

## International Journal of Innovative Research in Science, Engineering and Technology

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# Online Vehicle Parking Android Application: Smartpark

Kapil Gajbhiye<sup>1</sup>, Nikhil Dhoke<sup>2</sup>, Bhushan Hiwase<sup>3</sup>

B.E. Final Year, Department of Information Technology and Engineering, S.B. Jain Institute of Technology,  
Management and Research, Nagpur, India<sup>1</sup>

B.E. Final Year, Department of Information Technology and Engineering, S.B. Jain Institute of Technology,  
Management and Research, Nagpur, India<sup>2</sup>

B.E. Final Year, Department of Information Technology and Engineering, S.B. Jain Institute of Technology,  
Management and Research, Nagpur, India<sup>3</sup>

**ABSTRACT:** This application presents the design and implementation of Online Car Parking. The application provides the design of data program and the approach of automatically producing allocated and free spaces for parking. This application describes the principle of the online parking system, it presents the main functions of the parking facility, analyses the auto-generating allocated and free space for parking and the security of the parking system. This online parking system includes the architectural components as Browser-Server architecture, Client-Server Architecture, Security. This system presents an android application for Parking System developed with Android Studio and Firebase technologies. The system provides the functions, including parking management, spot generation, online registration and booking. Also the combination of client-side programming and server side programming techniques were used and analysed. The system describes the android application that is used to book parking spaces online.

**KEYWORDS:** Data program, Client-Server architecture, Android Studio, Server-side programming techniques.

### I. INTRODUCTION

We are planning to introduce online parking management system to more effectively control parking and enhance parking environment for everyone. Purpose of online parking management system is to reserve a parking space online for the customers. The parking on campus can be an issue for staff, students and visitors alike. For this we are planning to introduce a car park management system to more effectively control parking and enhance the campus environment for everyone. The vehicle park management system will enable us to make more efficient use of available spaces by controlling vehicle access at key entrances. It will also provide means of enforcing parking policy, by issuing the warning notices and fines to people parking without permits or illegally. This system presents the design and implementation of Online Car Parking. The system provides the design of data program and the approach of automatically producing allocated and free spaces for parking. Parking on campus can be an issue for staff, students and visitors alike so we are planning to introduce a vehicle parking management system. This will enable us to make more efficient use of available spaces by controlling vehicle access at key entrances.

**Problem Statement:** Finding car parking is a big problem in city. It is hectic for a person to find parking for their vehicles in Today's busy life. Problem of scattered parking of vehicles and mismanagement of parking in city.

### II. LITERATURE SURVEY

In this paper, we mainly focus on designing a new smart parking management system that assists users to find parking spaces in a specific parking area by using the android application. In addition, an important goal of the system is to

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reduce the traffic searching for parking, hence reduce energy consumption and air pollution. This paper mainly focuses on simplifying car management system at both ends i.e. users and parking owners. The application will be a middleware for connecting user to the owners. This greatly facilitates the owner as his parking space is put on a spot on an area increasing his functionality. Amongst the suggested area the user gets the choice to select which enhances the usability of the app.

[1] This paper describes the indoor parking facility for the daily customers in need of parking space. It gives the idea about how the process for the parking vehicle will be carried out. Also, it gives the technological feasibility and effectiveness of a novel parking facility. After parking the vehicle by customer, it gives the location of the vehicle that where it was being parked.

[2] This article gives the idea about the various types of parking schemes such as on street parking vs. off street parking. The parking apps are of two kinds as first is Parking reservation apps, for example, ParkWhiz, spothero, parking panda and second one is On-demand valet apps, for example, parkopedia, parkme, bestparking. The different types of apps makes the process of choosing customer much easier and convenient.

[3] It provides the suggestions, queries and FAQ's from and for the customers. It also provides the booking process for the new customers. It has monthly paid facility. It also provides the car washing and servicing facilities for the customers.

[4] It gives the idea of the payment schemes and type of payments for the booking. In this, the "clever alert" facility makes alert to the customer via smartphone for the time to go.

### III. PROPOSED WORK

The application is for online car parking booking which will be sophisticated and implemented for the customer's reliability. The system will be used by two users. They are: Admin and Customer. The Admin is only responsible for the collecting information of the customer. The customer can book the parking space for car at different zones. The whole system is divided into the three modules. They are User Registration and Login Module, Admin Module, Spot Finding Module. The car park management system will enable us to make more efficient use of available spaces by controlling vehicle access at key entrances. This will also provide a means of enforcing parking policy, by issuing the warning notices and fines to people parking without permits or illegally. This application presents the design and implementation of Online Car Parking. The application provides the design of data program and the approach of automatically producing allocated and free spaces for parking.

### IV. IMPLEMENTATION

As "Smart Parking" is android application, it needs Firebase for database and the Android Studio for the development.

**a) Firebase:** Firebase is a technology that permits you to make web applications with no server-side programming so that development turns out to be quicker and easier. With Firebase, we don't have to stress over-provisioning servers or building REST APIs with just a little bit of configuration; we can give Firebase a chance to take every necessary step: storing data, verifying users, and implementing access rules. It supports the web, iOS, OS X, and Android clients. Applications using Firebase can just use and control data, without having to think about how data would be stored, and synchronized across various examples of the application in real time. There is no need to write server side code, or to deploy a complex server framework to get an app started with Firebase.

**b) Android:** Android is a Linux-based operating system which primarily designed for mobile devices such as smart phones and tablet computers utilizing ARM processors. As the Android consists of a kernel based on the Linux kernel with middleware, libraries and APIs written in C and application software running on an application framework which includes Java-compatible libraries based on Apache Harmony. By using Android Software Development new applications are created for the Android operating system. Mostly applications are usually developed in the Java programming language using the Android Software Development Kit. Android uses the Dalvik virtual machine with just-in-time compilation to run Dalvikdex-code (Dalvik Executable), which is usually translated from Java byte code. The procedure will be as follows shown in figure,

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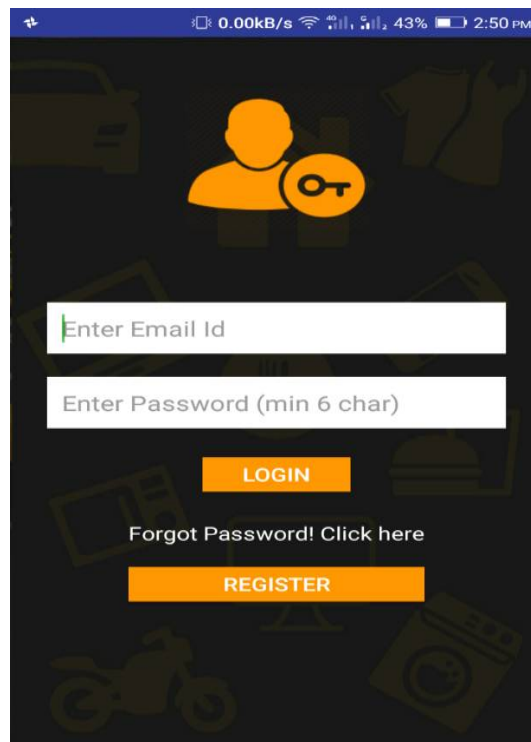
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**A) Login and registration:** Initially, the user has to register his details with the application for the first time. This is a one-time registration. The user has to enter details like user name, gender, phone number and email- id. All this data will be stored on server. Booking for slots mandatory has to be done four hours prior to arrival.

**B) Slot booking:** The user is provided with multiple parking locations. User has to select one of the locations provided where he desires to park the vehicle.

**C) Slot booking confirmation:** After the successful booking the slot becomes red from green colour and the receipt is generated for the confirmation of successful payment.

### V. RESULTS

A screenshot of a mobile application's login form. The background is dark with faint icons of a car, a motorcycle, a shopping bag, and a washing machine. At the top, there is a status bar showing "0.00kB/s", signal strength, 43% battery, and "2:50 PM". The form itself has a dark background with a central orange icon of a person holding a key. Below this icon are two white input fields: "Enter Email Id" and "Enter Password (min 6 char)". Below the password field is an orange "LOGIN" button. Underneath the button is the text "Forgot Password! Click here" in white. At the bottom of the form is an orange "REGISTER" button.

(a). Login Form

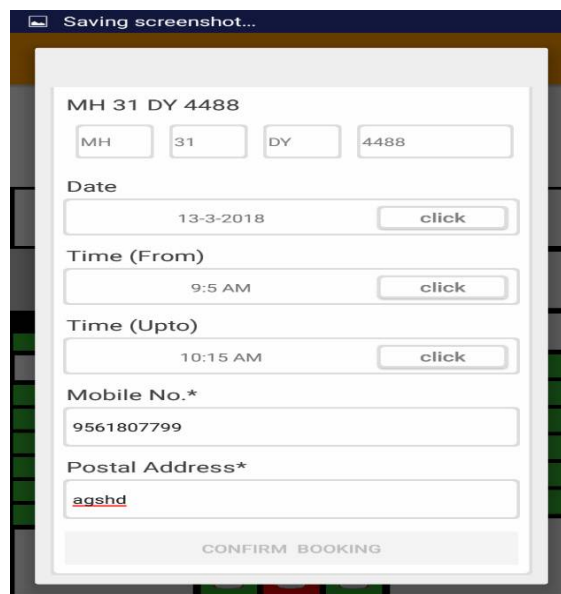
**a) Login and registration:** The user has to register his details with the application for the first time. This is a one-time registration. The user has to enter details like user name, gender, phone number and email- id. All this data will be stored on server. After successful registration the user will gain access to further features of this application. The user will put the generated Login ID and Password to gain further access of this app.

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Saving screenshot...

MH 31 DY 4488

MH 31 DY 4488

Date  
13-3-2018 click

Time (From)  
9:5 AM click

Time (Upto)  
10:15 AM click

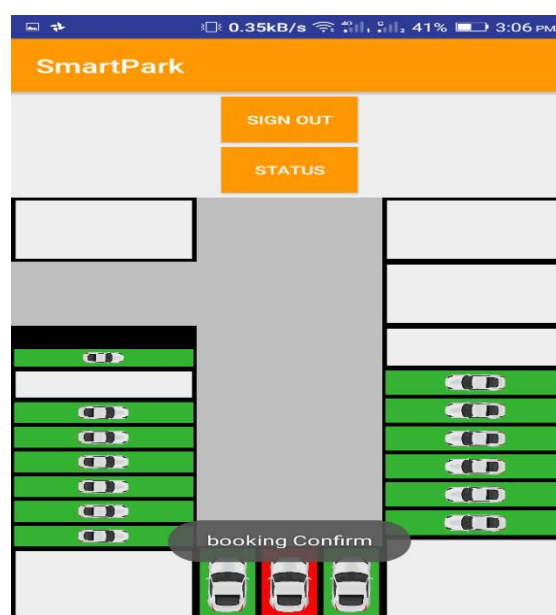
Mobile No.\*  
9561807799

Postal Address\*  
agshd

CONFIRM BOOKING

(b). Slot Booking Details

**b) Slot booking:** The user is provided with multiple parking locations. User has to select one of the locations provided where he desires to park the vehicle. The above snapshot shows that the user have to fill the details of the available parking slot he wish to book. The user have to fill the details like Vehicle No.,Date of the booking day,Time, Mobile etc.



(c). Slot Booking Confirmation

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**c) Slot booking confirmation:** After the successfully filling details and confirming to book slot. The booking the slot becomes red from green colour and the receipt is generated for the confirmation of successful payment

## VI. SYSTEM FEATURES

**a) Search parking area:** On selecting a location, user can view detailed list of parking areas, their availability and the prices.

**b) Book parking slot:** The user is required to enter id of the required parking area and duration of reservation to book a lot as per availability. After booking, a unique session id is given to user to confirm booking.

**c) View booking:** The user can view his current booking details like location, session id and status of booking through the end user's application.

**d) Cancel booking:** The user can also see his current booking. On cancelling, parking session status becomes "cancelled" and availability of slots gets automatically updated.

## VII. CONSTRAINTS

**a) Stable internet connection:** The proposed system requires a stable internet connection for efficient functioning. In case of internet disconnection, the system may fail. The user and administrator interact with the system using mobile application via internet. Hence stable internet connection is the basic requirement of this system.

**b) Highly Scalable Architecture:** The proposed smart parking system should be highly scalable. Using cloud services for database provides scalability as the entire database can be stored in the cloud and can be scaled as per need.

**c) Handling concurrent access to the centralized database:** The smart parking system should be able to handle concurrent access to the database by users. As the database is centralized, many users can simultaneously access it and it is possible that many users can book the same parking area at the same time. For this, the system must be able to handle such cases.

**d) Availability:** As the user is using the smart parking service through a mobile application, real time availability status should be delivered to the user as and when required i.e. the system should be easily available to end users.

## VIII. CONCLUSION

Parking is and will remain an issue that affects everyone in the community, from traffic management and law enforcement. This survey helps in building the system for Online Parking System. It also focuses on the analysis of the parking space and managing the traffic control and generates the performance graph, based on previous and current traffic records. With this study, we have proposed an efficient Performance Analysis System to perform online parking facility for everyone. The Performance Analysis System realizes the management of the parking slots, the transactions, authenticated users and some other functions. A well-managed parking facility can enhance use efficiency and increase the parking revenue. This paper presented the technological feasibility and the effectiveness of a novel parking solution. Further development of the "Smart Parking" application shall include aspects as more functionalities will be developed to support the operational requirements of the parking operators and intelligent services for activities before and after parking.

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## BIOGRAPHY



**Kapil Gajbhiye**, Final Year student from I. T. Department at S. B. Jain Institute of Technology, Management and Research.



**Nikhil Dhoke**, Final Year student from I. T. Department at S. B. Jain Institute of Technology, Management and Research.



**Bhushan Hiwase**, Final Year student from I. T. Department at S. B. Jain Institute of Technology, Management and Research.