# Android Based Parking Booking System

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**Abstract:** Traffic congestion is a common phenomenon in most of the metropolitan cities of India. Because of heavy traffic people often lose their valuable time. One of the prime reasons for traffic congestion is parking on roadside, so a need arises to develop a parking system so that it can reduce the traffic condition in near future. Our project focuses on smart parking control application which will help you to find out a parking area in nearby your location. It has a server end to add parking spots and a customer end to book the parking spots.

## INTRODUCTION

The parking place is very important all over the world especially in the metropolitan cities of the countries. Every day thousands of car drivers spend a lot of the time to find where to park. The result of this situation is theft in urban areas, increasing traffic congestion and frustration of drivers.

Our proposed system presents a smart parking system that regulates a number of vehicles to the nearest parking space at any given time based on the parking space availability. "Parking System (PS)" is implemented using the Operating System Android. The user requests the Parking Control Unit to check the status of available parking slots. As soon as the user request, all the available free slots are displayed to the user.

The user fixes his slots by showing his confirmation details to the concerned person at Parking area. After communicating, the vehicle will further follow its path to the allocated parking slot.

After successful parking the slot details are updated simultaneously in the Administrators database. Finally, the time to find for an empty parking slot is minimized.

### 1.1 PROBLEM DEFINATION

Parking is a crucial issue in the cities where the increased development of shopping centres and offices make parking spaces diminish. Providing safe and comfortable parking facilities and sufficient parking space will give such a huge impact on visitor loyalty. People keep on roaming on roads searching for a parking space to park their vehicles especially at peak hours of time. If the management fails to manage the parking space, the vehicles will be piled up and it led to a dissatisfaction from the visitor. They need to look for a vacant spot around the parking lot when they need to find a parking space.

### 1.2 GOALS AND OBJECTIVES

The main responsibility of our project is to help the user to find an area where parking is available and total number of slots free in that area. Thus, our proposed methodology reduces the user's effort and time of searching a parking slot.

### 1.3 MOTIVATION

The main motivation behind the Smart Parking System is to help the drivers to find areas where parking is available in that area. Prior to his expected arrival, drivers can book a slot in the area if it is available. Drivers can search the parking slot through the mobile application installed and book the available slot. Besides that, user can also view the duration of parking usage through the application and charges can be calculated through the online application sent to the user for notification.

## I. LITERATURE SURVEY

| Sr no. | Paper Name | Year of Publication | Description | Limitation |
|---|---|---|---|---|
| 1. | Intelligent parking system using android. | 2017 | The paper focuses on a smart android-based parking control application which will help you to find out a parking area in | No transaction windows. |

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|---|---|---|---|---|
| | | | nearby your location. The mobile application will also help you to pay the parking charge by online payment system. A counter will be there in the application which will help you to count the amount of time your car has spent in the parking lot. | |
| 2. | Smart parking system. | 2018 | Smart Parking System provides us with two functionalities. One is the online spot booking system and the other is the traditional parking system. | Limited parking spots. |
| 3. | A smart android-based parking system. | 2019 | The paper focuses on a smart android-based parking control application which will help you to find out a parking area in nearby your location. The mobile application will also help you to pay the parking charge by online payment system. A counter will be there in the application which will help you to count the amount of time your car has spent in the parking lot. | Transaction is not taking place dynamically. |
| 4. | E-business in android application based on e-parking booking system. | 2020 | The application is use to find a parking space. The application provides information on the availability for booking a parking space, payment using electronic money and top-up the balance. | User has to search the nearby location. |

## II.    PROBLEM STATEMENT

The proposed research to design and implement a system for Parking Booking System
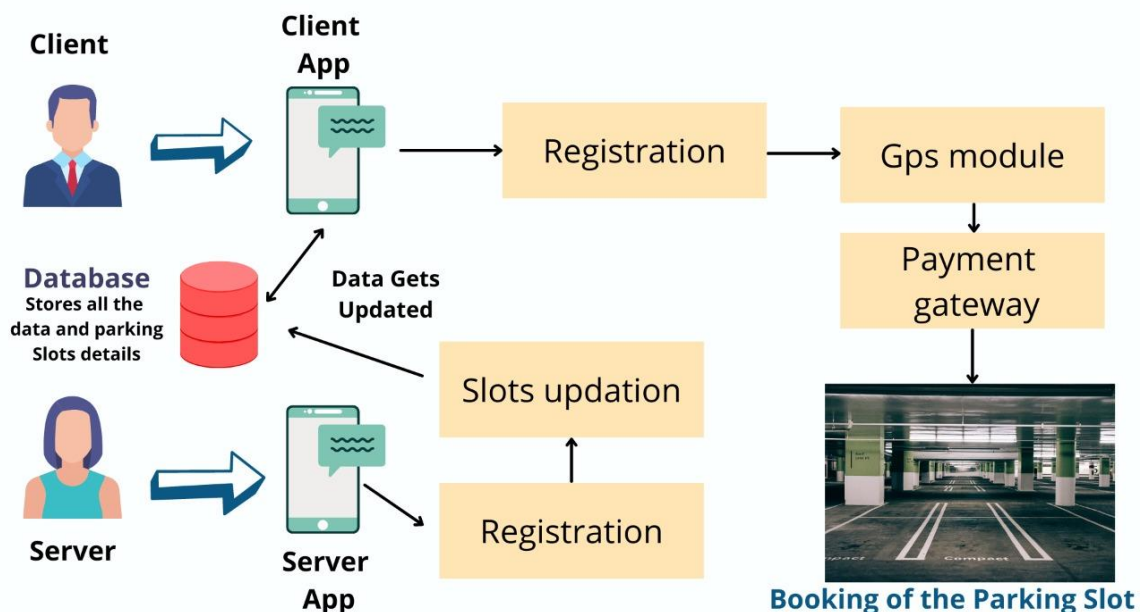
## III.    PROPOSED SYSTEM



Fig: - System Block Diagram

In This Proposed System we have client side and a server side. In client app the customer will register in our app after registration all the details will be stored in the database. After logging in the app, it will show him/her the parking spots nearby his/her location after selecting the spot they need to do the payment and the slot is book for specific time. And in server side after registration the server can add his parking spots to allow the client to park it gets updated in the database.

### Algorithm

The proposed system uses the Nearest Neighbor Search Algorithm for finding parking locations that are nearest to the client's current location. Nearest neighbor search (NNS), also known as proximity search, similarity, search or closest point search, is an optimization problem for finding closest (or most similar) points. Closeness is typically expressed in terms of a dissimilarity function: The less similar are the objects, the larger are the function values. Formally, the nearest-neighbor (NN) search problem is defined as follows: given a set S of points in a space M and a query point q ∈ M, find the closest point in S to q. Donald Knuth in vol. 3 of The Art of Computer Programming (1973) called it the post-office problem, referring to an application of assigning to a residence the nearest post office. A direct generalization of this problem is a k-NN search, where we need to find the k closest points.
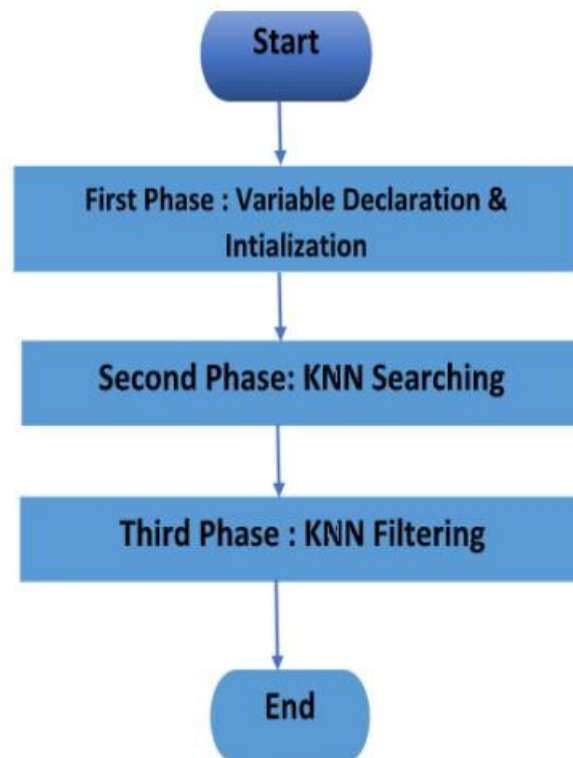


Fig. 3. Flowchart of K- Nearest Neighbour Algorithm

## IV. EXPERIMENTAL RESULTS

Optimized parking – Users find the best spot available, saving time, resources and effort. The parking lot fills up efficiently and space can be utilized properly by commercial and corporate entities.

Reduced traffic – Traffic flow increases as fewer cars are required to drive around in search of an open parking space.

Reduced pollution – Searching for parking burns around one million barrels of oil a day. An optimal parking solution will significantly decrease driving time, thus lowering the amount of daily vehicle emissions and ultimately reducing the global environmental footprint.

Enhanced User Experience – A smart parking solution will integrate the entire user experience into a unified action. Driver's payment, spot identification, location search and time notifications all seamlessly become part of the destination arrival process.

New Revenue Streams – Many new revenue streams are possible with smart parking technology. For example, lot owners can enable tiered payment options dependent on parking space location. Also, reward programs can be integrated into existing models to encourage repeat users.

Integrated Payments and POS – Returning users can replace daily, manual cash payments with account invoicing and application payments from their phone. This could also enable customer loyalty programs and valuable user feedback.

Increased Safety – Parking lot employees and security guards contain real-time lot data that can help prevent parking violations and suspicious activity. License plate recognition cameras can gather pertinent footage. Also, decreased spot-searching traffic on the streets can reduce accidents caused by the distraction of searching for parking.

Real-Time Data and Trend Insight – Over time, a smart parking solution can produce data that uncovers correlations and trends of users and lots. These trends can prove to be invaluable to lot owners as to how to make adjustments and improvements to drivers.

Decreased Management Costs – More automation and less manual activity saves on labour cost and resource exhaustion.

Increased Service and Brand Image – A seamless experience can really skyrocket a corporate or commercial entities brand image to the user. Whether the destination is a retail store, an airport or a corporate business office, visitors will surely be impressed with the cutting-edge technology and convenience factors.

As evidence of just these top ten benefits, the implementation of a smart parking solution would surely be a great investment for any city government or company. Our current parking inefficiencies are evident by the fact that there are about four parking spaces per vehicle in the United States, and we still can't find a spot! As the global population continues to grow and urbanize, it is vital to implement a well-planned and convenience-driven parking solution that can be utilized globally.

## V. CONCLUSION

1)Online vehicle parking reservation system improves the existing system since we are in computerized world.

2)With this new system is mandatory, it enables the user of the system (client, employee, System administrator) to reserve a parking lot online and this reduces the wasting of time of the clients looking for where to park.

3)It increase the safety of the property since the parking lot is numbering.

## REFERENCES

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