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College bus tracking android application using GPS

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Abstract- A College Bus Tracking android application enables the user to find out the bus location information so that the user does not get delayed. The main aim of this paper is to collect the data from GPS and delivering it to server from where it will be fetched by android application and the bus real time location can be viewed on Google map, which is integrated onto the android application.Global Positioning System (GPS) technologies have been increasingly considered as an alternative to traditional travel survey methods to collect activity-travel data. Android app is applied to extract activity-travel patterns vary from information decision rules to advanced machine learning methods and have different accuracy. This paper systematically compares the relative performance of different for the detection of transportation modes and activity episodes.

Index Terms – GPS, smartphone, bus ID, ecological behaviour, Tracking ID.

I.INTRODUCTION

In this project, we present a bus arrival time prediction system based on college bus participatory sensing. In modern era, huge development in the arrival of smart phones. Everybody started using smart phones and it became daily part of their of life, literally calling it as 11 finger. There is certain conflicts need to be answered from the school side, stating that the time of arrival and exact location of their children to be informed indeed by assigning id to students and their information. In order to overcome this issue specialized alert system is proposed and it can be implemented using android.

Multiple studies have sought to develop GPS-based surveys to collect all the information that is usually collected by extant mail-back, phone-based or door-to-door travel diary surveys, but with very little input from survey participants.

Errors in inference could potentially compromise the quality of data collected through GPS-based surveys and the validity of travel demand models developed using this data. And yet, to the best of our knowledge, no study has systematically examined the implications of using low-quality big data for traditional modes of analyses.

T.Forrest et al1 proposed a slight improvement in the prediction accuracy is achieved by selecting the best features for the classification purpose in tracking. D. P. Wagner2 stated that they have no battery issues, meaning that more data is recorded and that data quality is more stable. J.Wolf 3 states that the goal was to transform the second-by-second GPS data collected for all in- vehicle trips into the essential trip-level details typically recorded on a paper or electronic diary and then reported during the data retrieval call. J.Wolf et al4 in this approach, all GPS data collected must be processed in such a way that all essential trip data elements, including trip purpose, are derived. E.-H. Chung5 proposed the process of gps value into trip characteristics should be relatively fast and expensive. N.Schuessler6, demonstrate that derived data are ready for further applications, such as discrete choice model estimations. Tao Feng et al7 in the sense that the Bayesian network is relatively efficient and generalizable in the context of GPS data imputation. .

II.MODULES

As for as the "Android Application for College Bus tracking" it consist of 5 modules.

- Bus Details
- Driver Details
- Bus Allotment
- GPS initialization
- Track Bus.

A.MODULES DESCRITION

Bus Details

In this module, complete bus details will be entered in prior to the maintenance of transport details. It includes

- Name of the bus
- Bus Number
- Route details.

Driver Details

This particular module includes driver details

- Name of the driver
- Id card number
- Driver photo
- Address for Communication
- ID proof issued by government of India
- Mobile number

Driver details are strictly enrolled and maintained by the college management to ensure student safety.

Bus Allotment

From the school management end bus details will be entered into the database namely,

- Bus Number
- Route Details
- Driver Details.

This module indirectly need and support driver details.

GPS Initialization

As soon as the app is installed on both the college and parents side. This module plays vital role in triggering the app, it connects the college and parents just by initiating the GPS system that is being installed.

Track Bus

In this module, the parents shall easily track their children location once the GPS turned on by the driver of the concern bus as soon as bus starts from school.

- Bus Name
- Bus Number
- Tracking ID.

B.SPECIFIC OBJECTIVE

The proposed system solely relies on the collaborative effort of college student's details and dependent from the school bus drivers. It's always better to refer GPS-enabled location information which brings less burden to the monitor where their children are exactly with clear information.

B.1.SALIENT FEATURES OF THE SYSTEM

This study presents an algorithm that uses real-time GPS data from field and takes delays automatically into account for an accurate prediction of bus arrival time

- It automatically alert parents when the bus is reaching in nearby location
- Navigation Tracking facility is available to track the bus navigation and can see the navigation map via mobile

Fig 1 – App front end

III.BLOCK DIAGRAM

Identification of college buses during peak hours is very difficult. In such situation, on navigating information can substantially ease of use college transportation. Location based services are increasingly important for modern mobile devices such as a Smartphone. The realized system tracks prediction targets equipped with GPS enabled devices

In this method Android App will be developed one at the user side and the another one is placed at the college bus. Where GPS is incorporated in the college bus the current location of the bus will be sent to the cloud using Google server. From there data's can be fetched by the user by using the android app.

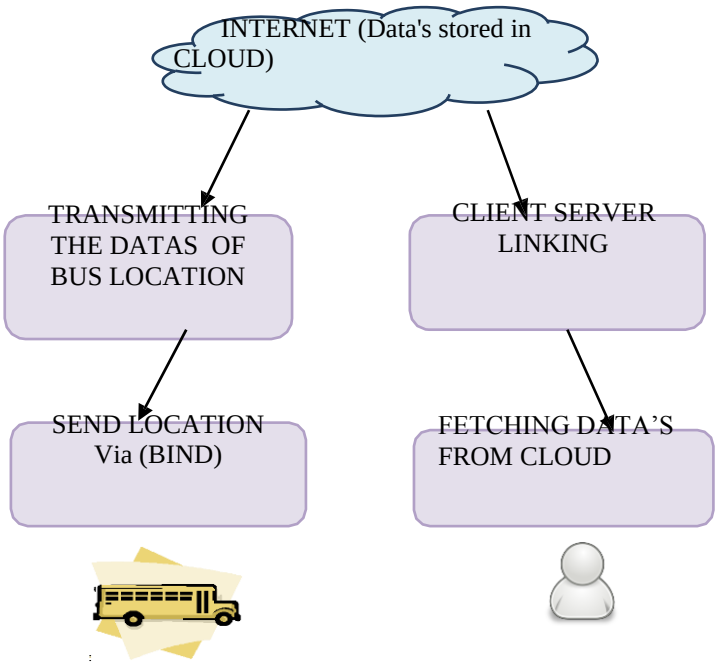


Fig 2 – Block Diagram

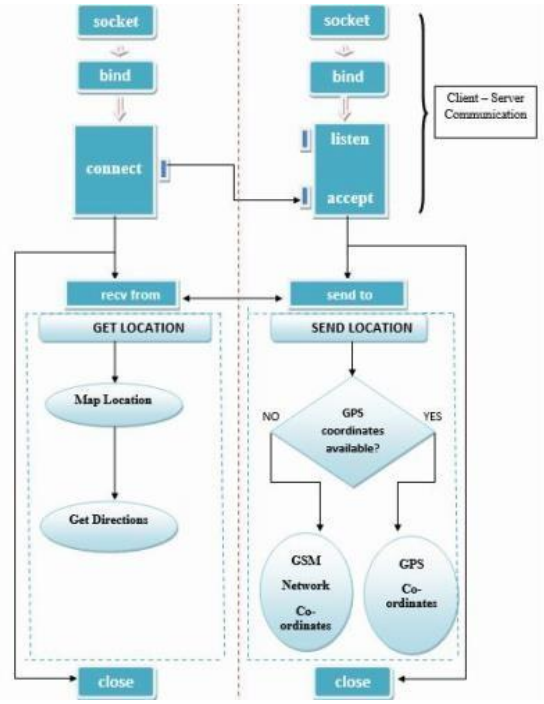


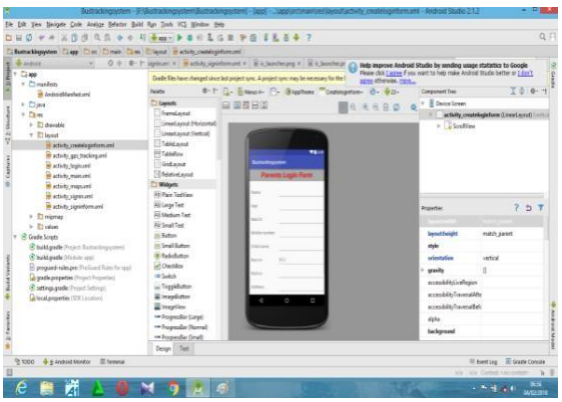
Fig 3 - Proposed method

IV.FUNDAMENTAL DESIGN CONCEPTS

System design is a "How to" approach to the creation of a new system. System design goes through 2 phases. They are

- Logical Design
- Physical Design

Logical design reviews the present physical system, prepares input and output specification, makes edit security and control specification. Physical design maps out the details of the physical system, plans the system implementation devise a test and implementation plan.



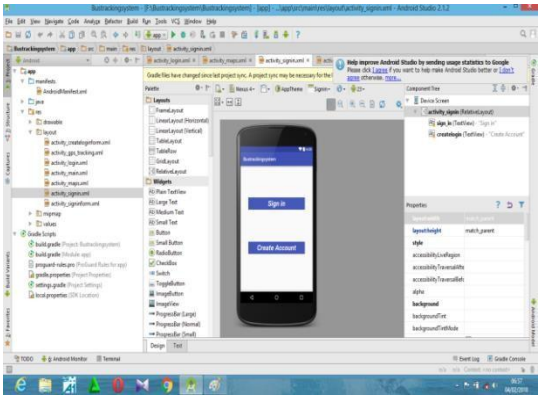


Fig 4 – Login form

V.DESIGN PROCESS

A.INPUT DESIGN

Input design is the process of connecting the user-originated inputs into a computer to used format. The goal of the input design is to make the data entry logical & free from errors. Errors in the input database controlled by input design.

B.OUTPUT DESIGN

The output form in the system is either by screen or by hard copies. Output design aims at communicating the results of the processing of the users. The reports are generated to suit the needs of the users. The reports have to be generated with appropriate levels. The Android SDK includes a virtual mobile device emulator that runs on your computer. The emulator lets you prototype, develop and test Android applications without using a physical device.

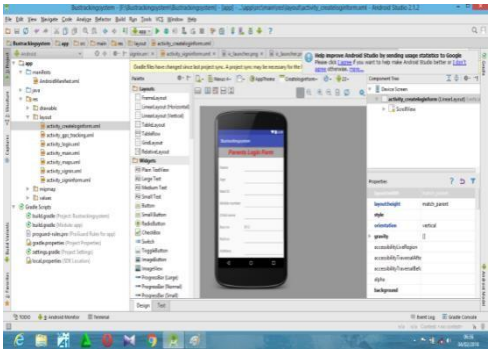


Fig 5 – Parent's login form

Fig 6 – Driver's login form

C.CODE DESIGN

The main purpose of performing code design is to simplify the coding to achieve better coding. The loading is prepared in such a way that the internal procedures are more meaningful. Validation manager is displayed for each column.

C.1.LANGUAGE DESCRIPTION

JAVA is a language, which could offer solution to some of the problems encountered in modern programming. The language is reliable, portable and distributed but also simple, compact and interactive. Sun Microsystems officially describes java with following attributes

- Compiled and interpreted
- Platform independent and portable
- Object-oriented
- Robust and Secure
- Distributed

Compiled and Interpreted

Usually a computer language is either compiled or interpreted. Java combines both the approaches for making java a two-stage system. First, Java compiler translates source code into what is known as byte code instructions. Byte codes are not machine instructions and therefore, in the second stage, java interpreter generates machine code that can be directly executed by a machine, running the Java program.

Platform Independent and Portable

The most significant contribution of Java over other languages is its portability. Java programs can be easily moved from one computer system to another, anywhere anytime. Changes and upgrades in operating systems, processors and system resources will not force any changes in Java programs. This is the reason why Java has become a popular language for programming on Internet, which interconnects different kinds of systems worldwide.

Object Oriented

Java is a true object oriented language. Almost everything in Java is an Object. All program code and data reside within objects and classes. Java comes with an extensive set of classes, arranged in packages that we can use in our programs by inheritance. The object model in Java is simple and easy to extend.

Robust and Secure

Java is a robust language. It provides many safeguards to ensure reliable code. It has strict compiler time and runtime checking for data types. It is designed as a garbage-collected language relieving the programmers virtually all memory management problems. Java also incorporates the concept of exception handling, which captured the series of errors and eliminates any risk of crashing the system.

Security becomes an important issue for a language that is used for programming in internet. Threat of virus and abuse of resource is everything. Java systems not only verify all memory access but also ensure no viruses are communicated with an applet.

Distributed

Java is designed as a distributed language for creating applications on networks. It has the ability to share both data and programs. Java applications can open and access remote objects on Internet as easily as they can in a local system. This enables multiple programmers at multiple remote locations to collaborate and work together on a single project.

D. PHP

PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management systems, and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command- line interface (CLI) and can be used to implement standalone graphical applications.

E. DEVELOPMENT APPROACH

The Android testing framework, an integral part of the development environment, provides an architecture and powerful tools that help you test every aspect of your application at every level from unit to framework.

The Android operating system is a multi-user Linux system in which each application is a different user.

Each process has its own virtual machine (VM), so an application's code runs in isolation from other applications.

VI.IMPLEMENTATION AND RESULTS

All the current information is stored to the cloud and it is retrieved to remote users via mobile application. This system is more user friendly for to get information visually shown on Google Map. User can freely get this mobile application for real time tracking of bus which provide interactive interface environment. So this paper presents a system which provides high practical value in the modern fast era.

Fig 7 – Driver end

Fig 8 – Location of driver

Fig 9 – Parent's end

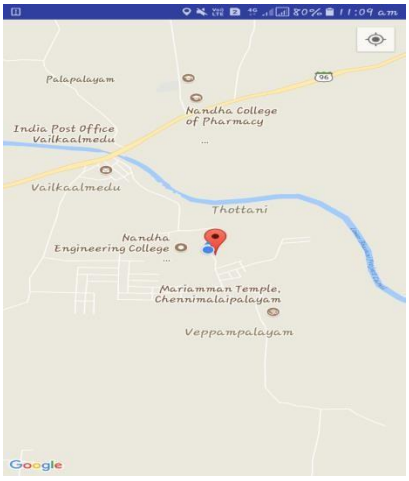


Fig 10 – Tracking the bus (via) app

VII.CONCLUSION

This proposed work is successfully designed, implemented and tested. Our system reduces the waiting time of remote users for bus. With the mobile application we can track the location of bus at any point of time.

This project is having a wide scope. A web based application which can further modified using cloud. Use of vedio camera to this system would take this system to next level in the field of security. It will help to monitor the crimes that happen now a days which is witnessed by common people every day.

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