

# GPS Based Route Navigation System with Real Time Traffic Information, Parking Allotment System and Work Reminder

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**Abstract-** This report describes the development and implementation of GPS based Route navigation system in android OS. Along with route Navigation, Real Time Work Reminder and Parking Allotment system is also provided. In city life, people face parking problem every day which requires a lot of time searching the parking space. It is very time consuming. Now a days, most of the people have Android cell phone. These can be employed in searching the parking space in the vicinity of the user using user's android cellphone's co-ordinates. Due to busy schedule, it becomes very hectic to remember many things. A great help to user can be by saving work list and selecting the area for it. The reminder application will remind the user when he/she reaches the selected area.

**Index Terms-**GPS(Global Positioning System), Android, PHP server.

## 1. INTRODUCTION

The aim of the proposed project is to provide the user with shortest path along with work reminder and Parking application. The main focus is given on the real time application. The Application is developed on the Android OS being open source software.

Today the mobile industry is a fast growing industry, the single most used device are mobile phones. Today the mobile phone users even surpass the PC users around the world. In India alone an estimated 1000 million phones are being used at any point of time over 77% people in India own mobile Phone. Among Various mobile phones available in the market android phones in particularly are booming. Android phones have a 60% of share of smart phone market worldwide.

GPS based navigation systems became popular in dedicated handheld devices, and are now also found in modern cell phones, and other small personal devices. The availability of global positioning system (GPS)[2] receivers has resulted in the growth of navigation as a key element of many portable devices. Many people rely on automatic route finding applications in cell phones.

For the users new to the particular area, there arises a situation where user is not aware of the roadmap.

Therefore the proposed project that targets to provide correct shortest path[1] to the user with various applications. The project is developed on the android platform.

The present system for parking allotment is based on the wireless sensor networks [4]. The system consists of a computer server, a base station, routers, end devices, and LCD board. End device consists of magnetic sensor which can detect vehicles. The computer server locates in a monitoring room where parking space is monitored. The data is recorded in the database. The information of parking lot, such as theremaining quantity of empty parking spaces, the utilization rate, are analyzed, forwarded by the routers, and displayed on the outside LCD board.

Whereas the proposed system provides parking allotment using GPS. With the help of setting the coordinates of the parking slot, the user is notified about the parking availability.

In present, smart phones contain the reminder application which reminds the user dependent on the time and date information. However, the proposed system reminds the user for the work to be done when he/she travels through a particular area. Hence the reminder is dependent on the area.

## 2. SYSTEM ARCHITECTURE

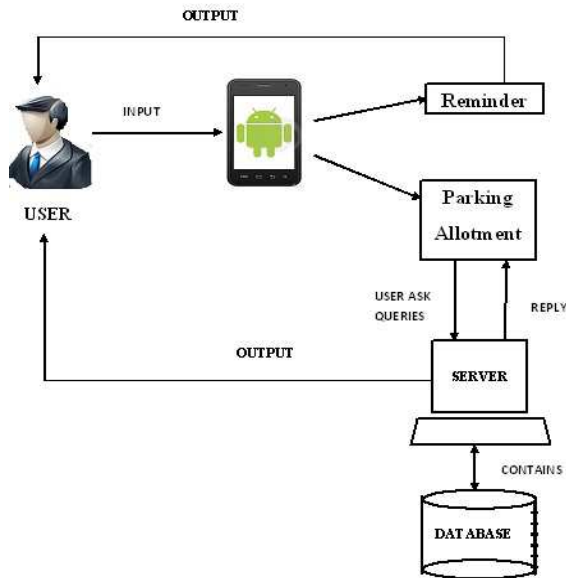


Fig. i: System Architecture Diagram

a pop up message is displayed with the work list on the cell phone screen with an alarm.

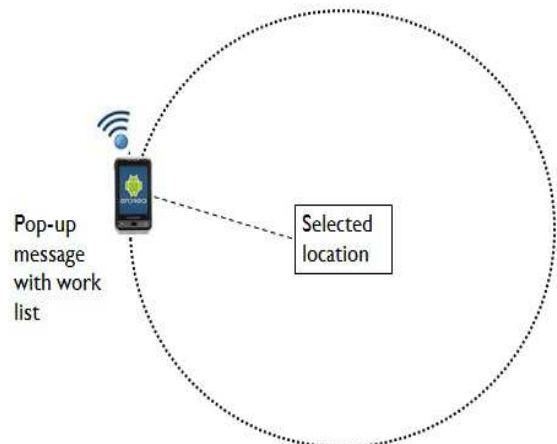


Fig. ii: Working of Location Reminder

### 2.1 Reminder Application

Earlier the cellphones had calendar and note to add/specify a reminder. It reminded the user according to the time specified by him/her. An improvement of this can be done in a way by specifying the reminder area, instead of the reminder time. This approach remains useful in the sense that the user is reminded on the basis of area which the user had selected for the assigned task. Here, the task or work to be done can be stored in a note file or simply a text file in the cellphone memory itself.

#### Algorithm:

1. Specify the area where the work has to be done.
2. Create to-do list.
3. Save the reminder for it.
4. If user's coordinates matches with specified area's coordinates

Then

Display the message box with to-do list and alarm

Else

Continuously check for the specified area's co-ordinates as a background task.

5. If work done then terminate.

Implementation of above algorithm repeatedly performs coordinate/ location matching operation.

The current location of the user is continuously checked with the coordinates of the selected location and the coordinates of the places around the area[3]. If there is any location  $p_5$  whose coordinates match with the coordinates of the places mentioned around the area ( $p_1, p_2, p_3, p_4, p_5, \dots, p_{10}$ ),

The above figure describes the pictorial representation of Reminder application. The coordinates of the places in the vicinity of the selected need to be taken into consideration. The continuous matching operation is performed by the system. As soon as a match is identified with any of the coordinates of the vicinity area i.e. 200meter, user is notified with the work list and alarm. The snooze option allows the user to postpone the reminding of work. When he/she again travels through that area, system again reminds with the work list.

### 2.2 Parking Application

The basic idea behind the parking application is that the user can check for parking slots of area from any location and can select it. So it reduces the searching time of slots. The proposed system consists of computer server, an Android based cell phone and the college parking area. For parking allotment system, college parking slots are taken into consideration i.e. the staff of college have this application installed on their cell phone.

The PHP server is used for saving the latitude and longitude of the parking slots. It gets updated according to the requirement.

The following algorithm describes the parking application as-

1. User requests the server for available parking slots.
2. Server shows the map displaying the available and non-available parking slots with green and red color respectively.
3. According to availability of slots user selects a parking slot.

4. Server updates the database i.e. slot number, request\_time, parking\_time, etc
5. If user reaches within 15 minutes  
Then slot gets reserved for the user when co-ordinates match.

Else

Slot is made available to other users.

6. When again the co-ordinates get matched  
Parking slot gets unreserved, and is made available for other users.

All the available parking slots are depicted with green color and reserved slots with red color.

The user firstly checks into map for availability of parking slots and accordingly chooses the parking slot. Once the slot gets reserved, it is made unavailable for other users. The time the user selects a parking slot, the countdown of 15 min starts. The user must reach within the countdown. When the coordinates of the selected slot and the user cell phone's get matched, the slot gets permanently reserved.



Fig. iii: Parking map

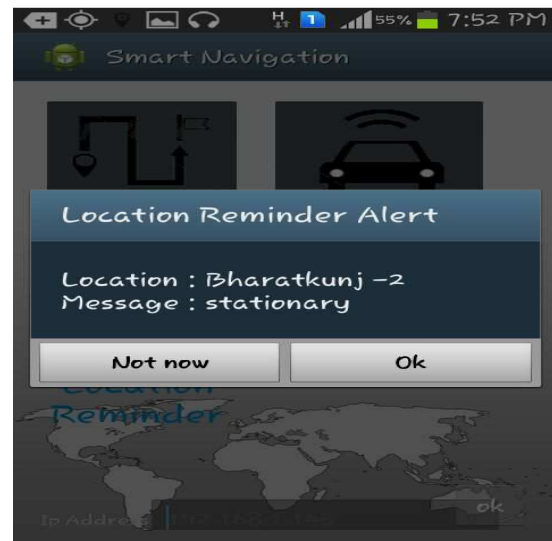
If the user does not reach the slot i.e. within 15 min the selected slot is made available to all other users. When again the coordinates of the parked slot and the user cell phone's get matched, this slot becomes free for others use.

### 3. EXPERIMENTAL RESULT

#### 3.1 Reminder results

The following are snapshots for Reminder activity. When user enters the reminder area, message box is displayed on the mobile screen as shown in fig

iv(a) and in fig iv(b) depicts the list of reminder set by the user and their status.



(a)



(b)

Fig iv: .Experimental result for Reminder

#### 3.2 Parking Results

The figure shows the steps to run the parking application. Firstly the user sees the parking space available[2] as shown in fig 3. The user selects the slots by checking the available list. Fig v (a) shows the same. When the user selects any slot, then it becomes reserved for that particular user.

Fig v (b) shows that the user has selected the 4<sup>th</sup> slot and hence it became reserved showing red colour. Again when the user and parking co-ordinates get matched, that particular parking space is marked as free, showed in green colour.

Fig v (c) shows that the user who has selected the slot 4 has unparked his/her vehicle and hence the parking slot becomes available for other users.



(a)



(c)



(b)

Fig v: Experimental results of Parking Application

#### 4. CONCLUSIONS

Hence the proposed system is easy to use, user friendly and includes many functionality at one platform. For the user, the system provides optimal route from source to destination providing more economic and less time consuming travel, real time traffic information, reserving the parking slots which is allotted by user, it requires less time for searching it manually. Reminder application helps the user to remind the work without taking any efforts.

#### 5. FUTURE SCOPE

The future scope of the parking application can be, instead of using the application for particular institution, can be used for a city. The user can check for the available space for parking in another vicinity or area with the help of android phone. The database of the parking has to be saved separately for the whole area. The time required for searching the parking space physically at that time will be reduced greatly. Also the issues of wrong parking can be reduced.

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