Smart Parking System Using GSM

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Abstract: However here we have designed time Driven sequence method which solves the problem of parking. This paper proposes an android Application, which is used to implement a pro Smart Parking System based on Reservation (SPSR) that allows Drivers to effectively find and reserve the vacant parking spaces with the help of with slot Allocation method and performs automatic billing process. A secure parking system using Global System for Mobile communications (GSM) technology has been performed. We design and implement a prototype of Reservation-based Smart Parking System (RSPS) that allows drivers to effectively find and reserve the vacant parking spaces with construct each and park as a GSM network and data.

Keywords: Smart Parking System, Android Application, GSM, SMS, Parking reservation.

1. Introduction

It causes Problem for parking which leads to traffic congestion and Driver frustration. When we visit the various public places it creates more parking problem do secured parking using the smart Parking under Slot Allocation method with the help of Android application using GSM. The Main aim of proposed systems is to find out Status of the parking area and provide secured parking. In recent years the mobile has become the important part of the human beings. It is necessary for human beings to have a powerful device which will provide all the facilities other than basic facilities available in mobile phones. Android provide such functionality which enables developers to design such applications which will create a simple mobile to smart one. “Android is built on the open source Linux Kernel. Furthermore, it utilizes a custom virtual machine that has been designed to optimize memory and hardware resources in a mobile environment. Android is open source it can be liberally extended to incorporate new cutting edge technologies as they emerge. The platform will continue to evolve as developer community works together to develop innovative mobile applications”.

The proposed system is to provide the facilities to users when user is newer to any place through application named places directory. Another application of proposed system is shortest path is to provide the service to user by mining the shortest distance between source and destination. The last application named GPS Alarm of proposed system will provide notification to the user of arrival of its specified destination while travelling in the form of alarm.

2. Methodology

We have proposed two methods to track location and catch the huddles and give return the stolen smart parking to the user. There is tow methods one is the basic method and other one is advanced. The basic method only include the network tracker in which alert the user will be notified about parking slot via alert sent on mobile numbers stored in mobile tracker.

A. Basic Module

A smart and secure parking system this will allow drivers to park their vehicle in safety condition. This process divided into two parts which are security reservation module.

B. GSM Tracking System

In advanced method, we can suggest to develop an application by adding GSM system with the first method. We are hoping for advancement of technology in future so that tracing the exact location of mobile number is possible. GSM (Global system for mobile communication) is a great boon to anyone who has the need to navigate either long or small distances. Global System for Mobile communications (GSM) is an open, digital cellular technology used for transmitting mobile data services. The communication medium between the users and the hardware modules is GSM modem via SMS formats.

3. Implementation

The proposed model for smart parking system has parking lot consists of a group of parking spaces. The state of a parking lot is the number of occupied
spaces versus total spaces. Every parking lot has access using Internet to communicate with the management system and users, and share parking information with other parking lots. In each parking lot, reservation authority is deployed for authenticating individual user’s identity and reservation request.

A. Architecture

In the architecture three components in smart parking model, including parking zones, users and the database smart parking system. The management system determines parking prices and broadcast lives parking available information to users (also drivers). Upon receiving parking information, user selects desired parking lot and reserves a space. Main System Architecture shows the Smart Parking System based on reservation. The applications are build on Android Platform. Two different apps are used in SPSG. One is at the user end and another one is admin at the parking lot. The Parking app in the user’s phone is used to reserve space in desired parking lot. User has to first create an account to be able to use services provided. Once account is sign up, user can login with its mobile number as username and password. User can then select appropriate parking lot and check availability. If free spaces are available then user can proceed with space reservation. One user is reserve only one space.

For booking, user has to enter its vehicle’s identification number with start time and end time of reservation. User is provided with a service that allows user to delay start time by 15 minutes. If the user is not able to arrive within the extended time then the reservation is discarded. User is also given a chance to delay ending time. Admin can see all parking slot details. Parking slots would be displayed as graphical boxes colored as Red, Green and White. Each color indicates one of the constraints. Green Indicates slot is reserved, White indicates the slot free and Red indicates expired slots. Such expired slots have the option of delete which would turn them into free slots.

4. Mathematical Module

System S=Android Application
System S={S’, I, O}
S’ = {GSM}
I = {PA, PTC}
∂ = Function
O = Output
I1 = PA→ Places Allocate
I2 = PTC→ Parking Time Calculation
I3 = SS → Server Sides

[1] I1 = {“Shopping Mall”, ”Hospital”, “Industry Complex…..n”}
∂1=I1→ O1
O1 = {Registration, Status}
O/P I2 = {Time calculating belling}

[2] I2 = {Booking Confirmation Time + Count}
I3= {Registration Server Side …E.g. Name Address} Network Found Then Display Data
Balance = Remaining amount – Total Time

5. Conclusion

In this paper, smart parking system using GSM to optimize parking management system. Pricing scheme for satisfying different needs of drivers and service providers, which is depend on the parking information. The pricing scheme is combined with the proposed smart parking system in which parking price is adjusted in response to the relationship of demand, supple and congestion level. Upon receiving parking prices, drivers make their reservations to maximize their benefits according to utility function. Based on obtained results from simulation study, conclude that the proposed smart parking system increases revenue for service providers, provide service differentiation for users with different requirement, alleviates traffic congestion caused parking searching and reduces the amount of traffic searching for parking.

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