

Intelligent Android based Online Parking System

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Abstract: With the increase of economical behavior and the upgrade of living standard of people, the ratio of people in India who own cars and motorcycles have recently increased giving a boost to Metropolitan Traffic. Therefore, Now a days parking issues will be a big challenge to facilitate traffic network and ensure the urban life quality. Searching for parking space in most metropolitan area's, especially during the rush hours, is difficult for the drivers. The difficulty arises from not knowing where the available spaces may be at that time or not ; even if known, many vehicles like two wheeler and four wheeler may pursue very limited parking spaces to cause serious traffic congestion. In this paper, we design and implement a prototype of Android Base Smart Parking System based on Reservation that allows drivers to effectively find the car parking in particular area and reserve the vacant parking spaces. By periodically learning the parking status from the host parking database management in parking lot, the reservation service is affected by the change of physical parking status. The drivers are allow to access this cyber-physical system with their personal communication device. Furthermore, we study state-of-the-art parking policies in the smart parking systems and compare their performance. The experiment results show that the proposed reservation-based parking policy has the potential to simplify the operations of parking systems, as well as traffic congestion caused by parking searching.

Keywords: Parking space detection, Android Application, Automated parking.

INTRODUCTION

Searching for the vacant parking space in a metropolitan area is the daily concern for most the drivers, and it is time consuming. It commonly results more traffic congestion and air pollution by constantly cruising in certain area only for an available parking space. For an instance, a recent survey shows that during rush hours in most of big cities, the traffic generated by cars searching for parking spaces takes up to 40% of the total traffic on that particular road. To alleviate such traffic congestion and improve the convenience for drivers, many of smart parking systems aiming to satisfy the involved parties (e.g., parking service providers) have been deployed. The current smart parking or parking guidance systems only obtain the available information of parking spaces database which is managed by reservation authority and simply display the parking information to direct drivers or user. However, since these type of systems cannot guide the drivers to their particular parking destinations, even sometimes make the situation worse, they are not "smart" enough. For instance, when the number of vacant spaces in an area is limited, most of drivers, who obtain the parking information, are heading for these spaces. It will cause server congestion. It is, therefore important, strongly desired to provide an effective strategy to address these concerns.

The main idea behind the Android Base online parking system is to help the user analyze area's where parking is available and number of slots free in that area. The user can pre-book a slot in the particular area, he desires if it is available some hours prior to his expected arrival. This will help to reduce the load on the administrator as his

physical work will be reduces drastically. The user can search the parking slot through Android Application and pre-book the slot but the internet must be required for booking . Payment services are made available using various application like paytm or other application.

Thus the purpose of this application makes the user relief free as it reduces the time required for manually searching and waiting for empty slots to park the vehicle.

MAIN MOTIVATION OF THIS PAPER

The motivation of this project is to reduce the traffic congestion that occurs in and around the metropolitan areas which is caused by vehicles searching for parking. In the newspapers, we can be able to see many of the articles regarding to the parking problem all over India like Delhi, Mumbai, Pune, Bangalore and many metropolitan cities. Growing population has created many problems; today's parking problem is one of the big problems in our day to day life. In a recent survey, researchers have found that for one year, car cruising for parking created the equivalent of 38 times trips around the whole world, burning 177914.8 lit. of fuel and producing 730 tons of CO₂ and it directly affect on the air pollution. To reduce all these factors we go for the smart parking system.

REVIEW OF RELATED LITERTURE

In this paper, we mainly focus on designing a new smart parking system that assists drivers to find parking spaces in a specific parking district. In addition, an important goal



of the system is to reduce the traffic searching for parking, hence reduce energy consumption and air pollution.

State-of-the-art smart Parking Management

Traffic searching for the parking comparison under different parking guidance strategies. Many of the parking guidance systems have been developed over the past some year ago. In this subpart, we study several existing parking guidance approaches and explain their limitations and what we will take extraaffect. Furthermore, we simulate these different parking management strategies under realistic traffic and current parking conditions, compare their performance, and show the result.

Performance Metrics

In order to find the performance of the strategies which can be applied & implemented in smart parking systems, we can be introduce the following metrics, which reflect the willingness of drivers, and our concerns on congestion in traffic and environmental protection easily.

CHALLENGES

Given the design some of objectives of smart parking systems that required the coordination among multiple parties, we summarize the some of main design considerations as follows:

User get fake Parking Requests:

The system can collect and stores the large data about the performance metrics including the status of the parking space, Booking time, parking location, driver's identity or

proof. All data stored or available by the system is at least stamped with time metadata. As the user can be allowed to book only one parking space at a one time from one id, it is a big challenge for us if user is continuously trying to book one book or many book request at a time from one id.

User Identity Verification process:

Verifying users identity is a main security concern as users with no reservation can enter and occupy others parking space. In our proposed system, the user can open the application and verify their identity via the OTP .fake user can not be assessed to the another person account

User can be delayed in parking:

User reserves a parking space for particular time duration i.eStarting time of user & also ending time. What if the user is unable to reach the parking spot at the fixed time? So to solve this challenge, we provided the time extend option to the driver, but user can only extend the time by 15 min or if available then 1 hr from the specified time. User has to do some extra money to extend the time.

Timer:

As soon as reservation time is nearby to expire, user will be get be notification about this. To deal with this, smart parking system gives prior notifications at regular intervals to the user. For example, if there is only 30 minutes remaining to reach the expire time of particular user. Smart parking system will give notification when 20 or minutes are elapsed and when 10 minutes are remaining a final notification is given to that user.

SYSTEM ARCHITECTURE

Basic Architecture:

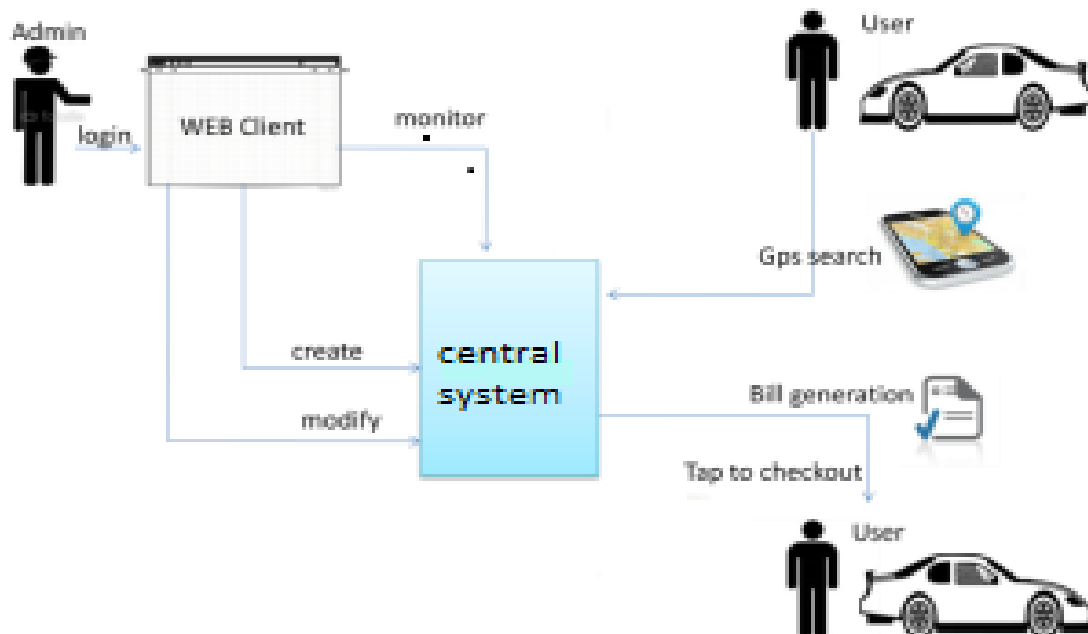


Fig1.SystemArchitecture



In this type of parking there is one central system which is responsible for all the internal function of smart parking. If any of the user or person, who can be easily register on this network and the user information goes to the server. After that user can be easily search for the parking for any particular area and book their seat. After that booking user get notification of their booking conformation.

Object diagram:

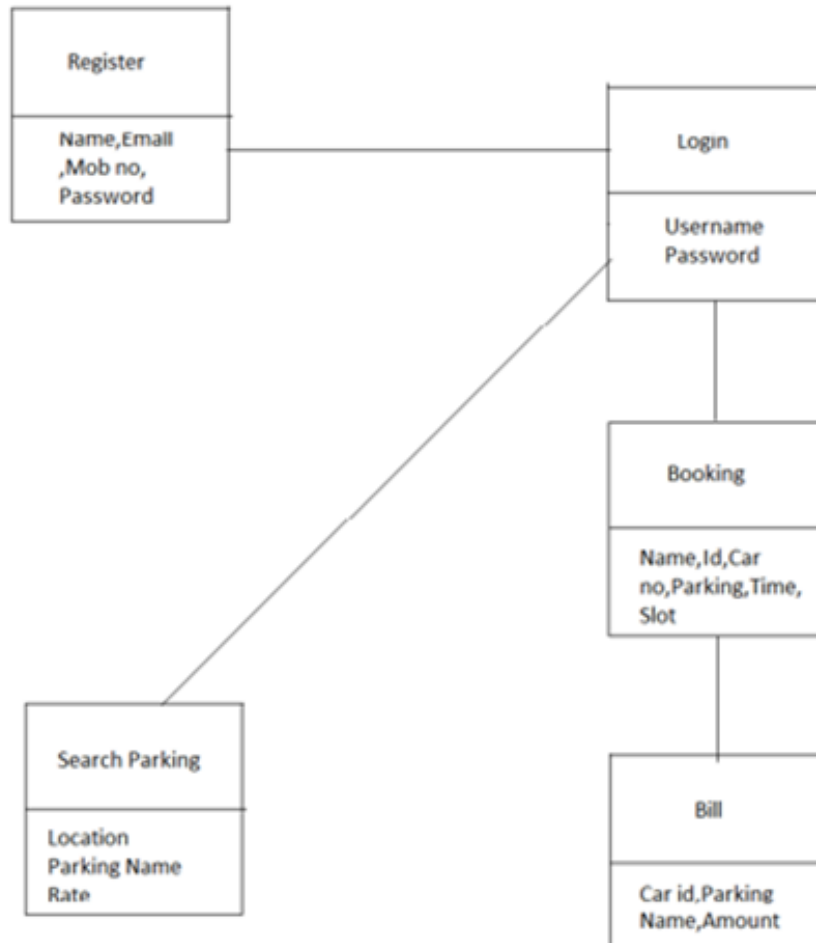


Fig2.Object Diagram

CONCLUSION & FUTURE SCOPE

In this paper, we have developed a new prototype of Android base Smart Parking System to optimize parking management. In this system, we implement smart parking booking policy to maintain the benefit of service providers and requirements of that the particular users. Moreover, we have presented the detailed design, development and evaluation of the prototype. Based on the getting results from our simulation study, we conclude that the proposed booking -based smart parking system can alleviate traffic congestion caused parking searching and reduce the amount of traffic volume searching for parking.

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