Safety-Tracker for School Kids

Priya Davkhar[1], Ritesh Kadam[2], C.M. Raut[3]

[1,2,3]DMCE, Airoli

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Abstract— An increased concern for parents is the safety of their children on the way back home from school and the timing of their arrival. Waiting school buses in the morning and then in the afternoon to return back is a time wasting daily mission on parents, especially with the increasing traffic jams at these hours. In this paper we present a mobile application that is designed to address this issue. The system will help detect kid's arrival time. The bus application will notify parents few minutes before its approaching to their home. Furthermore the system will allow parents to inform the school about their kid. The system has been efficiently and dynamically designed and implemented so it can be hosted and used by any school administration without the need to any major modification.

Keywords:- J2EE5, J2SE6, GPS/GPRS, MIDP (Mobile Information Device Profile), CLDC (Connected Limited Device Configuration)

I. INTRODUCTION

One of the major concern for school authorities and parents today is the safety and security of students while commuting to school.

We have came with an idea of "**SAFETY TRACKER FOR SCHOOL KIDS** "which will track the bus with some functionality and smart communication. It provide all round-student security, it also bridges the communication gap between parents, mentors & students. "**SAFETY TRACKER FOR SCHOOL KIDS"** is the technology used to determine the location of the vehicle using different method like GPS. By using GPS Tracking parents will have an complete idea about their child and there will be no chaos or worry in case there is traffic or anything else. They will also have an idea about their child presence in the bus.

The focus of the project is to ensure the safety and security for the school kids travelling in the school bus and also to ensure there is no worry for parents and school authorities regarding kids security.

The objective of this project is to design and implement a school bus tracking system in which the parents or guardians would be able to know the location, arrival and departure time of school bus and will also get the information about their child presence. In accomplishing this different methods were used which include reading different literatures relevant to this project, data collections, data analysis, circuit designing, programming of programmable devices, interfacing systems, simulation, circuit implementation and testing.

"**SAFETY TRACKER FOR SCHOOL KIDS"** is available both as Mobile Applications so that users can use it anytime, regardless of where they are. Mobile app is operated by school admin as well as by the mentors, parents, and bus drivers

II. LITERATURE REVIEW

Vehicle Tracking is one of the research areas and extensive research work has been carried out in recent years. A number of effective techniques have been proposed by various authors to track a vehicle. This chapter discusses several works done by various researchers that deal with tracking a   vehicle.

There are several works printed connected to GPS tracking system. However, all these working are done using external hardware interfaces. The accurate tracking of targets is highly challenging without using external modems or tracking chips for getting the exact location of the user.

The work done by Pradip V Mistary and R H Chile represents vehicle tracking system using GPS, GSM modem and micro- controller. The work is done for observing the movement any time of any equipped vehicle. In this system, GPS receiver receives the situation knowledge and convert this knowledge into the information string of NMEA 0183 format in continuously periodic manner. At operator station, the receiver get the reading and place this into the GUI application created in MAT-LAB. The application contained an algorithm which gets the NMEA reading and converts into degree format appropriate for Google earth which is named by using an

algorithm.The system can is improved by connecting GSM modem to the GUI, for lower the need of operator and making the system more reliable.

The work by Iman M. Almomani, Nour Y. Alkhalil, Enas M. Ahmad, Rania M.Jodeh [1] represents the vehicle tracking and management system using GPRS, GSM, the Internet and GPS, essentially helpful for fleet operators in monitoring driving the behavior of employee. The system consists of the mobile application for the end user. The developing approach for creating this system includes The GPS vehicle tracking system is mainly executed using JAVA 2 Enterprise 5Edition platform , JAVA 2 Standard Edition Platform and J2ME MIDP (Mobile Information Device Profile), combined with the Connected Limited Device Configuration. The SMS alerts are also provided for the notification of the bound events. The system can be improved by increasing the services of the application and rising GUI.

M. B. M. Kamel[2], "Real-time GPS/GPRS based vehicle tracking system" International Journal Of Engineering And Computer Science, Aug. 2015" The vital Time Bus observation and traveller data bus tracking device will perform a viable notification system that may effectively assist in making the decision of whether to wait for the bus or walk. This device is a standalone system designed to show the real-time location(s) of the buses in city The system will encompass a transmitter module put in on the buses, receiver boards installed on the bus stops, LED embedded map of the BEST bus transportation routes at the centralized controller. It will even have traveler system package put in at the bus stops, which will provide a user the relevant information regarding all the bus numbers going for his source to destination along with the route details and also the value. Assembly of these modules can modify the tracking device to get GPS knowledge from the bus locations, which will then transfer it to the centralized control unit and depict it by activating LEDs within the approximate geographic positions of the buses on the route map. It will also transmit its bus information as soon as the bus comes within the range of the receiver at the bus stop.

III. EXISTING SYSTEM

This system may be a combination of net and additionally android application wherever the driver can utilize the android application whereas administrator and parent can utilize net application. This application is meant for drivers driving school bus. Administrator can include the another driver wherever login details is generated and keep into

the system. the driver will have the application in his phone where he can login, his GPS detail will be put in database. Once driver sign up, GPS info of the driver will be followed consequently by the application and stores the GPS coordinates into a database once five minutes. At the purpose once driver logs out from the device, again GPS area will be stored. The a part of the administrator is to enter another student by getting his own detail with parent points of interest wherever parent gets a mail that comprise login detail, thus parent will get to the online interface to trace their kid. Administrator can modify and update elements. The Key drawback is if the data is off they do not any information about their kid and even if gps is not operating properly there's no different approach during which their parent would get an update concerning their child. The another drawback is that they don't have any plan if their kid is there within the bus or not.
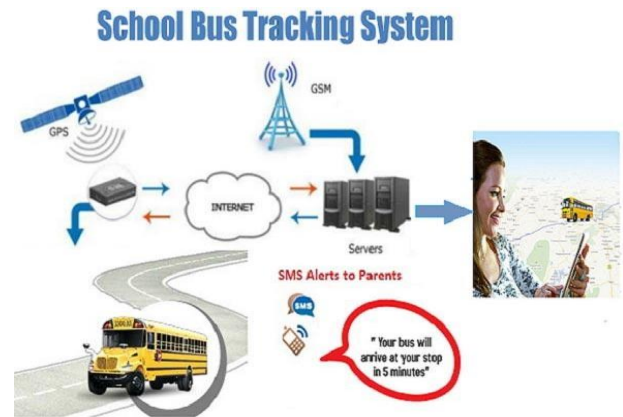

Fig.1. A Typical School Bus Tracking System

IV. PROPOSED SYSTEM

We propose a SAFETY TRACKER FOR SCHOOL KIDS System. This system is an android application where both the driver and parent will be using an android application. This system is basically meant for tracking the bus in which her/his child travel's on the parent's part and the admin to track his driver and to get information about his attendance. The System allows the admin to add a student with a system generated password which is then message to the parent so that the parent can locate and track the bus. The System permits the Admin to add or remove a driver and maintain a info to track his movements. The bus driver when he starts his duty has to login into his account, using login details and on each five minutes interval the GPS Coordinates the driver is been sent to the server. When his duty is over he can logout of the app and which will help the admin to analysis his work. The Parent can

track his child or children and can give a feedback.

A. MAP-MATCHING ALGORITHM

i. The road searching for the vehicle GPS system:

In the method of map-matching, the vehicle-running road is firstly determined. Then the GPS measured information are amended from relevant road data. Here the gap r_i between the GPS measured point and each road within the definite region, and the angle θ_i between the moving direction of the vehicle and the road should be calculated. The road, whose distance is smaller than the given threshold value, is selected to be the candidate one for its metric value λ_i calculation from the following equation:
$\lambda_i = w_r \, r_i + w_\theta \, \theta$
Where $w_{r,\theta}$ is the weight of distance and direction respectively.
The road with the smallest metricvalue λ_i isselected for the matching road. In Fig.1, P is the measured point to be matched; L_1, L_2 are the adjacent roads with the GPS measured point.To calculate the metricvalue λ_i, road L_2 is selected as the vehicle's matching road.

ii. Location evaluation based on map-matching:

The location evaluating will be used to match the measured location information with the chosen road within the electronic map. Assume that vehicle runs on a straight-forward road, the GPS measured point P_t (x_b, y_b) is coordinately conversed to P_t (x_m, y_m) in Beijing 54 coordinate system. α_d is that the angle between the X axes in Beijing 54 standard and the selected road from Eq.(1). For a straight road R_d, on that the vehicle moves, the measured information could also be set may be outside the chosen road. Assume MaxError is the threshold, the measured point, if its distance to the road R_d is smaller than MaxError, is considered to be on the road R_d. Otherwise, the measured point is projected to the road through the near nearest distance rule.

V. CONCLUSION

The conclusions of this study that knowledge of specific domain improves the results. This Project has been done on Android platform. Also, different attributes have been added to the project which is able to convince be advantageous to the system. The necessities and specification have been listed above. This project is done using Android and the SQL domain. Using the GPS system, it will automatically display the maps and routes to the various locations and also track the bus location using

client-server technology and forward it to the client device.

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