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Real Time GPS Based Bus Route Tracking System using Android

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ABSTRACT: The location-based services are to provide services to customers based on the knowledge of their locations. Similarly, hardware independent programming languages allow the development of applications that can run on any of these devices and exchange information to and from other clients, servers, and specialized databases. This generalized concept facilitates transportability of developed software across different devices and networks, which is a necessity for the rapidly advancing market of wireless communications. In this paper we Create A Circle Location Based Intimation Android Application for bus Traveler With The Help of Google Map and GPS Technology. In this proposed system, if the bus is trapped in the traffic. The intimation will be directly updated to the user. The bus route information will be updated to the user. The seating arrangement will be shown to the user, they can see the empty seats and reserved seats. If the bus happens to be any damage or breakdown the information will be transferred to the depot and then intimation will be directly updated to the user.

KEYWORDS: GPS(Global Positioning System), Android, Google Map,Bus.

I. INTRODUCTION

The great amount of the data requires more effective data analysis and manipulation methods. During the survey, the GPS modules built in smartphones could accurately record a series of information including the longitude, latitude, timing, speed, altitude, number of satellites, of each point, which, to a great extent, reproduces the information associated with geography and movement. Despite of the advantages, the transportation survey using the smartphone-based GPS modules cannot record the specific travel mode and purpose, while these two aspects are really important for travel behavior analysis and prediction. Besides, some of the GPS tracking data tend to miss due to the hot start of smartphone GPS, urban street canyon, and the loss of signal underground.

II. EXISTING SYSTEM

In the existing system, the user does not know the exact location of the college bus and whenever he needs to know about the location, he has to call and ask someone. Sometimes, the bus may also get delayed by few circumstances such as traffic congestion. Then the user will not be able to decide whether the bus has arrived or not. Due to this, the user may face many problems such as getting late to work..Time based scheduling is inconvenient for a user who is travelling and who is waiting for bus. Time based alarm may not be accurate for the travelling user. Existing software do not provide a Circle location based Intimation facility. There is no energy aware protocol for communication (HTTP). There is no application for coordinate public. It's a complex system notify any emergency process. It is not possible for the public to know exact location of the bus..

III. LITERATURE REVIEW

1.) **COMPARISON OF TRIP DETERMINATION METHODS IN HOUSEHOLD TRAVEL SURVEYS ENHANCED BY A GLOBAL POSITIONING SYSTEM**

Improvements in vehicular tracking with Global Positioning Systems (GPSs) have fostered new analysis methods in transportation planning. Emerging geographical information systems have helped in developing new techniques in the

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collection and analysis of data specifically for travel demand forecasting. In 2002, more than 150 households in Laredo, Texas, participated in a GPS-enhanced household travel survey. Trip diary data were collected by means of a computer-assisted telephone interview (CATI), and GPS trip data were collected from survey participants' vehicles. For trip purpose, a comparison of the two data sets yielded significant results. It was found that the number of trips in the GPS data was much greater than the number reported in the CATI data. Despite that, almost all home-based work (HBW) trips found in the GPS data were also found in the CATI data. That result differs sharply from the other trip purposes: home-based non work (HBNW) and non-home-based (NHB); for these two trip purposes, less than half the trips found in the GPS data were found in the CATI data. That result indicates the potential for serious deficiencies in the CATI process for collecting certain types of trips in the region of study. In additional, household size and household income were found to be significant factors affecting the reporting accuracy in the CATI data. Despite that, the CATI method of household trip data retrieval is still considered to be an effective and valuable tool.

2.) **A TRIP RECONSTRUCTION FOR GPS BASED PERSONAL TRAVEL SURVEYS**

This article reports on the development of a trip reconstruction software tool for use in GPS-based personal travel surveys. Specifically, the tool enables the automatic processing of GPS traces of individual survey respondents in order to identify the road links traveled and modes used by each respondent for individual trips. Identifying the links is based on a conventional GIS-based map-matching algorithm and identifying the modes is a rule-based algorithm using attributes of four modes (walk, bicycle, bus and passenger-car). The tool was evaluated using GPS travel data collected for the study and a multi-modal transportation network model of downtown Toronto. The results show that the tool correctly detected about 79% of all links traveled and 92% of all trip modes.

3.) **A CONSTRUCTIVE INTELLIGENT TRANSPORTATION SYSTEM FOR URBAN TRAFFIC NETWORK IN DEVELOPING COUNTRIES VIA GPS DATA FROM MULTIPLE TRANSPORTATION MODES**

Due to demographic and economic growth in recent developing countries such as Viet Nam, traffic activities increase continuously and the problem of traffic management is urgently required. Consequently, the complexity of collecting traffic data as well as the traffic coordination carried over a control center are exponential. An Intelligent Transportation System (ITS) nowadays becomes a solution for handling those complexities. ITSs were already considered in developed countries under different formations. However, they are rarely used in most developing countries because of the cost of developing, implementing and maintaining those systems. We develop a framework for two main goals: 1) Collecting and processing traffic data from various types of sources such as cameras, sensors, GPS on cars, buses, taxis, motorcycles, etc. or individual users via our Mobile Application, 2) Adapting several algorithms in transportation research to regulate the traffic and inform users via a control center.

4.) AUTOMATED TRANSPORTATION TRANSFER DETECTION USING GPS ENABLED SMARTPHONES

Understanding the mobility of a traveler from mobile sensor data is an important area of work in context aware and ubiquitous computing. Given a multimodal GPS trace, we will identify where in the GPS trace the traveler changed transportation modes. For example, where in the GPS trace the traveler alight a bus and boards a train, or where did the client stop running and start walking. Using data mining schemes to understand mobility data, in conjunction with real world observations, we propose an algorithm to identify mobility transfer points automatically. We compared the proposed algorithm against the state of the art that is used in the previously proposed work. Evaluation on real world data collected from GPS enabled mobile phones indicate that the proposed algorithm is accurate, has a good coverage, and a good asymptotic run time complexity.

5.) UNDERSTANDING INDIVIDUAL HUMAN MOBILITY PATTERNS

Despite their importance for urban planning , traffic forecasting and the spread of biological and mobile viruses, our understanding of the basic laws governing human motion remains limited owing to the lack of tools to monitor the time-resolved location of individuals. Here we study the trajectory of 100,000 anonymized mobile phone users whose position is tracked for a six-month period. We find that, in contrast with the random trajectories predicted by the prevailing Levy flight and random walk models7 , human trajectories show a high degree of temporal and spatial

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regularity, each individual being characterized by a time independent characteristic travel distance and a significant probability to return to a few highly frequented locations. After correcting for differences in travel distances and the inherent anisotropy of each trajectory, the individual travel patterns collapse into a single spatial probability distribution, indicating that, despite the diversity of their travel history, humans follow simple reproducible patterns. This inherent similarity in travel patterns could impact all phenomena driven by human mobility, from epidemic prevention to emergency response, urban planning and agent-based modeling.

IV. PROPOSED SYSTEM

The proposed system is executable inside an Android mobile handset. It is a circle location based intimation Android Application for bus travellers. The Google Map API used in the application makes it easier to for identification of the bus location. By using the GPS Technology, the app can track the current location of the bus through its latitude and longitude coordinates.The app sets the dynamic circle ratios for required place (Stopping Place)using Google Map and GPS Technologies. Send Intimation to person who requests the bus location , when the bus enters the scheduled circle location. Should enable the user to sound alarm based on place, instead of time.

LOCATION INFORMATION MODULE:
The location information module depicts the process of selection of Bus no and presenting the current location of the Bus.

TECHNOLOGY APPLIED:

- GPS – Global Positioning System.
- Client-Server Technology.

GPS interaction module:

A GPSis a space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.It is a technology where satellites send down radio signals which GPS units
and receivers use to work out their current location (which is shown by latitude, longitude and elevation). GPS works like this: There are 24 working satellites circling the globe at any given moment. A GPS navigator or GPS tracker searches for the transmission signal from at least three satellites. A normal GPS receiver listens to a particular frequency for radio signals. Satellites send time coded messages at this frequency. Each satellite has an atomic clock, and sends the current exact time as well. The GPS receiver figures out which satellites it can hear, and then starts gathering those messages. The messages include time, current satellite positions, and a few other bits of information. The message stream is slow - this is to save power, and also because all the satellites transmit on the same frequency and they're easier to pick out if they go slow. Because of this, and the amount of information needed to operate well, it can take 30-60 seconds to get a location on a regular GPS. When it knows the position and time code of at least 3 satellites, a GPS receiver can assume it's on the earth's surface and get a good reading. 4 satellites are needed if you aren't on the ground and you want altitude as well.

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V. PROPOSED SYSTEM ARCHITECTURE DIAGRAM

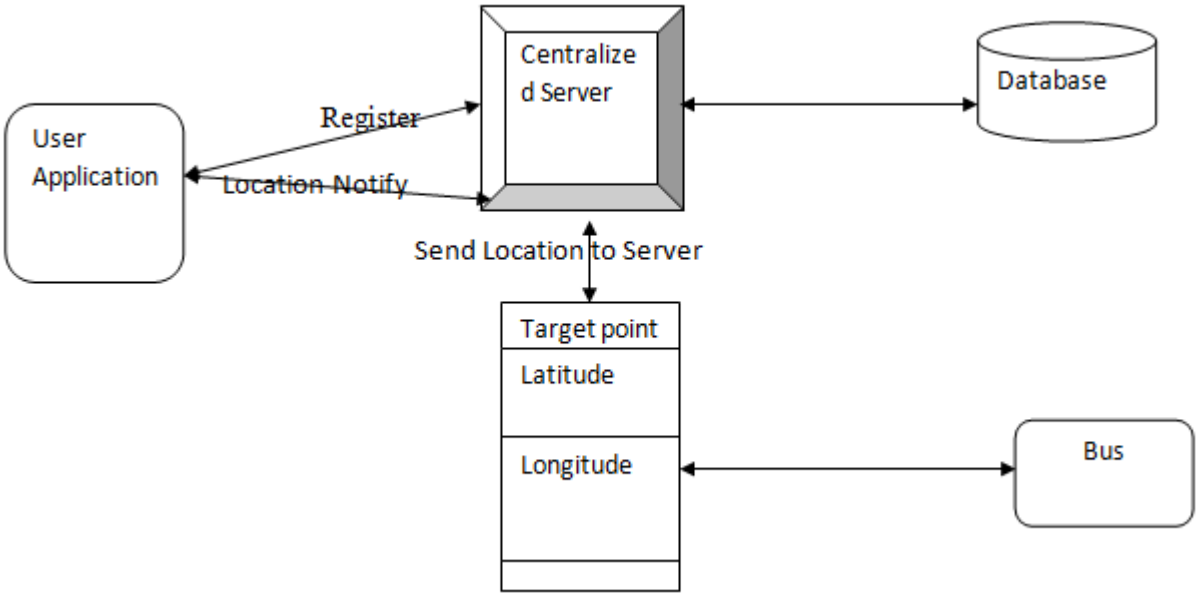

Fig 1

VI. EXPERIMENT RESULT

Admin:
Admin can login to the admin account after authentication and authorization. He can enter new route details and also he can select the route from the list of routes and then the corresponding stops are displayed. He has the options to add or remove a route. He also has the option to modify or remove a stop from the route.

Driver:
Driver has to enter the bus number, route id, and mobile number to login the application. Driver works is only start and stop the bus. When the application is launched, the homeActivity fetches the routes from the server and binds it to the spinner for the driver to select it. If the driver selects “Start”, the location of the bus will be uploaded to the server. If the driver selects “Stop” then the uploading of location of the bus is stopped.

User
User has to enter the register number and mobile number to login the application. To search for a bus, user has to enter the bus number in the search bar. Then map is displayed which shows the current location of the bus. He can also receive an alert notification when the bus came to the nearest stop. When the application is launched, the home Activity fetches the routes from the server and binds it to the spinner for the client to select it. When the client selects a route, corresponding stops are fetched from the server and binded to the spinner for the user to select.

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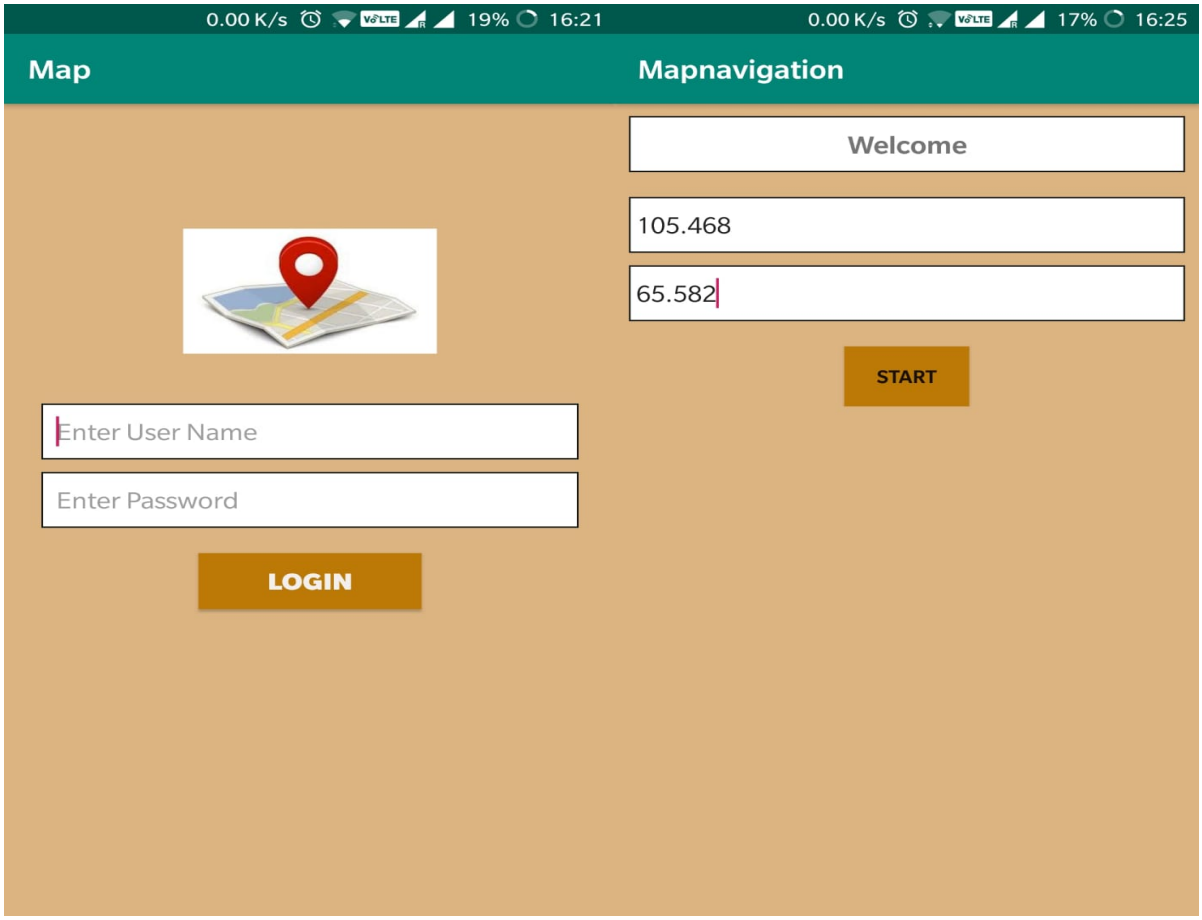

Fig 2

Fig 3

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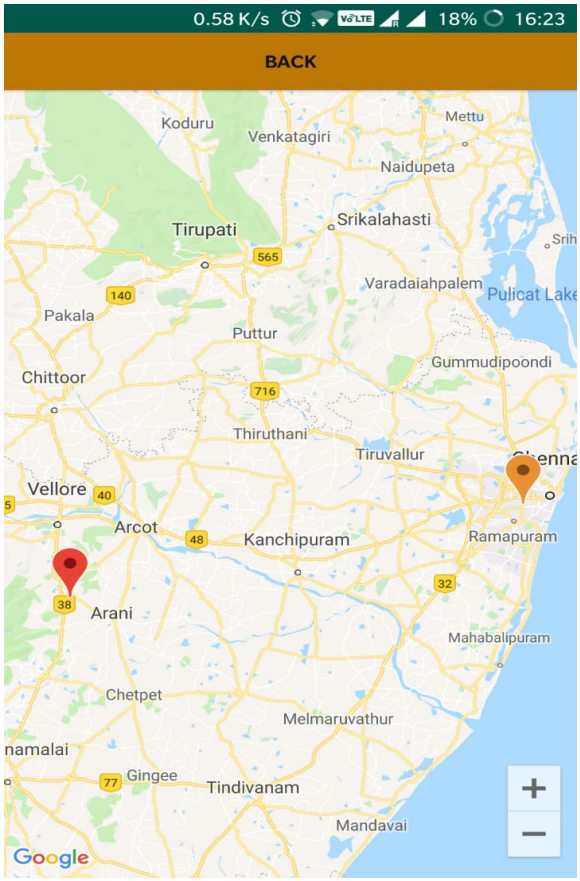

Fig 4

VII.CONCLUSION

The overall purpose of this application is to remind the works which we are having in our daily life based on the work location to which we are going. In this location based alarm system based on the location of the mobile devices user will automatically retrieves the notification in relevant situations allowing them easily to activate or deactivate the alarm system. Till now there were so many applications for reminding the work schedule which are working based on the time. But in our application we have introduced a new thought for reminding the daily works by using the GPS location system for placing alarm based on the location and by using clustering concept, we are able to place the alarm to the nearby places according to the user's desire. For the future enhancement of our application we are planning to add the Data Mining concepts for better understanding of the user.

VIII.FUTURE WORK

The project is aimed at developing a dialog that displays the list of integrated online cloud storage and web services. The user can authenticate themselves in each of the services all in a single dialog that pops out. However, making frequent API calls will lead to an increase in the response time. Hence, frequently accessed data can be managed using local storage. At present, only five services are listed in the dialog. In future, various other online cloud and file storage services can also be integrated. There is also a good future scope for open sourcing this module so that any file attachment module can make use of it to enable users to easily upload files from across different cloud services like Google drive, One drive, Box, Dropbox, etc.

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