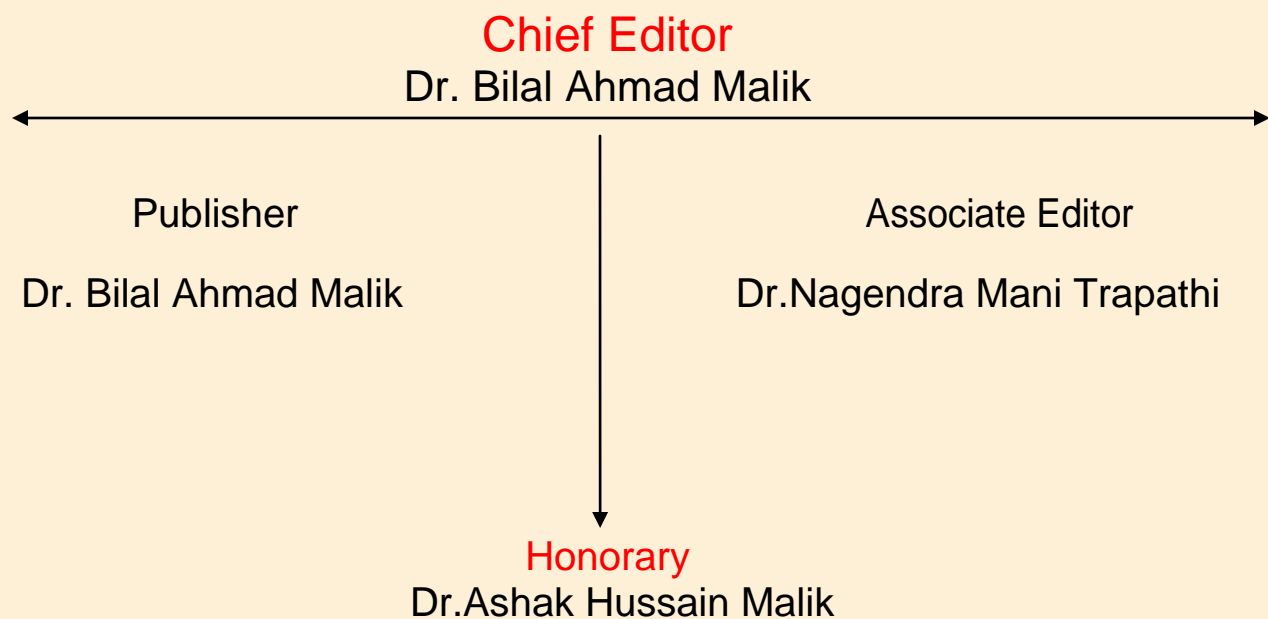


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ANDROID BASED SMART PARKING PLACE FINDER USING PREDICTIVE ANALYSIS

(PARKSLOTFINDER)

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ABSTRACT

Now-a-days mobile phone is most essential part in people's life. There is a continuous rise in population and thus, the number of personal vehicles usage is also increasing manifold. People prefer using personal vehicles than depending on public transportation for their travelling. Finding a parking area in the most metropolitan areas, especially during the busy hours is the biggest challenge for drivers or users.

However to overcome this problem an application is introduced to provide a large area with parking slots, which not only provides parking space but also security to the cars/vehicles. This application helps the user by providing complete information about the parking area in the current locations and traces out the nearest parking area. It also the detailed information of how many parking slots are engaged and how many are freely available. Payment is made easy by simply deducting the amount charged from the user's account.

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

I. INTRODUCTION

Android is an Operating System developed for mobile devices like smart phones, tablets, iPods and computers [1]. 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 this application, the parking slot, entry as well as the exits gates pair of sensors that continuously 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. A CCTV would be made available to ensure the security of the vehicles.

During the time of registration the user needs to provide his complete information i.e. users name, vehicle no., his account no., parking and exit time.

II. LITERATURE REVIEW

[1]The study tells that, they list out the feature or attribute why the drop out of student takes place. And they are given to the teachers and management for direct and indirect action taken to improve.

[2]The ITS (Intelligent Transportation System) is very common nowadays and adopted by public or private transportation company. To adopt IT'S a company must have a database with all paths travelled by the vehicles and the bus stops location of each path. There is no automatic solution. Therefore a system is developed GBUS which enables a single person within a smart-phone to gather bus route, etc. Thus reducing implementation time and cost.

[3]To analyze factor affecting student drop out can lead to better academic performance and to reduce dropout rates of student and proper decision to improve the quality of education.

In this paper they have considered three issues of factor affecting student's dropout rate.

They are:

i) Condition related to the students before admissions

ii) Factors related to the student during study period.

iii) Factors including the target value to be predicted for factor analysis.

[4]The study tells about the usage of public place and parking lot utilization on a large campus. Comparison of data is done to simulate the results against the collection of dataset that reveals the hybrid approach accurately and helps in predicting parking slot usage. It helps to performs significantly better than other comparable modeling techniques. This paper describes a hybrid approach to improve and stochastic the simulations the accuracy and issued to reduce the variance of long-term predictions.

III. METHODOLOGY:

- **Data Mining:**

Data Mining means applying few mining techniques on dataset for knowledge discovery that is useful. Data Mining is a process of extraction of meaning information from a large data set. There are many Mining techniques that can be applied on data for analysis. The challenges in data mining are scaling the work with large variety of data.

• **Predictive Analysis:**

It is a process of extracting required information from a proposed system to predict the future outcome and trends. Predictive analytics uses many techniques from data mining, statistics, modeling, machine learning, and artificial intelligence to analyze current data to make predictions about future.

I. ARCHITECTURE:

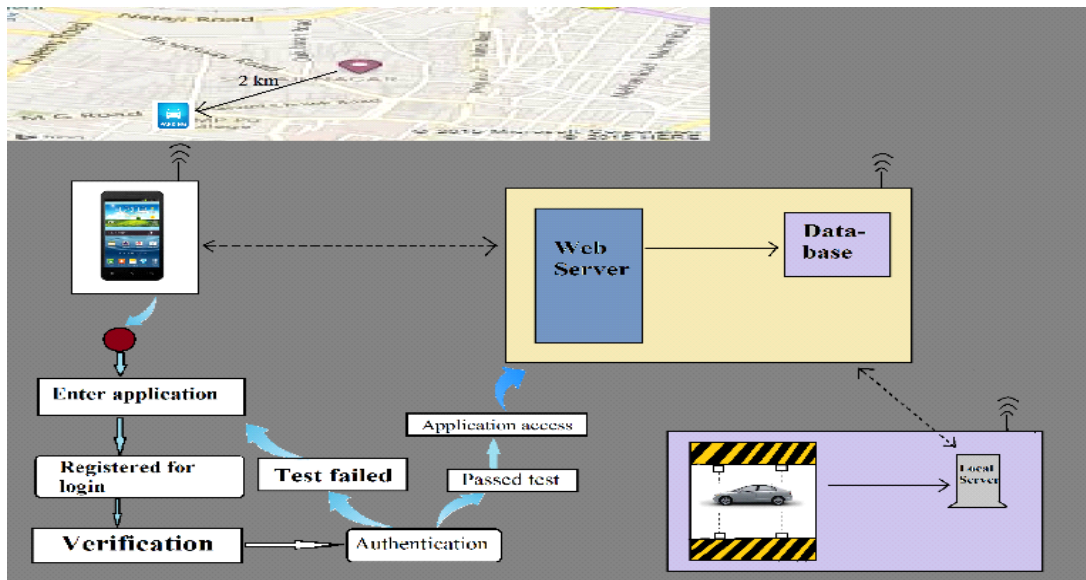


Fig.1: Architecture

The hardware kit consists of parking slot modules. Client, web and android modules. In android module once you enter the application you have to provide all the information. The information will access and the verification of the details takes place. The authentication request will be send to the user for further process, and if the details are correct application will access and the user will get all the data needed. If the test fails it again come back to start.

The client module consist of different parking spot which includes many slots. In between that many pair Of sensors are available emitting the infrared signals, once the signal is broken by any vehicle an event will generate and data will be sent to the local server. As at different locations many parking areas are there consist of n number of local servers. These local servers are connected to a web server (sql server). It stores the generated data in a database. User can retrieve information directly from web server. It has to send set of request to the server and finally the servers provide response to it.

II. WEB SEVERS IN DETAIL:

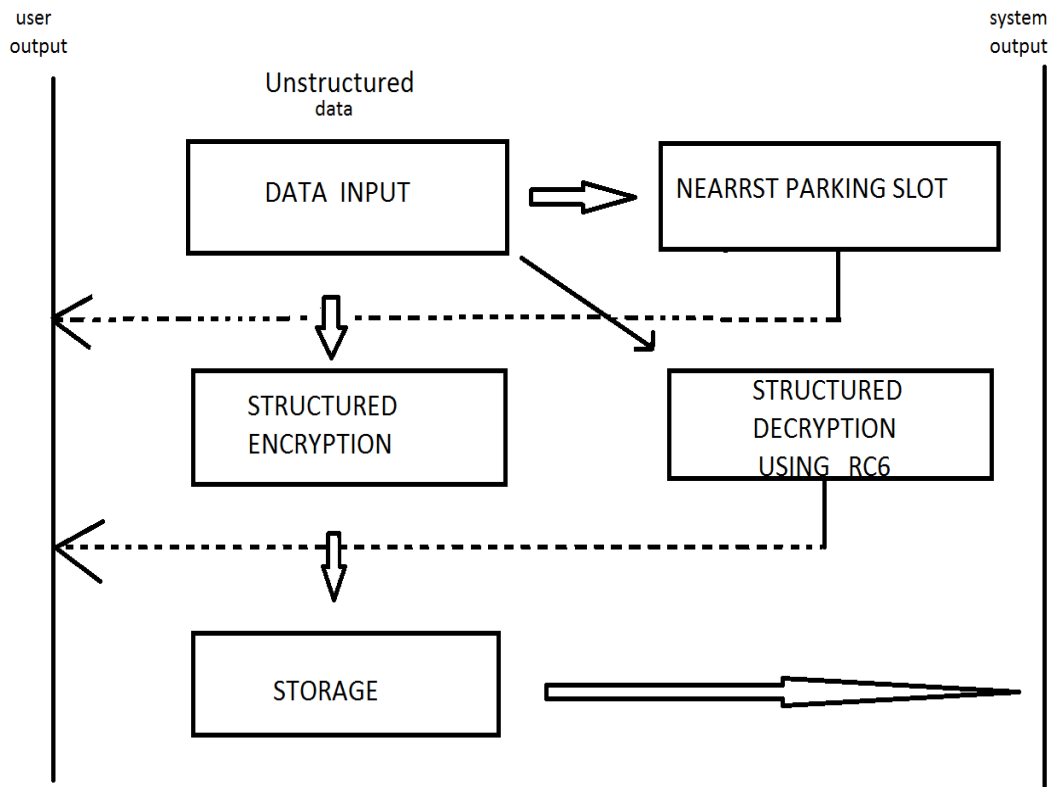


Fig.2: Web Server in Detail.

The process would be as follows user gives the input and with the help of map-reduce algorithm we will find the nearest parking slot available and output send to the user. The input is in unstructured form so it is converted into structured format. In the structured input the encryption and decryption process is done with the help of RC6 algorithm.

The encrypted data is stored and send to the system. The decrypted data is send to the user. The pre-whitening and post-whitening process takes place in the RC6 algorithm.

III. DESIGN MODEL

The design models are described in fig.3:

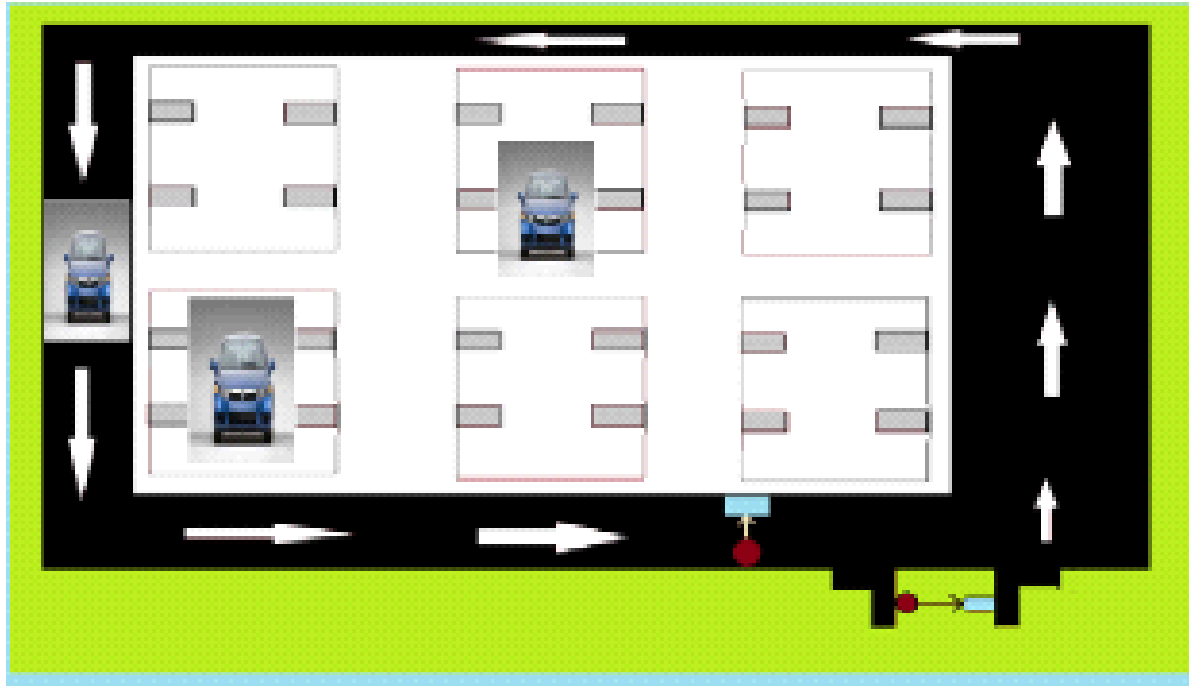


Fig.3: Design Model.

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. I.e. Entry count=Engaged count.

IV ALGORITHM:

RC6:

In cryptography **RC6** (*Rivest Cipher 6*) is a symmetric key block cipher derived from RC5. The algorithm was one of the five finalists. It is a proprietary algorithm, patented by RSA Security. RC6 proper has a block size of 128 bits and supports key sizes of 128, 192, and 256 bits, but, like RC5, it may be parameterized to support a wide variety of word-lengths, key sizes, and number of rounds. RC6 is very similar to RC5 in structure, using data-dependent rotations, modular addition, and XOR operations; in fact, RC6 could be viewed as interweaving two parallel RC5 encryption processes, however, RC6 does use an extra multiplication operation not present in RC5 in order to make the rotation dependent on every bit in a word, and not just the least significant few bits.

SPEKE:

SPEKE (Simple Password Exponential Key Exchange) is a cryptographic method for password-authenticated key agreement. SPEKE is one of the older and well-known protocols in the relatively new field of password-authenticated key exchange.

The protocol consists of little more than a Diffie-Hellman key exchange where the Diffie-Hellman generator g is created from a hash of the password.

V. CONCLUSION:

Thus we are going to develop an Android application that will overcome the difficulties faced during travelling and will help user to find and allocate nearest parking slot. Therefore, we intend to explore how to build a mobile tourist guide system based android GPS technology to solve this problem. This technology can have a futuristic approach to the existing parking problems.

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