# DIGIPARK

# A Service Based App

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## Abstract

*DigiPark, a parking management system, a cloud-based application, that will help users find available parking spaces anywhere and check the availability of parking spaces in the appropriate parking lot. If parking is available, users can book in advance for the required number of hours. Users can also compare the hourly cost of the various options available and choose the best one. When booking a parking space, the user will need to provide certain information such as his vehicle number, entry time, exit time, etc. Upon successfully booking a parking space, the user will receive a unique QR code that will contain. all the details they have filled in and will serve as their ticket. Users can pay the parking amount to the service provider upon arrival at the location or via the built-in payment system provided in the application. Users can also add information to their car and later select it while booking a parking space. For security purposes, there is a JWT-based authentication system and every user needs to sign in or register for the app to use it. DigiPark will provide a separate application for service providers where they can register their parking spaces with the system. Once a parking space is registered in the system, it will be automatically added to the map interface for users to find. Thus, DigiPark is focused on maintaining an effective parking system where users, as well as service providers, will benefit.*

## 1. Introduction

With each passing day, Urban and Modern Development is one step further. In line with this, the population is also growing. These factors have contributed greatly to the increase in the number of motorists. In fact, the number of urban vehicles became nine per 1000 vehicles in 1960-65 and the same increased to 402 per thousand people in 2011-15, resulting in a 44 per cent increase in the total number of vehicles to be taken. to the cities. With such a large number of car users, most people living in big cities are having difficulty finding a place to park. Here, the problem is not the lack of adequate parking spaces but a system that can help people find the parking spaces around them. Improper parking can cause serious damage to the vehicle and cause inconvenience to others. Thus, there is a great need for an effective parking system that can close this gap. If people can find available parking spaces anywhere, they will not have to wander around finding one that will directly reduce their time and waste fuel and indirectly reduce traffic congestion and pollution.

## 2. Scope

With an individual access point, DigiPark is built using Flutter which can work on both Android and iOS devices. The system tracks the current location of users and shows them the parking spaces available in that area that are registered with the system. The system also provides a search bar where users can enter the desired location and find the parking spaces before arrival. Another important feature of the system is location comparisons, online booking, and a built-in payment system.

## 3. Objective

The aim of our "Park Up" program is to:
- Reduce the stress a person has when finding a parking space in everyday life.
- Allow the person to locate and view the various parking lots near him or her somewhere.

- Allow the person to select or view a parking space and check whether the location is available or not
- Allow the person to book a parking space if space is available.
- Allow the person to make an online payment and cancel the booking.
- Alternatively, traffic congestion can be largely addressed in major political cities and metropolitan areas.

## 4. Literature Review

**4.1. Title :** Review Paper on Smart Parking System
   **4.1.1.    Inventor**: Anusha, Anushri, Arshitha M S, Geetanjali Bishtannavar, Ms. Megha D Hegde
   **4.1.2.    Description:**
- This research paper introduces an intelligent Io-based parking system that provides a complete solution to the parking problem in major cities.
- The user can reserve a parking space. Once he is in space the time will begin. The user later leaves the area he needs to pay for the amount of time his car is parked at the entrance.

**4.2  Title:** Centralized parking payment and monitoring system using geo location enabled devices
   **4.2.1    Inventor:** Adityakumar Akshaikumar Aggarwal, Sunil Goel
   **4.2.2    Description:**
- This patent describes a one-stop parking and monitoring system, which uses geo-location-    enabled devices and wireless computers.
- Instead of looking for a specific parking area, it aims to park in a specific area of the road or in an unoccupied parking lot - which we call 'Parking'.
- This program does not require any new devices to be installed or parking areas to be marked and included in the parking system. Uses geo-location-enabled devices to pinpoint parking location.

**4.3  Title:** Intelligent Parking System

   **4.3.1    Inventor:** Abdul Ahad, Zishan Raza Khan, Syed Aqeel Ahmad
   **4.3.2    Description:**
- Smart parking management systems can give drivers extreme comfort. In this paper, the proposed web application App, called 'Park Easy' is based on the use of smart phones, camera-sensing surveillance techniques used as sensor to take pictures of car parking spaces. With this program, the use of parking spaces will increase.
- Provides a driver with a parking space to park his car, renew the parking space when the car is moving and calculate the cost to be paid. The Smart Parking App, "Easy Park", will also enable the most important strategies to provide all possible lack of parking routes in any part of the city in particular, helping to accurately predict and locate a car / location in real time.Smart parking management systems are capable of providing extreme levels of convenience to the drivers. In this paper, a proposed web App system, named "Park Easy " is based on the usage of smart phones, sensors monitoring techniques with a camera which is used as a sensor to take photos to show the occupancy of car parks. By implementing this system, the utilization of parking spaces will increase.
- Provides a driver with a parking space to park his car, renew the parking space when the car is moving and calculate the cost to be paid. The Smart Parking App, "Easy Park", will also enable the most important strategies to provide all the possible lack of parking routes in any part of the city in particular, helping to accurately predict and detect car location / location in real time.

**4.4  Title:** Smart Car Parking with Reservation system using QR Generator
   **4.4.1    Inventor:** Aswathy James, Prince Abhraham
   **4.4.2    Description:**

- In this paper, an attempt has been made to automate the car and the car parking system with Smart Parking System (SPS) based on the integration of the Android app and QR Code reader.
- Introduction of a novel algorithm that enhances the efficiency of the current smart parking system and enhances the android app to collect information about the living conditions of parking spaces, and to inform drivers in an unoccupied parking lot. Getting in or out of the parking lot is controlled by an Android-based app. The algorithm helps to improve the chances of successful parking and reduces the user's waiting time.

## 5    Proposed System

The proposed system is used by the user to maintain the parking space. Here the user is able to reserve a parking space. Once in the space the time will start later the user will leave the space he needs to pay for the amount of time his car is placed in the entrance area.

### 5.1   System Design

A system architecture design describes the structure, behavior and further view of the system and analysis. The goal of design is to produce the system module used to build the system. In the proposed program.

Initially when a user logs in the app they can view real-time parking spaces available for parking.

After viewing the FIFO-based parking area the parking space will be allocated to users so once they have selected the parking area by entering all the required information you can book a parking space.

So once he has entered the parking lot his parking time will begin, if the person will not go with the car at the appointed time a warning message will arrive. Then in time he leaves the area from time to time will be calculated and the fee will be paid.

### 5.2  System Architecture

The goal of design is to produce a module of the system which is used to build the system. Fig 1 shows the proposed system where:
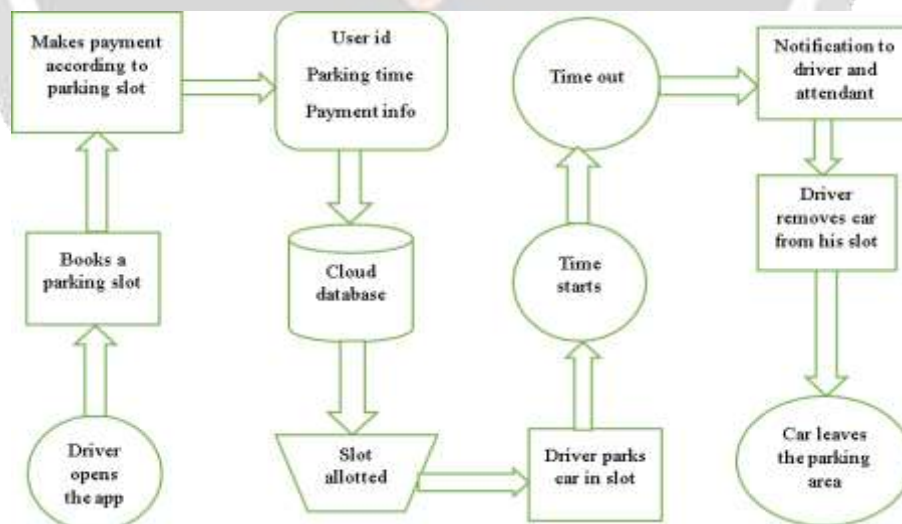


- User will register in the app, later gaining access to the app by entering a username and password.
- At the beginning of the homepage you can view real-time spaces available.
    - By viewing the available space you select a specific location and enter the required information such as vehicle number, parking number, time, and time.
    - Data is sent to the cloud by a slot provided by the user.

- When the selected time is up, if a person has not received his or her car a notification message will be sent to the user.
- The user later leaves the parking lot to pay for the right time.
- Later the availability of spaces will be updated on the homepage for viewing.

### 5.3 Algorithm

The algorithm can perform arithmetic, data processing, and default thinking tasks. As an effective method, the algorithm can be displayed within a limited amount of space and time and in a well-defined structured language for calculating the task. Algorithm 1 describes user and employee relationships regarding parking space.

**Algorithm 1**: **Algorithm of System Operations**
Step 1: Start
Step 2: If the user not registered
        User register in the system
Else
        Sign in to the system
Step 3: user submits request
Step 4: staff will receive the request
Step 5: if parking is not available
        Staff will send a message that space is not available (try another Park! Unavailable space)
        Go to step 3
        Else
        Staff will send the reserve parking slot number to the user
Step 6: user enters the car parking
Step 7: End

When a user attempts to find a parking space, they must register to get free parking through the system, and submit a request on request. The system will detect the application and check the available parking table to receive the message and check the park using the table. When the vehicle arrives at the parking lot, the drivers must be confirmed by staff. This verification process is achieved by looking at the parking website. If the details are correct, the driver received a receipt and entered the park. Later, the driver checks the area to see if it is empty. If so, he will park and change the situation from being reserved to the park. When the current car park is full, the system will send a new message including - Try Another Park! Unavailable Space, as shown in algorithm 1.

## 6 Applications

The importance of smart parking is:
1. Determine accurately and predict location / vehicle in real time.
2. Guides residents and visitors to the available parking space.
3. Configure Parking Use.
4. It simplifies the parking experience and increases the number of parking participants, such as dealers and drivers.
5. Enables smart decisions using data, including real-time applications and historical statistics reports.
6. Smart Parking plays an important role in creating a better city environment by reducing emissions of $CO_2$ and other pollutants.
7. Smart Parking makes it easy to monitor and manage better and more real-time parking that leads to more revenue.
8. Provides tools to improve human resource management

## 7 Conclusion

Problems that may arise while working with an intelligent parking system and solutions are explained that provide a good platform for all users. Through the use of an intelligent parking system, it ensures an easy life for people who struggle with the daily routines of their daily lives. The system we provide provides

real-time information about the availability of parking spaces in the parking lot. Users can book a parking space with our mobile app. So users can save their time in finding parking spaces.

## 8   References

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5.  Rosario Salpietro, Luca Bedogni, Marco Di Felice, LucianoBononi: Park here! A smart parking based on smart phones' embedded sensors and short range communication technologies