



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## SMART PARKING SYSTEM

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**Abstract:** Growing population in metro towns is leading to huge vehicle density, the problems for car parking has become an unending question. Centralized car parking systems have been set up to avoid roadside parking and other related traffic problems. In many cities, car drivers look for a parking slot during rush hours or during traffic jams. This app presence an efficient method to check the availability of the parking slot and to reserve a slot. Existing work will focus solely on parking slot availability. However in this fast paced world drivers cannot confirm whether a parking slot is available as per the demand. To conquer this disadvantage, clever parking with reservation cell primarily based totally surroundings is proposed. This will make it easier for motorists to park their vehicles and avoid traffic jams. Drivers can provoke the request the usage of the reservation app on Android mobile to decide the provision of a parking slot. The driver can reserve the slot through the online payment system if the slot is available. The proposed system also allows drivers to cancel a reserved parking slot. The amount will be refunded after cancellation charges.

**Keywords:** Parking Slot, Traffic Congestion, Vehicles, Reservation Slot

### I. INTRODUCTION

This app presence an efficient method to check the availability of the parking slot and to reserve a slot. Existing work will focus solely on parking slot availability [1]. However in this fast paced world drivers cannot confirm whether a parking slot is available as per the demand. To overcome this disadvantage, smart parking with reservation mobile based environment is proposed [2]. This will make it easier for motorists to park their vehicles and avoid traffic jams. [3] Drivers can initiate the request using the reservation app on Android mobile to determine the availability of a parking slot.

### II. LITERATURE REVIEW

Smart Parking System is a android applications. It is introduced by D.J.Bonde. In this application is used to help of parking areas. [4]. When we go anywhere we face a lot of problems for parking there. For example, shopping malls, restaurants, and so on. Also near some apartments sometimes the parking space is overcrowded and we face the problem of not knowing where to park. [5]. How easy it is for a driver to make car parking using this Android application. Car parking is convenient to park another car depending on the time. If the parking space is full then the Android application will show another area. Then the user can easily go there and park. In this section, some related works of smart parking are presented. The system [7] is used to collect and display applications, technologies, and interfaces in real time, requiring expensive private infrastructure. The Smart Parking System [8] provides user information and access to parking slots via the VMS over the Internet. It is classified as off-road and on-road. The Google Map application, ultrasonic sensors and cloud-stored data are used in smart parking [9], the Android application Map Forward data user space. Each slot has a parking space and an LED for booking. An infrared sensor in [10] is implemented to detect a vacuum and open the entrance and exit gate. The RFID tag, issued to approve individual access to a parking lot using a mobile application, is provided in the ACO algorithm [11] to calculate the shortest path between users and available space by connecting to the cloud. System using Arduino and Raspberry PI to locate free slots by using GPS for internet server and booking [12]. A system that uses infrared sensors [13] is proposed. Verification is completed using the RFID tag and ZigBee for communication. In the Android application [14] the customer gets data about the area, state, car number, user entry and exit time and choice of parking location Available empty parking slot and user details stored in the MYSQL database. [14] The car number and license must be entered into the system using the system and a photo of the vehicle can be taken to easily find out whose car it is. The system [15] uses the Vehicle to Infrastructure (V2I) to communicate with the driver sending the parking request, the User information status corresponding to the reservation and the Infrastructure to Vehicle (I2V) communication used for the Reserve Parking Place application and showing the direction. For security purposes, the QR code is used, the webcam is used to scan the code, and the car is authorized to indicate the direction of the parking zone. Privacy-preserving pay-by-phone parking system [16] is proposed, booked by phone payment. The mobile application is implemented using the credit card payment method. If a new user is using this application for the first time it means that he must first register with Smart Parking Applications. Contact the admin if there are any problems and he will fix them. Coupons are also given to the first registered user. Using them he can reduce the cost of parking

and increase the parking deadline. The parking officer questions the on-board equipment by handling the RFID query. The system [17] provides real-time parking facilities and is ready for customers to book and make payments before entering the car parking space. Proposed a communication system and database using the system cloud in [18]. Ultrasonic sensor placed on the ground [18] connected via Ethernet. The system [19] uses wireless communication to order nearby parking spaces via GPS. The system broadcasts the availability of vacancies every 2 minutes. If all parking spaces are not available, no action will be taken; In the opposite case, any customer would be willing to order an area within 2km of their location. Provided in a system [20] that calculates neighborhoods for optimal car parking, trajectory and time-consuming user-supported space. There is no booking service in the system and space is subject to availability at that time.

### III. PROPOSED SYSTEM

The use of this Android application, our idea is to be able to reserve and book a parking space using this in a very simple manner without any problems. Basically, two hours before his expected arrival, the user can pre-book if the slot is available in the desired location and also reserve the slot ,it will help the user to find the parking slot through the Android application and booking through the online payment or offline payment. The person using this Android application must first reserve a parking space and then enter exactly how long the customer will be there as well as the time he will go. If he is later than the scheduled departure time he can pay a higher charge and park the vehicle there. If the user has to go ahead, he will have to pay whatever price is put in front of him. You can pay these costs online, either near the parking lot or online. The customer has to cancel the parking slot which means he has to pay a small cost. The rest of your money will be credited to your account as soon as it is canceled. Parking slot allows traffic locate availability, confirm availability. Assists the parking proprietor to reveal the provision of a vacant slot in order that it may be utilized by the subsequent person. The proposed plan will store site visitors time in locating and reserving a parking slot. Allocating a vacant slot to a parking proprietor in a scientific and prepared way is laborious task, as the visitor himself chooses a adequate parking space for his vehicle and the process will be made more efficient.

### IV. ADVANTAGES

- This will allow traffic to locate the facility of the parking slot, verify the provision.
- This will help the parking owner monitor the availability of the empty slot so that the next person can use it.
- The proposed plan saves the user time and easy way of finding visitor time and booking a parking slot.
- Allocating a vacant slot to a parking proprietor in a scientific and prepared way is a onerous task, because the vacationer himself chooses a appropriate parking area for his car and the manner is made greater efficient.

### V. REQUIREMENTS

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#### 5.1 Functional Requirements

The admin has set up some websites to find the parking area in this system. Customers also have to pay for the Android application and the amount means that users have put things like phone pay, google pay, amazon pay, paytm in it. If there is no money in the customer's account he can pay at the parking lot. Some of the requirements are as follows steps:

##### 5.1.1 Web Application for parking admin

1. Selecting parking areas and which slot to choose, as well as how much it will cost to park there, how much it will cost per minute and how long a vehicle can stay there will be included.
2. The admin is constantly updating the data for the parking area. Doing so will ensure that customers do not face any problems.

##### 5.1.2 Android Application for parking operator

1. Send the vehicle plate number and reservation password (session ID) to the central server for verification when customers check in. The customer must pay the bill when parking his vehicle. That is why giving him that bill shows why it cost him so much.

##### 5.1.3 Android Application for end users

1. Vehicle details and customer details need to be registered here. The first task of the end user is to collect evidence and store it in the system. Find the parking area from the list of areas registered by the parking operator.
2. View details such as selected parking area name, price per minute, total number of available spaces. Reserve the available parking space and specify the reservation period.

##### 5.1.4 Back End Management System

1. When editing or deleting a data, it is important to properly consult the user and then edit or delete that data.
2. When giving a booking slot the admin must properly collect the user credentials. An Id should be assigned to each slot.
3. Customers must contact the parking operator to modify the parking slot. The parking area allows the customer to cancel the slot if it is not comfortable.

#### 5.2 Non-Functional Requirements

- I. The information we provide must be separate, only then can the website retain the information or the data will not be stored. The server collects and resolves user requests only in those cases where it must be properly from separate users.
- II. Consumers should take due care as before when any problems arise. For example when your device is stolen the user should see to it that the data is connected to a different system.
- III. We have made this Android application very secure. If you use it you can keep your data very secure.

### VI. IMPLEMENTATION

The Smart Parking application will be implemented collectively in the following modules:

- Website for Administrator.
- Mobile application for end user.
- Mobile application for parking operator.

### 6.1 Website for Administrator

Website allows Administrator to carry out features: Add, View and Edit a parking area.

#### 6.1.1 Login

First user has to login/check in to the app and cable of locate gadgets regardless of the admin posted and update their profile also.If the customer wants the item, he can order the items and also access to see the status of the ordered items.

#### 6.1.2 Adding a new parking area

It is used to add new parking spaces. This means that unprecedented parking areas will be identified and added. It is only used to add parking locations.

#### 6.1.3 Edit parking area details

Only the admin can modify the parking areas and remove those parking areas from the system. Before doing so the admin will need to contact the user once.

### 6.2 Mobile Application for Operator

Mobile Application for the Operator helps in Authentication and Billing functions.

#### 6.2.1 Authentication

When the customer enters the parking area, the operator confirms the reservation using driving license and vehicle R.C and vehicle number.The first shows that the vehicle has been standardized to have arrived in the parking area. The entire parking operator is solely responsible for any vehicle that enters the parking lot first. The admin must book the parking slot after the booked vehicle arrives at the parking area and how long it will stay there.

#### 6.2.2 Billing

The booked customer is required to first receive the bill and then enter into the system his driving license and the details of the cart and the number of the vehicle. On Billing, out-of-time registered, invoice quantity calculated and Updated, reputation "Completed" and changed to parking reputation modified to "Available" and complete parking spaces the given parking area will be increased.

### 6.3 Mobile Application for End User

Provides mobile application functions for end users - Cancel Search, Book, View, Slots.

#### 6.3.1 Search Parking Area

The user has to find out if the parking slots are empty or if there are any in the Android applications near him for parking and then book them. Customers can also see the cost of the slot.

#### 6.3.2 Book Parking Slot

The user selects the area in which he wants to park and then the customer selects the parking slot. Once selected the user will have to pay for his parking expenses .It can be done online otherwise at the parking lot.

#### 6.3.3 View Booking Slot

User can view his contemporary-day booking information as location, session ID and booking popularity through manner of manner of surrender client utility.

#### 6.3.4 Cancel Booking Slot

The user can also make his modern reserving. Upon cancellation, Parking session status "Canceled" and becomes available slots will be updated automatically.

## VII. EXISTING SYSTEM

Parking problems are common and dangerous in every major city. The sizable use of Android generation with current advances in wi-fi programs exhibits that virtual facts penetration may be important in fixing rising parking problems. Currently the quantity of humans the usage of Android cellular telephones is regularly increasing. Customers waste time looking for available parking slots.This is a waste of time, leading to congestion and also causing traffic. People coming from far and wide are coming to waste time searching for vacant space and sometimes not even finding a parking space. Users have to spend quite a few time for fee processing and there are probabilities for people to leave the parking space without doing the payment.

## VIII. DIS-ADVANTAGES

- ✓ There is no proper parking facilities at all time.

## IX. CONCLUSION

In end Smart Parking is used to e- book parking slots with none superb attempt via way of means of the consumer the usage of an android device. The consumer can take a look at the reputation of parking region and e- book the parking fit in advance. This can overcome many of the problems caused by traffic management errors. This software is relevant on Android Mobile OS as

cellular computing has confirmed to be the first-rate paintings location for researchers with inside the fields of database and facts management. This application can be applied in nook and corner due to its ease of use and impact.

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