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Advanced Authentication and Security System For Call Centre Employee's with Live GPS Tracking

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ABSTRACT: In this paper we proposed the design, development of GPS (Global positioning system)/GSM (Global system for mobile communications) based vehicle tracking in real time and provides alert system for reporting any kind of trouble occurrences. It will continuously monitor a moving vehicle. This system contains single board embedded system that is equipped with GPS and GSM modems along with ARM processor which is installed in the vehicle. After pressing the emergency key in case of trouble, SMS is sent to the server via SMS using AT command. A GSM modem is used to send the position (Latitude and Longitude) of the vehicle and GPS modem will continuously monitor the data that is the latitude and longitude indicating the position of the vehicle.

KEYWORDS: GSM, GPS, Embedded ARM.

I. INTRODUCTION

In today's world employee security has become a major concern. Especially employee's that are working in call centres who have to do a night shifts and return home at late night hours. For such employees their safety is a major worry for all companies. We read many attacks on such call centre cabs in recent times, moreover there is no efficient way to inform the company or the police so that any immediate action can be taken to resolve above mentioned problems we have come up with the solution of finger print recognition and GPS based employee tracking and security. GSM and GPS based tracking system will provide effective, real time vehicle location, and reporting. A GPS- GSM based tracking system will inform where your vehicle is and where it has been, how long it has been. Here we are tracking the employee cab as well as the employee's, also we have an arrangement for emergency button so whenever any employee finds him/her self in any kind of trouble, an SMS can be sent to the nearest police station and the company so that immediate action can be taken by the concerned authorities.

II. LITERATURE REVIEW

Fleicher et.al explains in his paper that Design and development of GPS/GSM based vehicle tracking and alert system for commercial inter-city buses, based on the design, development and deployment of GPS (Global Positioning System)/GSM (Global System for Mobile Communications) based On Vehicle Tracking and Alert System which allows inter-city transport companies to track their vehicles in real-time and provides an alert system for reporting armed robbery and accident occurrences.

Almomani.M.et.al explains in his paper the Ubiquitous GPS vehicle tracking and management system, based on The system's tracking services includes acquiring the location and ground speed of a given vehicle in the current moment or on any previous date. It also monitors the vehicle by setting speed and geographical limits and therefore receiving SMS alerts when the vehicle exceeds these pre-defined limits. Additionally, all the movements and stops of a given vehicle can also be monitored. Tracking vehicles in this system uses a wide range of new technologies and communication networks including General Packet Radio Service (GPRS), Global System for Mobile Communication (GSM), the Internet or the World Wide Web and Global Positioning System (GPS).



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Wattanawisuth.N. et.al explains in his paper that Accelerometer and GPS tracking for accidental monitoring of vehicles based on accelerometer, microcontroller unit, GPS device and GSM module. In the event of accident, this wireless device will send mobile phone short message indicating the position of vehicle by GPS system to family member, emergency medical service (EMS) and nearest hospital.

Miao. et.al explains in his paper that Application of RFID and GPS Technology in Transportation Vehicles Monitoring System for Dangerous Goods based on a real-time vehicles monitoring system for dangerous goods by using of Radio Frequency Identification (RFID) and Global Positioning System (GPS) technology, which includes the functions of data acquisition in realtime, positioning, tracking and monitoring in transportation.

Liu et.al explains in his paper that Real-time urban traffic monitoring with global positioning system-equipped vehicles, based on real-time monitoring urban traffic with global positioning system (GPS)-equipped vehicles, which provides estimation of urban traffic conditions in real time. The approach first real-time collects GPS trace data from GPS-equipped vehicles on the urban road network. Then, it periodically clusters the collected data of several minutes, calculates estimated space mean speed and translates estimated space mean speed to smooth indexes (denoting traffic conditions).

III. PROPOSED WORK

A) Methodology:

This system is proposed for employee's safety. The finger print module is used to recognize the valid Employee and sends SMS using AT command. A GPS tracker essentially contains GPS module to receive the GPS signal and calculate Latitude and Longitude co-ordinates & transmit this information to a central computer. After pressing the emergency key in case of trouble, it sends SMS to the Server via SMS using AT command.

B) Block diagram:

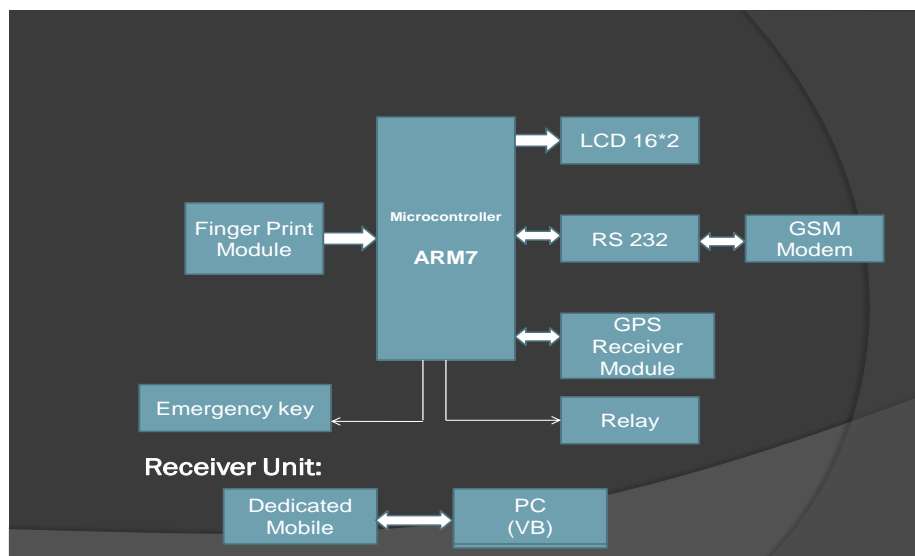


Fig.1 system block diagram

C) System flow: Fig.1 shows system block diagram.

D) Finger print module: First the user has to confirm its identification before entering. For user identification finger print sensor is used. The finger print sensor is attached to arm processor. The role of arm processor will be to access the



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finger print sensor by using its commands. There is Serial Communication between Finger Print Module and PC. The operations carried out will be as follows:

- i] Adding the members.
- ii] Matching the members;
- iii] Checking whether members are valid or invalid.

The user will first put her/his thumb on sensor. Matching will be done from sensor data base. If match found then access will be granted, detail of member will be SMS to base station. If user is invalid then also SMS will be sent to base station & access will not be granted.

E) GPS unit: The GPS receiver provides high position, velocity and time accuracy performances as well as high sensitivity and tracking capabilities. A GPS tracker essentially contains GPS module to receive the GPS signal and calculate the coordinates. For data loggers it contains large memory to store the coordinates, data pushers additionally contains the GSM/GPRS modem to transmit this information to a central computer either via SMS or via GPRS in form of IP packets.



Fig.2 GPS receiver unit

Fig.2 depicts a hardware architecture of an advanced GPS tracker. GPS unit will send positions to ARM processor. A GPS tracking unit is a device that uses the Global Positioning System to determine the precise location of a vehicle, person, or other asset to which it is attached and to record the position of the asset at regular intervals. The recorded location data can be stored within the tracking unit, or it may be transmitted to a central location data base, or internet-connected computer, using a cellular (GPRS or SMS), radio, or satellite modem embedded in the unit. This allows the asset's location to be displayed against a map backdrop either in real time or when analysing the track later, using GPS tracking software (e.g., Telematics 2.0).

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F) GSM module: The AT commands are given to the GSM modem with the help of PC or controller. The GSM Modem is serially interfaced with the controller with the help of MAX 232. GSM module is used to send message to base station. Interfacing is serial with ARM processor at 9600 baud rate. AT commands are used to access GSM modem.

G) LCD display :LCD 16*2 line is used to display the operation carried out.

H) Alarm unit: Relay is used to trigger alarm via ARM processor.

I) MAX232: This IC is used to convert TTL-CMOS logic levels or vice-versa.

J) ARM processor: ARM processor is the heart of system. All the operations such as finger matching, reading GPS data, sending SMS, controlling alarm etc will be carried out.

I) Base station: It contains mobile/GSM modem attached to PC. PC will receive the SMS sent by CAB through mobile/GSM modem. GPS data will be recovered via SMS received. Through this GPS data PC will map the position of vehicle or other asset on the Google map. PC will also contain VB software to store the data of users, faults etc in data base. Also it will monitor the faults occurred.



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IV.APPLICATIONS AND ADVANTAGES

A) Applications:

- 1] It can be use for vehicle tracking.
- 2] It can be used for ATM cash carrying vans.
- 3] It can be used for mining vehicles, oil tankers etc.

B) Advantage:

- 1] It is an efficient way for evacuation of bank.
- 2] System has less time delays.
- 3] Ability for quick response time.
- 4] It is a fully automated system.
- 5] It is robust system and low power requirement.

V.CONCLUSION

Vehicle tracking system is becoming increasingly important in rural and urban areas and it is more secured than other systems. It is more interactive by adding a display to show basic information about the vehicle and provides alert system for reporting any kind of trouble occurrences.



Fig.3 Dashboard for vehicle tracking and alert system

Fig.3 shows the dashboard for vehicle tracking and alert system. The map on the dashboard displays all the vehicles under authority of particular vehicle corporation or an individual.

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