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Transport Tracking Application for Smartphone via SMS using GPS and Graphical Map

S.Malathi[#1], N.Juliet[*2]

[1]*Master of Computer Applications, S.A. Engineering college, Chennai-77.*
malimalu.s23@gmail.com
[2]*Asst. Prof., Department of Computer Applications, S.A. Engineering College, Chennai-77.*
juliet@saec.ac.in

Abstract— Now days in this fast life where everyone is hurry to reach our correct destination. It's not possible for a new person to determine transport terminals. They are always dependent to somebody who helps them. So this public transport (vehicle) tracking provides citizens with transportation details. This paper deals with tracking the public transports in a single application. The customers encompass a smart phone means they could download this application function and they have to regain the in sequence near to their carrys position and procedure that base to obtain more constructive details. Using GPS (Global Positioning System) and Graphical map the user can know the location of the request transport by sending an SMS (Short Message Service). The complete process requires everything to be done manually.

Keywords— Smartphone; GPS; SMS; Graphic Map.

1. Introduction

Transport tracking is one of the most important infrastructures of any country. The India not succeeds to pursue the moves planned schedule and places the ordinary man in to problem. A being to come indoor of a stop is not capable to obtain the details where the demand transport carry has achieved. These passenger faces difficulty. They take the decision of whether it would be to wait for the next transport or to walk or to hire a cab/rickshaw. The main focus of our research is to reduce the device storage and reduce the waiting time for particular transport such as every day we see people going late work, students to wait for the bus stop of just using an alternate transportation. So this transport tracking used to track a public transports people can easily alternate the transport.

Transport tracking system is an application for smartphone. The client supports Android OS. This application uses the GPS function [4], graphical map available in most of smartphone, the map pin point the current location accurate. With this application installed on smartphone, people need to start up with application when he/she needed. This android application will send co-ordinates to server, and then server sends SMS alerts to a person who is registered from their specific location point.

2. Existing System

2.1 Wireless Sensor

The wireless sensor is a technique for trailing the bus structure. The fig1 demonstrate the wireless sensor structure.

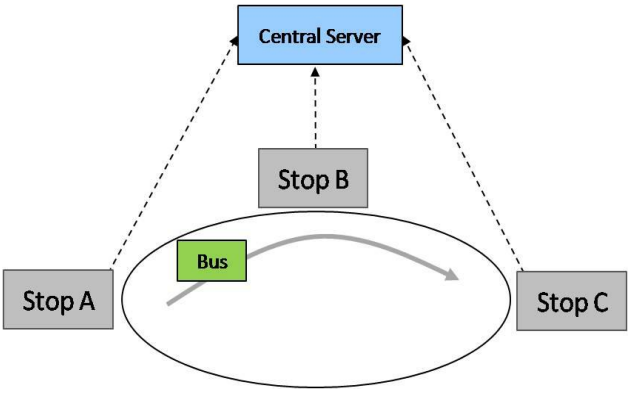

Fig.1: Wireless Sensor

Sensors are placed on the bus-stop and bus. Bus stop directly connected to a central severs. Bus and bus-stops communicated through the wireless sensors.bus sends beacons regularly. When the bus come the communication range of a bus-stop, the bus-stop receives the beacon. The records of time receiving the beacon as the arrival time of the bus. Bus-stop regularly updates the latest information to the server The bus-stop are simultaneously updated with relevant analysis results bus-stops and eventually buses. Then display this information such as current expected arrival time, bus location, congested road, etc. central server can also predict communication between bus-stop and bus using which effective sleep schedules can be built.

2.2 GPS/GSM Based Tracking

The GPS/GSM based tracking is also one of the methods for bus tracking.[4,8]. This tracking system consists of microcontroller, GPS, GSM, and SMS. The database have various location details is stored in the microcontroller memory. This database is used in location the bus [4, 5]. GPS coordinate value and location name are stored in a

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LUT (Look Up Table) of the microcontroller. The GSM modem receives SMS request for location, and the microcontroller checks for a closest location in the LUT table. It matches inside of the LUT with the received GPS coordinate data. The matched location details sent to the user as an SMS using GSM modem. Figure2 show the GPS and LCD screen. This application used in c language not a java language.

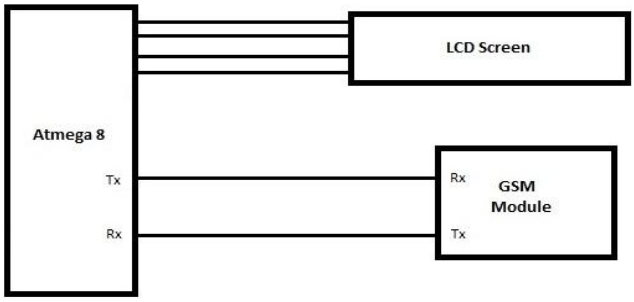

Fig.2: GPS Model

2.3 SMS Based Tracking

This is purely based on Android application. This only runs on Android devices or Android Phones. This application also used track a student bus. Figure3 show the students bus tracking. The system is composed of server and client interface. At client side we have Android app fetch the co-ordinate by using the Google map, sends the co-ordinates to server side. At server side stored all details, bus details then server send SMS alerts to register students and also server provides current bus location via Graphical map by having markers on to the map. It's also run on the map background so students are free to use our phones for other activities [1, 2].

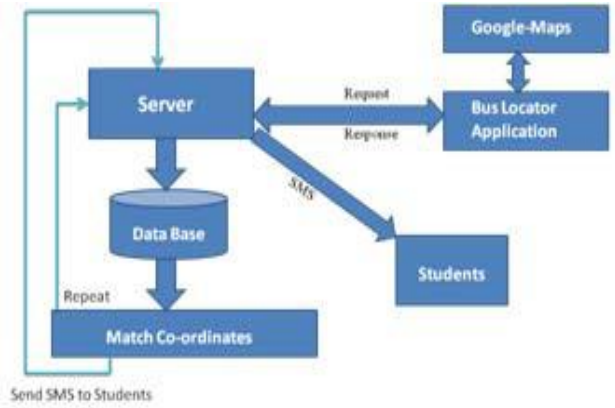

Fig.3: Student Bus Tracking

3. Proposed System

The existing system consists of disadvantage. My proposed system overcomes these disadvantages. My proposed system is tracking the transports. Figure4 show how this system can be work. This is an android based system which will provide the person required all information about transports. Why we can choose this android means it develops the platform. This system is android based mobile phones are used [1].

Android is a user friendly. We can handle very easily, and hence the maximum number of people can use this android. Android is one of the open source operating system for mobile phone. The transports tracking system consists of the GPS [4], Graphical map [5] and SMS methods. This application used to track public transports such as train, ship, cab, bus. This application provide easiest path/route and gives exact time and date and provide a distance between users and transports and also give an alert if the transport very closed means and if the transport have some distance means it provide sms (this transport distance between 5km).

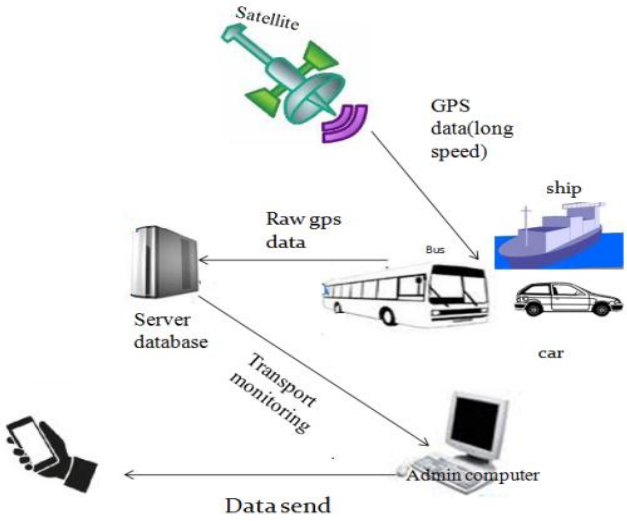

Fig.4: Transport Tracking for a Smartphone

3.1 Requirements

- GPS-fetch the current data.
- smartphone-like android phone.
- RAM: 600 MB or above.
- Internet connectivity.
- Map.
- Child server-each transport details store in a child server system.
- LCD Screen-A 16*2 and above on board LCD screen for location display.

3.2 Architecture For Transport Tracking

The satellite GPS gather the transport information [4] and provide data to server. The server stores a raw data into database and monitors the data and updates the data in each

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and every second. The person open application the map show the current location and the person enter the request location. The server show fetch the request show the current available transport location and details. The person request a particular transport server show the details such as distance, time, route and etc. if the transport very closed means its provide a alert. This architecture (fig5) refers to track a transports using application.

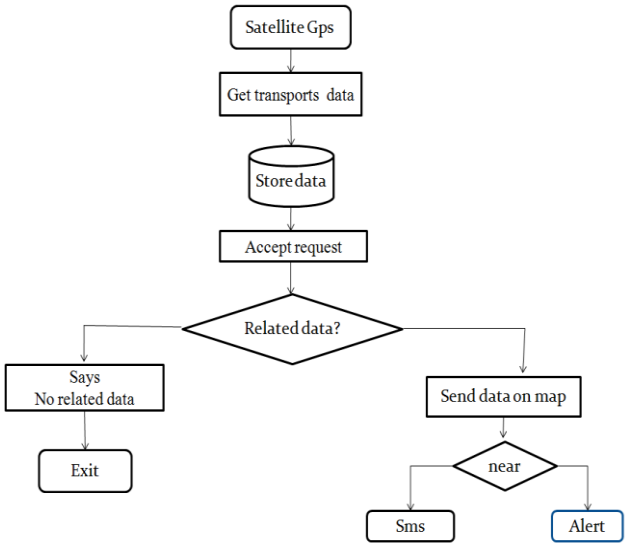

Fig.5: Architecture of a System

3.3 GSM Based Location

GSM module is used in both sender and receiver module every module will have a separate number.

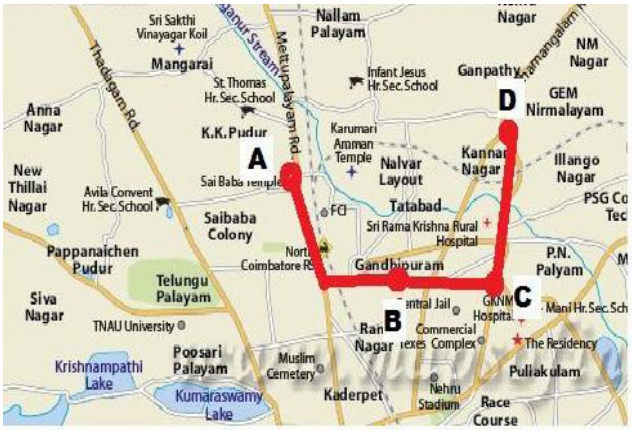

Fig.6: Request Transport Show the Current Position

The figure 6 to showing the operational of the complete system to obtain the map. The users send a request transport to the server. The server shows the details via client map such as route and timing. The map show the 4 points such as A, B, C, D. The request transport starting point is A. The user point is D. The map shows the transport arrival time is 10 sec. Then transport move to B means it sends 7sec. then transport move to nearby D means it send an alert sms. The user can pick up the point very easily.

3.4 Length Calculation

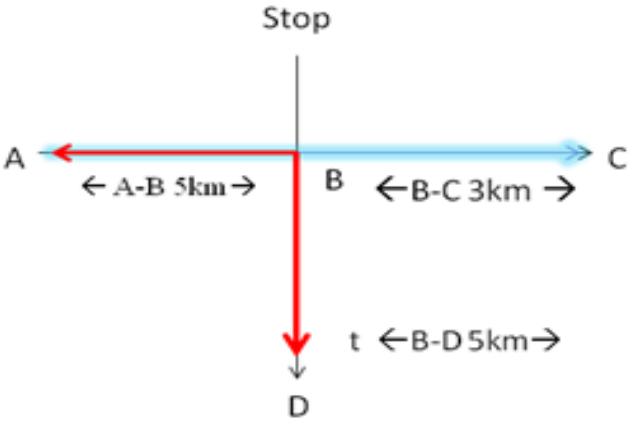

Fig.7: Map of example network

The map of the network show the line 1 in blue (train) and line 2 in read (bus). Both transports begin at point A and run on a common route 5km long to B. At point B, the two line divide. Line 1 continues A further 5km from point B to a terminus at point C. Line 2 similar continues A further 5km from point B, but to a different terminus, at point D.

The route length is:

Line1 (train)

5km (A→B)
+3km (B→D)
8km

Line2 (bus)

5km (A→B)
+5km (B→C)
10km

The figure 7 shows the shortest path. Here the train travelling is 8km. the bus travelling distance is 10km. the map can choose the train distance because it is a shortest path/route.

3.5 Mathematical Modeling

Let S be a GPS based transport notification system [1].

S = {L, O, P}

Where, L is represents a server name, P represents the process of the system, O represents the name of the transport and the routes and OUT represents output.

L = {L1, L2, Ln}
P = {P1, P2, Pn}
O= {O1, O2, On}

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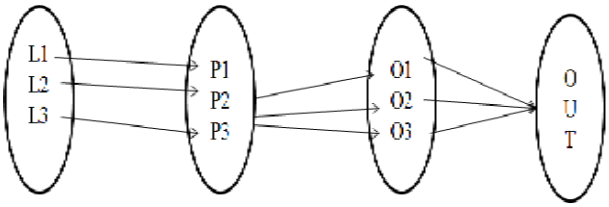

Fig.8: Mathematical Model

The beyond figure8 demonstrate the achievement and stoppage of a scheme [2]. Success of the system will be depending upon when: Li=Oj where Li € L Oj €O Where, 1 <= j <=n. Failure of the system will be depending upon when: For an input (L) no feature vector is found.

Li≠Oj where Li € LOj €O Where, 1 <= j <=n

Where,

O: Select transport name
O1: Train name
O2: Bus name
O3: Car/taxi name
L1: Opening the application
L2: button ON the GPS
L3: choose goal via map.
P1: choose the GPS apparatus.
P2: propel base and GPS name to the server.
P3: recovering the base from the server to mobile app.
OUT: exhibit the subjects to the customers.

4. Conclusion

This application is more user friendly and easy to access the information about transports. We can have easy access to the routines as well as provide the navigation of the route. It shows the transport arrival request number, name and transport arrival time. It's reduced pollution, consumption of fuel and traffic will leads to better works. This project reduced the risk of losing signals by the time of transports arrival at the stop. And also this project reduced the waiting time and promotes single application usage for multiple transports. It reduced mobile storage space and user net accessing time. If the transports have some distance means it will provide a sms.

5. Future Enhancements

In the future, we have to plan some additional feature like, sending messages from transport to request client (passenger) about other information including status, door, close, passenger count and etc. We also try to send a traffic status for more accurate results to the clients and reduce a storage space into the module. It also sends an accident signal to the police station and intimation of ambulances in nearby hospitals.

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