

## IoT based Vehicle Tracking using GPS

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**ABSTRACT-** The present generation requires the information time to time. The use of technology have been increasing day by day. So we are planning for the combination of present technology with the requirement of information transmission, we planned for the creative approach of Vehicle Tracking System using GPS". To overcome the drawbacks of the previous methods of paper based and we introduce a project to track a vehicle using GPS. It intends to reduce the waiting time for bus students, thereby to stimulate sharing of updated information between the bus drivers and students. The application can run only on android devices. It would inform the students about the exact time of arrival and departure of buses on route any change in the scheduled movement of the buses would be updated in the software.

**Keywords:** Bus Routing, Bus Tracking, Google Maps, GIS

### I. INTRODUCTION

The microprocessor-based system is built for controlling a function or range of functions and is not designed to be programmed by the end user in the same way a PC is needed as an embedded system. An embedded system is designed to perform one particular task with different choices and options. Embedded systems contain processing cores that are either microcontrollers or digital signal processors. Microcontrollers are generally known as "chip", which may itself be packaged with other microcontrollers in a hybrid system of Application Specific Integrated Circuit (ASIC). In general, input always comes from a detector or sensors in more specific word and meanwhile the output goes to the activator which may start or stop the operation of the machine or the operating system. An embedded system is a combination of both hardware and software, each embedded system is unique and the hardware is highly specialized in the application domain. Hardware consists of processors, microcontroller, IR sensors etc. On the other hand, Software is just like a brain of the whole embedded system as this consists of the programming languages used which makes hardware work. Android is becoming very popular because the source code is completely free; also, Android is highly suitable for expansion as the developer see, so building a mobile application for Android devices is very common these days due to the mentioned reasons A geographic information system (GIS) is a machine framework intended to catch, store, control, investigate, oversee, and

show different kinds of spatial or land information. The acronym GIS is in some cases utilized for geographical information science. GIS platform is used to constitute a map of route net, beside the user's interface based on VB.

### II. LITERATUREREVIEW

V Maria Anu ; D. Sarikha, [1], RFID is a technology similar to that of bar code scanning. An RFID system consists of tags, which use radio frequency signals to transmit its location information to a reader, which usually sends this information to a server that processes it according to the needs of the application. This paper presents a system that can track buses across a city by placing RFID tags in the buses and the readers in every alternative bus stop.

K Sujatha; P V Nageswara Rao [2], Tracking of organization buses while moving on highway is a crucial task. A person patiently waiting for the bus may want to enquire about the position of current location of the bus. Phone discussion is not always possible due to track disturbances. Further it involves variant costs due to the calls and message service over phone and the person in the bus may get annoyed if he gets multiple calls from people boarding that bus. The Global Positioning System (GPS) supports in area following with backing of Global Standard for Mobile (GSM) in cellular telephone to report transport area information again to the servers. Continuously, this shows where transports are on a guide and evaluation the entry time.

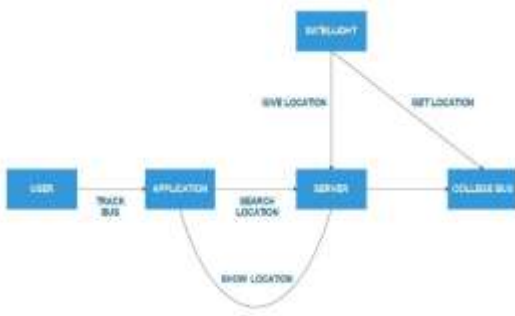
Shah Alamgir ; Israt Jahan [3], Implementation of a real-time bus tracking system in Chit-tagong University (CU) is proposed and developed to keep monitoring the teachers' buses and to provide the information of buses to the teachers via android application (app) in a more efficient manner. The idea behind is, there is no such tracking system in CU. Moreover, some limitations arise with the present existing tracking systems in the universe-need hardware maintenance in the GSM/GPRS module that is expensive also, use conventional MySQL database that updates data within few seconds etc. Concerning these limitations, the developed system uses two smart-phone applications for transmitting and receiving information using Firebase, an online server with real-time database updating data within few milliseconds that makes the system faster than others.

Huai-kun Xiang ; An-tao Ming [4],

Bus passenger flow collection technology is a subject urgently to be solved in current city intelligent transport system construction. By using self-developed multi-sensor array devices to collect the foot type data of passengers getting on and on, a kind of bus passenger intelligent recognition and statistical algorithms based on motion vector tracking is researched and proposed. The basic idea is based on establishing the motion vector model, determining the optimal solution of motion vector by advance prediction method, similarity criterion and dynamic search strategy according to the law of human body kinematics, tracking the motion process of passengers dynamically, ultimately, determining the movement direction of the passengers. The actual test results show that this algorithm can accurately and effectively deal with all kinds of complicated conditions.

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### IV. Androids key features

- No licensing, distribution, or development fees or release approval processes
- GSM, EDGE, and 3G networks for telephony or data transfer, enabling us to make or receive calls or SMS messages, or to send and retrieve data across mobile networks.
- Libraries for using Bluetooth to transfer data peer-to-peer.
- Full support for applications that integrate map controls as part of their user interface.

- Media libraries for playing and recording a variety of audio/video or still image format.

### V. GPS

The Global Positioning System (GPS), originally NAVSTAR GPS, is a satellite based radio navigation system owned by the United States government and operated by the United States Air Force. It is a global navigation satellite system (GNSS) that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Obstacles such as mountains and buildings block the relatively weak GPS signals.



### VI. Advantages

- $\Sigma$  User friendly: Usability is the ease of use and learn ability of a human-made object such as a tool or device. In software engineering, usability is the degree to which a software can be used by specified consumers to achieve quantified objectives with effectiveness, efficiency, and satisfaction in a quantified context of use.
- $\Sigma$  Reliable: It is a sub-discipline of systems engineering that emphasizes dependability in the lifecycle management of a product. Dependability, or reliability, describes the ability of a system or component to function under stated conditions for a specified period of time.
- $\Sigma$  Scalable: It is the property of a system to handle a growing amount of work by adding resources to the system. In an economic context, a scalable business model implies that a company can increase sales given increased resources
- $\Sigma$  Centralized management system: Centralized management is the organizational structure where a small handful of individuals make most of the decisions in a company. For example, a small

family diner owned by a married couple probably uses centralized management.

## VII. CONCLUSION

This proposed project intends to resolve the problem with long waiting times students of the University are facing for buses. It's primarily important to upgrade the existing manual Bus Tracking and Monitoring system to improve transportation services. For the proposed application, GPS based system is used to success the intended purpose. In this proposal, extensive study has been done to elaborate on the bus management and a mobile application based on the same. It also studies previous research works conducted in this field to gauge the potential challenges in future. So, users would need a mandatory GPS, reliable internet connection, and GPS enabled android phone to utilize the app.

## VII. REFERENCES

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