons for parking options
- User reviews and ratings
- Reservation options for parking spaces

These benchmarked parking space finder apps demonstrate key features such as real-time availability, search filters, navigation integration, secure payment options, pre-booking functionality, and user reviews. Incorporating these features into a parking space finder app can enhance the user experience and

provide a competitive advantage in the market.

## 6) APPLICATION PATENTS:

There were few patents found in google patents for the Parking space marketplace. Some of them describe the marketplace but the market place described in this report uses Artificial intelligence and Machine learning algorithms which is not present in patents that we found. Though, a further detailed search maybe required to ascertain the applicability of the exact patents.

Some of the relevant patents as below:

https://patents.google.com/patent/US20090125341A1/en?q=(parking+space+marketplace)&oq=parking+space+marketplace

https://patents.google.com/patent/US20090125341A1/en?q=(parking+space+marketplace)&oq=parking+space+marketplace

## 7) APPLICABLE REGULATIONS:

Investigated local regulations pertaining to parking space rentals, permits, liability, and safety to ensure compliance with government and environmental regulations.Some key regulations to consider include:

**1. Data Privacy and Protection:** Adhering to data privacy regulations, such as the GDPR or CCPA, which govern the collection, storage, and processing of user data. Implementing strong security measures, obtain user consent, and handle personal data responsibly.

**2. Intellectual Property Rights:** Respecting existing patents, trademarks, and copyrights to avoid infringement. Conducted thorough research to ensure app doesn't unlawfully use protected materials or designs.

**3. Local Parking Regulations:** Familiarizing with local parking regulations to provide accurate information and help users comply with parking restrictions, time limits, disabled parking rules, and other relevant guidelines.

**4. Payment and Financial Regulations:** Complying with financial regulations and obtain necessary licenses if your app processes payments. Adhere to PCI DSS standards and local banking regulations when handling financial transactions.

**5. Consumer Protection Laws:** Providing accurate and reliable information to users regarding parking space availability, rates, and terms. Comply with consumer protection laws, including fair advertising practices and transparent dispute resolution mechanisms.

**6. Accessibility Standards:** Ensuring to meet accessibility standards, such as WCAG, to accommodate individuals with disabilities and provide an inclusive user experience.

## 8) APPLICABLE CONSTRAINTS:

**Space:** Considered physical space constraints for parking vehicles in the listed spaces.

**Budget:** Considered financial limitations for platform development, marketing, and ongoing maintenance.

**Expertise:** Required expertise in platform development, payment processing, security, and user experience.

## 9) BUSINESS MODEL:

The marketplace will adopt a commission-based business model, charging a percentage fee for each successful parking transaction. Additional revenue streams may include offering premium services to parking space providers or targeted advertising opportunities. By continuously improving our app's functionality, establishing strong partnerships, and delivering exceptional customer support, we strive to create a user-centric platform that enhances the parking experience for our customers while generating sustainable revenue for our business.

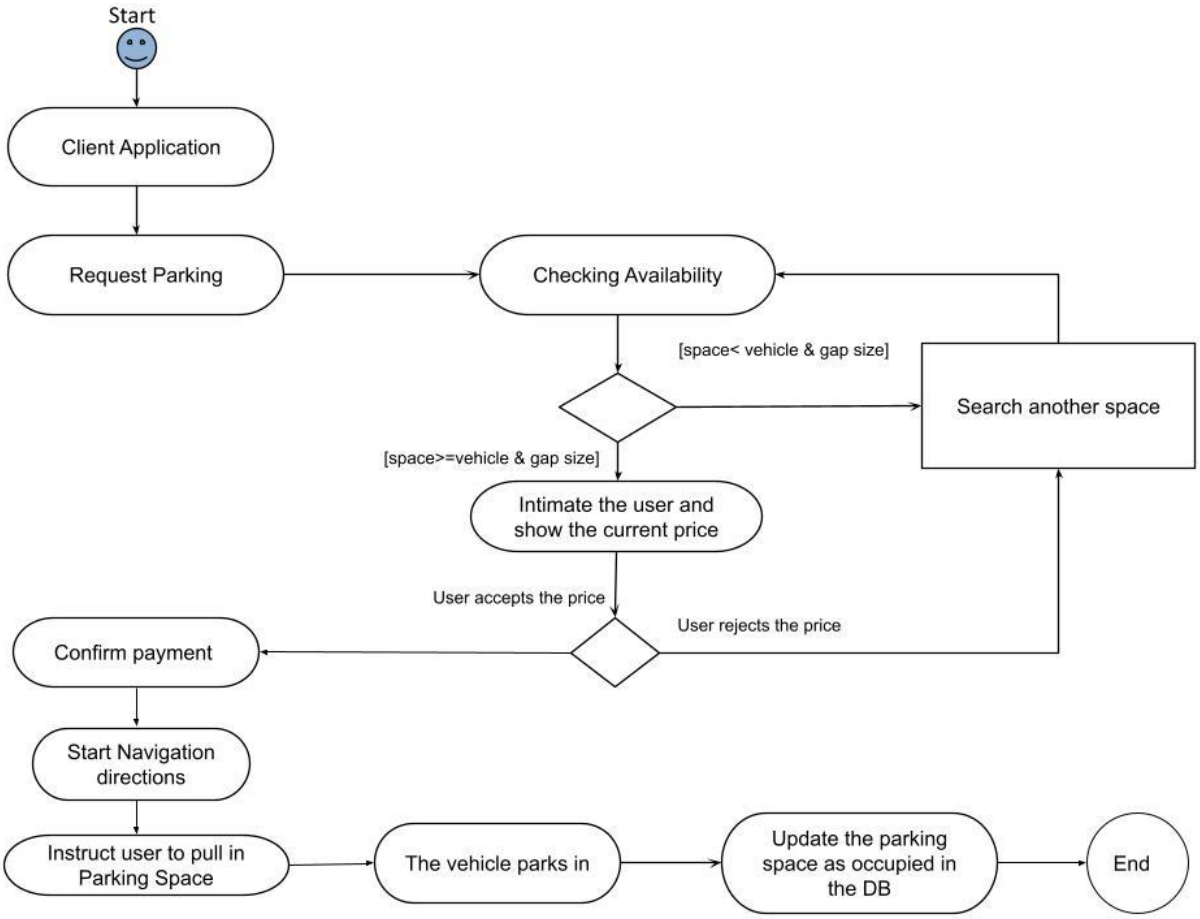
## 10) CONCEPT GENERATION:

The idea for the parking space marketplace was generated by recognizing the need for an efficient, user-friendly platform that connects drivers with available parking spaces and enables hassle-free parking reservations.

## 11) FINAL PRODUCT PROTOTYPE WITH SCHEMATIC DIAGRAM:

The final product prototype for the parking space finder app consists of a

user-friendly mobile application compatible with iOS and Android devices. The app's home screen provides a search bar where users can enter their desired location or use their current GPS location to find nearby parking spaces. The app utilizes real-time data from parking facility operators, municipalities, and other reliable sources to display available parking spaces on a map, along with key information such as rates, opening hours, and any restrictions. It enables users to make reservations by selecting their desired date and time, and complete the payment securely within the app using various payment options. Additionally, the app incorporates a navigation feature that guides users to their reserved parking space using optimized routes.




**WIREFRAME For PARKit**


VIRGIN 3G 4:20 AM
PARKIT
WARNING
Please do not use any handheld device to operate this application while driving. Using a handheld device to operate this application while driving is dangerous and against the law in California. Parkit is not liable for any damage or injury that occurs while operating this application.
Accept & Continue
VIRGIN 3G 4:20 AM
PARKIT
Home
Search
Find Car
Setting
Pay
VIRGIN 3G 4:20 AM
Setting
Sign Out
Credit Card Info
Card Type
Visa
Card Number
6186
Expiration Date
June 30, 2016
Billing Zip Code
92116
Stay Signed In
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PARKIT


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Find Car - Direction
PARKED CAR FINDER
Parkit will show you where your car is parked and direct you to the location.


VIRGIN 3G 4:20 AM
Payment
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$ 16
Detail
PAY
MOBILE PAYMENT
Enable mobile payment is easy and safe. You can pay on the phone without worrying about not having enough coins.

## 12) PRODUCT DETAILS:

PARKit is a powerful yet user-friendly mobile application designed to streamline the process of finding available parking spaces. With its intuitive interface and robust features, it takes the frustration out of parking, ensuring a seamless experience for users.

**How does it work?**

- Registration and verification process for parking space providers and drivers.

- Listing and search functionalities for parking spaces.

- Booking and payment processing system.

- Communication and feedback mechanisms between providers and drivers.

**Data Sources:**

- User-provided information during registration and listing process.

- Geolocation data for accurate location mapping.

**Algorithms, frameworks, software, etc., needed:**

- Geolocation algorithms for accurate mapping of parking spaces and proximity-based search.

- Recommendation algorithms to suggest parking spaces based on user preferences and historical data.

- Payment processing software and integration with payment gateways.

- User authentication and security frameworks to protect user data.

**Team required to develop:**

- Front-end developers for designing the user interface.

- Back-end developers for implementing the platform's functionality and

database management.

- UX/UI designers to create an intuitive and user-friendly experience.

- QA testers to ensure the platform's reliability and smooth operation.

**What does it cost?**

- Costs will vary based on the complexity of the platform, development time, and required features. Factors include hiring development resources, server costs, payment gateway fees, and marketing expenses.

## 13) CONCLUSION:

The parking space marketplace addresses the problem of limited parking options by connecting drivers with available parking spaces. It offers convenience, affordability, and security for users while providing a source of additional income for parking space providers. The proposed business model, functionality, and features make it a viable solution for small businesses and individuals in need of parking spaces. Its real-time availability updates, interactive map, advanced filtering options, reservation and payment integration, and user-generated reviews ensure a stress-free and efficient parking experience for users.

## 14) REFERENCES


- https://www.researchgate.net/publication/343513017_Designing_Parking_Lot_Finder_Application
- https://www.emizentech.com/blog/parking-finder-app-development.html
- https://www.spaceotechnologies.com/blog/parking-spot-finder-app-development/

## Step 3: Business Model for ParkIt

The Parking Space Finder App connects parking space owners with individuals seeking convenient and secure parking options. The app aims to provide a seamless experience for users, making it easy to locate and reserve parking spaces while also offering a sustainable revenue model.

The key **value proposition** for the app is as below:

- Convenience: Users can quickly find available parking spaces in their desired locations, saving time and reducing stress.
- Cost-Efficiency: Car owners can compare parking options based on price, location, and amenities, ensuring they get the best value.
- Optimized Space Utilization: Parking space owners can monetize their unused or underutilized spaces, generating additional income.
- Secure Transactions: The app facilitates secure and hassle-free transactions, instilling trust among both car owners and space providers.

**Revenue Model:**

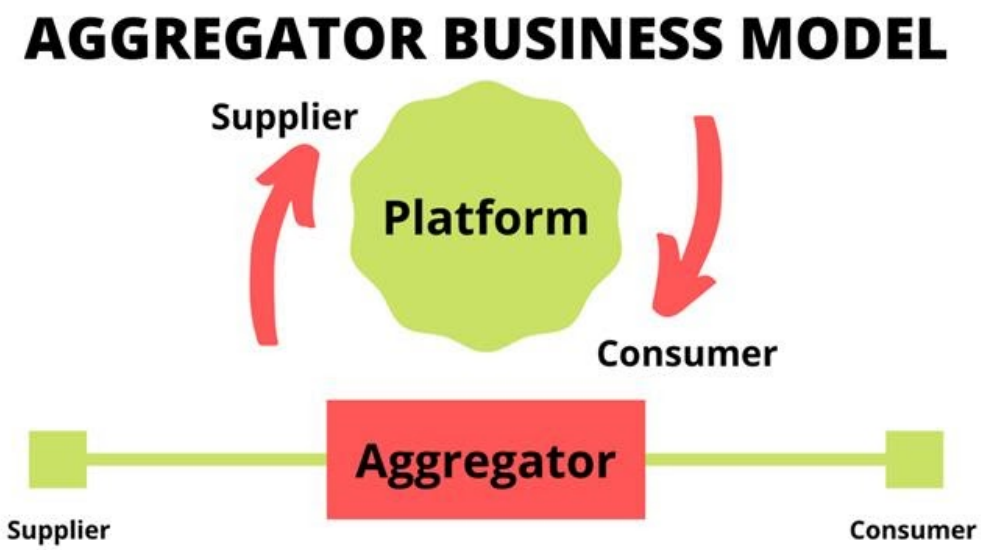
The app acts as an aggregator and adopts a commission-based revenue model, earning income from both parking space owners and car owners.

a. Parking Space Owners:

When a parking space owner successfully rents out their space through the app, the platform charges a commission on each transaction. This commission fee is a percentage of the total parking fee for the booking. The fee percentage can be tiered based on factors such as location, demand, and frequency of listings.

b. Car Owners:

When a car owner books a parking space through the app, a portion of the parking fee is retained as a commission. This commission is transparently displayed during the booking process, ensuring that users understand the breakdown of costs.




**Step 4: Financial Model**

In the context of developing the Parking Space Finder App, financial modeling involves predicting the app's potential profitability by analyzing the market it will be launched into. This involves identifying the appropriate market, collecting relevant data, and using regression models or time series forecasting to make predictions about the market's growth. Subsequently, a financial equation will be designed to align with the market trend and estimate the app's profitability based on factors such as pricing, sales, and costs.

Let's consider that the Parking Space Finder App will be launched in a market that's growing linearly over time. We'll use the following financial equation to estimate the total profit:

$y = mx(t) - c$

y: Total Profit

m: Pricing of the app's services (per transaction)

x(t): Total Sales (Number of transactions) as a function of time

c: Production, Maintenance, and Operating Costs

Profit = ₹100 per year * x(t) - ₹5 lakhs per year

where:

Profit is the total profit from the app in a year

x(t) is the total number of users of the app in year t

₹100 per year is the pricing of the app

₹5 lakhs per year is the production, maintenance, and other costs

This model assumes that the market for the parking space finder app is growing linearly at a rate of 10% per year. This means that the number of users of the app is expected to increase by 10% each year.

The profit from the app is calculated by multiplying the number of users by the pricing of the app and then subtracting the costs.

We have assumed the app has 10,000 users in its first year, the profit will be ₹5 lakhs. In its second year, the number of users is expected to increase to 11,000, and the profit will be ₹5.5 lakhs.

The linear financial model can be used to forecast the profit from the app in future years. However, it is important to note that this is just a model and the actual profit may vary depending on a number of factors, such as the competition, the target market, and the app's features.