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SMART PARKING IN A SMART CITY (PARKFINDER)

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Abstract—In this era and the Upcoming generation mobile phones plays an essential part in peoples life. There is continuously rising in a number of mobile computing applications, centered on the people's daily life. The application which is based on location dependency has been proved to be the most important application to trace a location. The application consists of an architecture that can be implemented and used for location detection; this is also known as Smart Travel Guide. An architecture is been proposed in mobile tourist guide system using android mobile phones that will provide complete information to the mobile user tourism efficiently.

This system is based on light weighted mash up technology that can easily combine more than one data sources to create value-added services. In mobile device the GPS application is used by the user to locate the nearby parking area. Using this application the complete information can be obtained whether the user is aware of the availability of the parking slot. The user can book in prior a parking slot as per his convenience and

payment is deducted from his account where no man power is required. More over this application is well efficient that is used to find the nearby parking spot in a single touch that helps to locate the nearby parking spot from the current location. This application helps one to overcome the problem of driving and looking around for nearest parking spot. The one click on FIND button is a solution to the problem.

Keywords: API, parking slot, mobile devices and sensors.

INTRODUCTION

Android is an Operating System developed for mobile devices like smart phones, tablets, iPods and computers. The use of android is based on Linux operating system. With the rise in latest technology the use mobile devices is also high. With the rise in population the use of vehicles is also increasing and with this increase on the other hand the problem of finding a safe parking area is also increasing.

In real time, the biggest challenge faced today is to find a safe parking area in the near-by

location. In a smart city the number of people using Android smart phones is on high rates. Thus, this paper proposes an application called as **PARKSLOTFINDER**. With android devices and using this application a single touch on the **FIND** button is the overall solution to the problem of finding a parking area. This application traces out the nearest parking area from the current location of the user. This application informs of the availability of parking. The biggest advantage of this application is that it also provides pre-booking or advance booking of parking slot as per users need. This therefore provides the assurance of safe parking in safe area, Moreover it helps the user to avoid the unwanted circling around the busy metropolitan city just to find a parking for his vehicles. In transmits signal, these sensors senses the vehicle and confirms that the particular parking slot is currently engaged. After the car or vehicle breaks the signal emitted from the sensors.

IMPLEMENTATION

In this Model, we will have an entry gate as well as the exit gate. The entry as well as exit gate consists of an LED and a phototransistor. The LED transmits the signal to the phototransistor. This signal is transmitted continuously to the entry and exit gate. In this, as the vehicle enters the parking slot or as it enters the entry gate the signal breaks which results in the increment in the count i.e. count++. Initially the count will be 0.

As the vehicle enters, the count will move to count++. Then it will search for a free parking slot. As it gets a free parking space it will move in and park the vehicle. In this, the parking slot contains two pairs of sensors. One pair in the front and one behind. These sensors also transmit the signal continuously. As the car is parked in the parking slot the signal breaks and thus it sends the signal to the server that a car is parked. If the car is kept between the sensors for more than 120 seconds it means that the vehicle is parked and the parking slot is engaged. If the vehicle is not parked properly i.e. in between the sensors then it alerts the guard that the vehicle is not properly parked. While moving out of the parking slot as the exit containing the LED and phototransistor the signal breaks, the count moves to count--. This shows that the vehicle has left. Thus in this, the entry count and the engaged count should be equal. We have used following algorithm:

1. Map Reduce

```
1: Map<String, SajObj> from cand, to cand;
// candidate objects from different partitions to be compared.
2: Set<Pair>bu pairs, td pairs; // pairs already computed by BU or being computed by TD. // get the top-p pairs from the final BU level
3: Set<Pair> top = In Memory Top P (Buf, P, Fj, Fr);
4: for level = (f-1) -> 0 do
```

5: (from cand, to cand, bu pairs) = Generate Candidates (Bulevel, TOP) // define type Set<SajObj> as SSO for convenience
 6: Map<String,(SSO, SSO)> grouped = Join (from cand, to cand); // Compare And Write writes to TD
 7: td pairs = Compare And Write (grouped, Fj, level);
 8: Set<Pair>all_pairs = bu_pairs U td_pairs;
 9: if level > 0 then
 10: top = Distributed Top P (all pairs, P, p, F
 11: end if
 12: end for
 13: Return: TD0,TD1,....., TDf, sets of all SajObj objects that are materialised at each TD level.

FEASIBILITY CHECK

Place data in terms of dataset and their utilization.

1. Economical feasibility:

There is no cost involve in successful execution of this software since it is self contained, standalone program. And it doesn't require any software to process on it.. Due to case of operation of the system no need of trained programmer is required.

2. Technical feasibility:

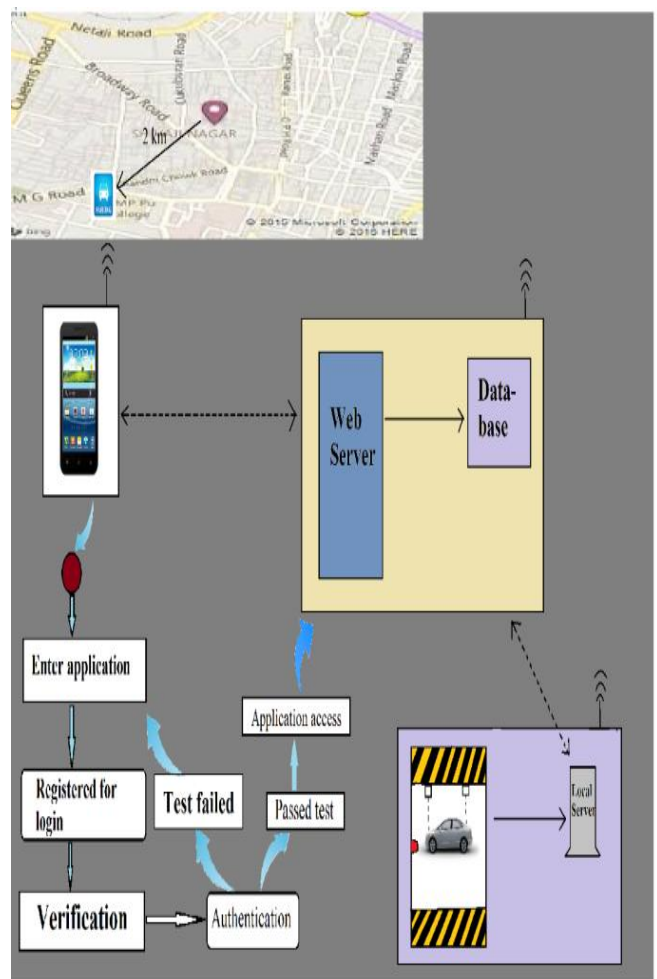
The project work can be done with the current equipment existing software and available personnel. The proposed system needs no new equipments

installed at the users end. Technically this is very much safe and sound.

3. Operational feasibility:

Considering an average user's point of view, we have maintained app design as easy to handle as possible. User can understand and interact, the functionality of app in short span of time and if required, Help option is given.

System design:



The system is made up of 2 components:

1. Application website
2. User android application

1. Application website

This system provides website for user. All features given in android app can also be used on website. And if required, app can be downloaded from website.

2. The User Application

Using the user application, the user can do the following tasks:

i. Signup and Login:

This is the first procedure to know the user's information. User need to register before using this application. During the registration user must fill his personal information like name, address, email, mobile number and set a username and password for his account.

The next time whenever user wishes to search for parking area, user can simply login into his account using username and password which he has registered. All these information are stored and can be accessed from the sql server.

ii. Browse:

- i. User can search for nearest parking slot. User puts name of destination. An automatic googleapi is

working in background which suggests destinations available all over the globe.

- ii. A asynchronous task runs when user searches for destination. Task searches for the entries in database which are for that destination.
- iii. A list is generated based on single input (Destination). When user clicks item in list, information of the user and its traveling route is displayed. User can book a slot from this screen onwards.
- iv. Advanced search feature is given in search screen. This feature encompasses second algorithm in our project named "near neighbour join". We give user multiple options to choose from. Based on these criteria, a function is invoked which checks for parameter and minimizes result based on parameter passed. Thus we accomplish our algorithmic implementation of finding near neighbours (nodes / users that matches with current given criteria)

iii. Post New:

User can post new park slot information from this section. He/She has options of Travel source, Destination, Day, Time, Via, Travel visibility. (Goes to Travel_master). In this section we implemented Map Reduce functionality described in paper. We have information of location of each user in tracker_master table. So we made a function which will do following:

1. Fetch current location of user
2. Send that info to server which has one calculation function.
3. Function calculates distance between user and his/her friend.
4. A temporary view is created in database which has Distance mentioned.
5. A threshold distance value is taken from user (current app have default 5 value).
6. A list of users is generated which satisfies less than or equal to threshold value. And this will be used for sending our travel information.
7. So by this way we implemented map reduce functionality as we map each user's location periodically and then perform our calculations to fetch nearby user's so that notification can be sent to them only (not our).

iv. Surrounding Info:

User can search for surrounding amenities and establishments from

- a. Atm
- b. Bank
- c. Bus_station
- d. Train_station
- e. Cafe|food|restaurant
- f. Establishment
- g. Hospital
- h. Parking
- i. Gas_station

v. Emergency Help:

Emergency help is a novel functionality in our app. This functionality chooses app user's friends in user's surrounding dynamically and send alerts to them in case of emergency. In existing system, apps tend to use static data provided to application in such cases but our app makes selection of guardians on dynamic basis based on the distance.

SUMMARY:

This paper gives the idea of a mobile park place finder application on android phone. This application developed by using smart phones which can change the way of people to book a slot in future. This android application is to find nearest parking area. This android application reduces the manual work of both user and administrator. This app also reduces the road traffic and saves fuel also.

FUTURE WORK:

This system is extremely effective means that to cut back pollution and therefore the congestion of vehicles in cities. It also provides associate degree eco-friendly thanks to travel. It additionally provides an opportunity to fulfil new individuals. Pre-registration ensures security, as solely known individuals get into the vehicle so that trust will be established.

There's scope of improvement by applying many measures available. The future work with regards to the current paper is as currently, system uses GPS triangulation system which is very hefty on normal user devices which almost drains battery in short period of time. So there's surely scope of improvement in existing system.

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