# Vehicle Tracking And Fuel Level Identifying Based On Android

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*Abstract -* Now a day's nearly vehicle theft are frequently occurred in many areas. To avoid that situation we design a project based on android application. We need to secure and protection in vehicle and focus on eco-friendly safety. Everyone has to reach his/her home in safe condition with avoiding theft incident occurred in any areas. In recent years the tracking location is based GPS Technology and GSM whereas in this project we implemented based on advanced technology such as android mobile phones. Collecting the required data from sensors which is attached to microcontroller ARM 7 LPC2148 and monitor each moment at vehicle condition. The vehicle condition status has been updated to a specific mobile phone via Bluetooth. In case a theft incident occurred then getting alertness through mobile phone and as well as to police station. ARM 7 micro controllers is controls the all devices and performs a specific task. We implemented this project based on combination of android mobile and GPS technology integrated to embedded technology and used to perform the require task. The purpose of this project is security of the person when an uneven condition happened to vehicle.

**Index Terms—Vehicle Tracking, Fuel level Indicator, Microcontroller, GPS, GSM**
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## I. INTRODUCTION

Over the most recent couple of decades, India has advanced at such a huge rate, to the point that many organizations have emphatically settled themselves here. These organizations carry a gigantic measure of workforce with them. Masterminding transportation to such a tremendous mass is an awkward assignment including numerous complexities. By and large, this vehicle is organized through the neighborhood transport merchants on a yearly contract premise, as of late happen accidents, for example, theft, assault cases and so on. The improvement of satellite correspondence innovation is anything but difficult to distinguish the vehicle areas. Vehicle following frameworks have conveyed this innovation to the everyday existence of the basic individual. Today GPS utilized as a part of autos, ambulances, armadas and police vehicles are normal sights on the streets of created nations. All the current innovation bolster following the vehicle place and status

The GPS/GSM Based System is a standout amongst the most essential frameworks, which coordinate both GSM and GPS innovations. It is important due to the huge numbers of uses of both GSM and GPS frameworks and the wide utilization of them by a large number of individuals all through the world [1]. This framework intended for clients in arrive development and transport business, gives continuous data, for example, area, speed and expected landing time of the client is moving vehicles in a succinct and simple to-peruse arrange. This framework may likewise helpful for correspondence process among the two focuses.

As of now GPS vehicle following guarantees their security as voyaging. This vehicle following framework found in customers vehicles as a robbery counteractive action and protect gadget. Vehicle proprietor or Police take after the flag discharged by the following framework to find a ransacked vehicle in parallel the stolen vehicle motor speed going to diminished and pushed to off. After switch of the motor, engine can't restart without consent of secret key. This framework introduced for the four wheelers, Vehicle following normally utilized as a part of naval force administrators for naval force administration capacities, directing, send off, on board data and security. The applications incorporate observing driving execution of a parent with a high schooler driver. Vehicle following frameworks acknowledged in customer vehicles as a burglary counteractive action and recovery gadget. On the off chance that the burglary recognized, the framework sends the SMS to the vehicle proprietor. After that vehicle proprietor sends the SMS to the controller, issue the vital signs to stop the engine.

## II. RELATED WORK

In [2], the equipment and programming of the GPS and GSM arrange were produced. The proposed GPS/GSM based System has the two sections, first is a portable unit and another is controlling station. The framework forms, interfaces, associations, information transmission and gathering of information among the versatile unit and control stations are working effectively. These outcomes are good with GPS advancements.

In [3], a vehicle following framework is an electronic gadget, introduced in a vehicle to empower the proprietor or an outsider to track the vehicle's place. This paper proposed to outline a vehicle following framework that works utilizing GPS and GSM innovation. This framework fabricated in view of inserted framework, utilized for following and situating of any vehicle by utilizing Global Positioning System (GPS) and Global framework for versatile correspondence (GSM). This plan will constantly watch a moving Vehicle and report the status of the Vehicle on request.

In [4], Face Detection System used to distinguish the substance of the driver, and contrast and the predefined confront. The auto proprietor is dozing amid the evening and somebody burglary the auto. At that point Face Detection System acquires pictures by one small web camera, which is shrouded effectively in some place in the auto. Face Detection System contrasted the got pictures and the put away pictures. On the off chance that the pictures don't coordinate, at that point the data sends to the proprietor through MMS. The proprietors get

the pictures of the criminal in cell phone and follow the place through GPS. The place of the auto and its speed showed to the proprietor through SMS. The proprietor can perceive the cheat pictures and additionally the place of the auto and can without much of a stretch discover the robbers picture. This framework connected in our everyday life.

In [5], this framework gave vehicle lodge wellbeing, security in view of inserted framework by changing the current modules. This technique screens the level of the lethal gasses, for example, CO, LPG and liquor inside the vehicle gave ready data as alert amid the perilous circumstances. The SMS sends to the approved individual through the GSM. In this technique, the IR Sensor used to distinguish the static impediment before the vehicle and the vehicle ceased if any hindrance identified. This is keeping away from mischances because of crash of vehicles with any static hindrances.

In [6], Kai-Tai Song and Chih-Chieh Yang have an outlined and based on an ongoing visual following framework for vehicle wellbeing applications. In this paper constructed a novel component based vehicle-following calculation, naturally distinguish and track a few moving items, similar to autos and bikes, in front of the following vehicle. Joint with the idea of center of extension (FOE) and Copyright © 2013 MECS see examination, the fabricated framework can section highlights of moving articles from moving foundation and offer a crash expression of caution on ongoing. The proposed calculation utilizing a CMOS picture sensor and NMOS implanted processor design. The developed remain solitary visual following framework approved in genuine street tests. The outcomes gave data of impact cautioning in urban supply route with speed around 60 km/hour both during the evening and day times.

In [7], the remote checking framework in view of SMS and GSM was actualized. In view of the aggregate plan of the framework, the equipment and programming outlined. In this paper, the GSM organize is a medium for transmitting the remote flag. This incorporates two sections that are the observing focus and the remote checking station. The observing focuses comprise of a PC and correspondence module of GSM. The product checking focus and the remote observing station executed by utilizing VB. The consequence of this exhibit demonstrates that the framework can watch and control the remote correspondence between the checking focus and the remote observing station.

In [8] this paper, the proposed following framework in view of distributed computing foundation. The sensors are utilized to screen the fuel level, driver conditions, and speed of the vehicle. Every one of the information exchanged to cloud server-utilizing GSM empowered gadget. Every one of the vehicles outfitted with GPS radio wire to find the place. To stay away from the alcoholic and drive, the liquor sensor introduced to screen the driver status. The proposed innovation essentially dodges the mishap in roadways.

## III. PROPOSED METHOD

In this proposed work, a novel strategy for vehicle following and fuel level sign framework used to track the robbery vehicle by utilizing GPS and GSM innovation in light of android. This framework puts into resting mode while the vehicle took care of by the proprietor or approved individual generally goes to dynamic mode, the method of operation changed by face to face or remotely. On the off chance that any intrusion happened in any side of the entryway, at that point the IR sensor detects the signs and SMS sends to the microcontroller. The controller issues the message about the place of the vehicle to the auto proprietor or approved individual. At the point when send SMS to the controller, issues the control signs to the motor engine. Motor engine speeds are bit by bit abatements and go to the off place. After that every one of the entryways bolted. To open the entryway or restart the motor, approved individual needs to enter the passwords. In this technique, following of vehicle put simple and entryways bolted naturally, along these lines cheat can't make tracks in an opposite direction from the auto.



Fig. 1 System Architecture
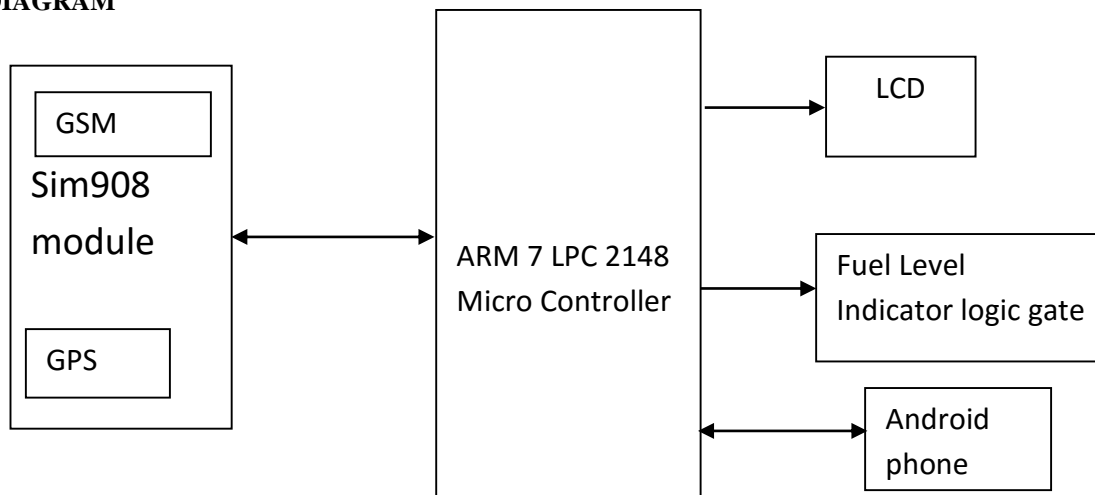
## IV.BLOCK DIAGRAM



**Figure.2.** Block diagram of the system

## IV.I. SYSTEM DESCRIPTION

This task comprises of a GSM module, GPS module, LCD, Android cell phone and LPC2148 microcontroller. At first GPS will track the area and send the scope and longitude esteems to the controller. There is a fuel level demonstrates with advanced rationale level whose yield is either 0 or 1 i.e., 0 for tank is full and 1 for tank is unfilled. This is send to small scale controller. The qualities which are perused by the controller will store in memory and showed on LCD show. Also, through GSM module. They are forward to portable number which is already given while coding.

SIM card to which the messages are sent is set in an android cell phone that will get messages and put away in inbox which we will read in an application. The application will read the message and process it and after that follow the area in Google outline showing the connection from past area which is taken from past message esteem and the application will likewise demonstrated the fuel level which is additionally perused from the approaching message.

The speed of the vehicle is figured by methods for messages accepting in the time interim to the adjustment in the position by methods for scope and longitude esteems and show on the application.

The system tracks vehicles on an online map. The system allows the app user to track and check vehicle fuel entries, servicing data and even repair/ maintenance status. This system allows users to keep track of their vehicles provided on rent or lease to someone else. Also for tourist vehicle owners to keep track of multiple vehicles. The individual features of this application have been listed below

- It provides a fuel entry form for each vehicle in that keeps track of its fuel entries for every month.
- A servicing Entry form is used to maintain the servicing data for each vehicle in per month.
- Repair & maintenance Entry form for each Vehicle in allows us to track its monthly repair/maintenance status.
- The vehicle tracking system uses the drivers GPS Enabled Mobile to track the vehicle on a Google maps.

## VI.CIRCUIT DESCRIPTIONS

### VI.1.Power supply

The power supply area is essential for every single electronic circuit. The 230V, 50Hz AC mains is ventured around transformer X1 to convey an optional yield of 12V, 500 mA. The transformer yield is redressed by a full-wave rectifier containing diodes D1 through D4, separated by capacitor C1 and directed by ICs 7812 (IC2) and 7805 (IC3). Capacitor C2 sidesteps the swells display in the directed supply. LED1 goes about as the power marker and R1 limits the current through LED1.The control supply area is appeared in the figure
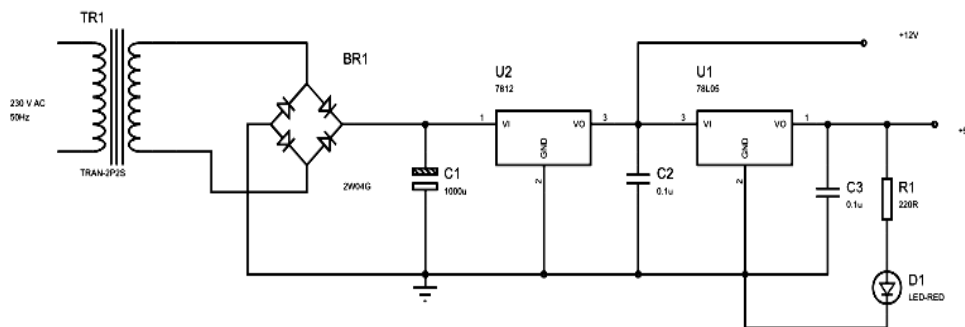
Fig. 3: Power supply

## IV.2.GPS Technology

The Global Positioning System (GPS) is a satellite-based route framework comprises of a system of 24 satellites situated into space. The framework gives basic data to military, common and business clients around the globe and which is openly available to anybody with a GPS collector. GPS works in any climate conditions at anyplace on the planet. Regularly no membership expenses or framework charges to use GPS. A GPS collector must be bolted on to the flag of no less than three satellites to evaluate 2D position (scope and longitude) and track development. With at least four satellites in locate, the recipient can decide the client's 3D position (scope, longitude and height). Once the vehicle position has been resolved, the GPS unit can decide other data like, speed, separation to goal, time and other. GPS collector is utilized for this exploration work to distinguish the vehicle area and give data to dependable individual through GSM innovation.
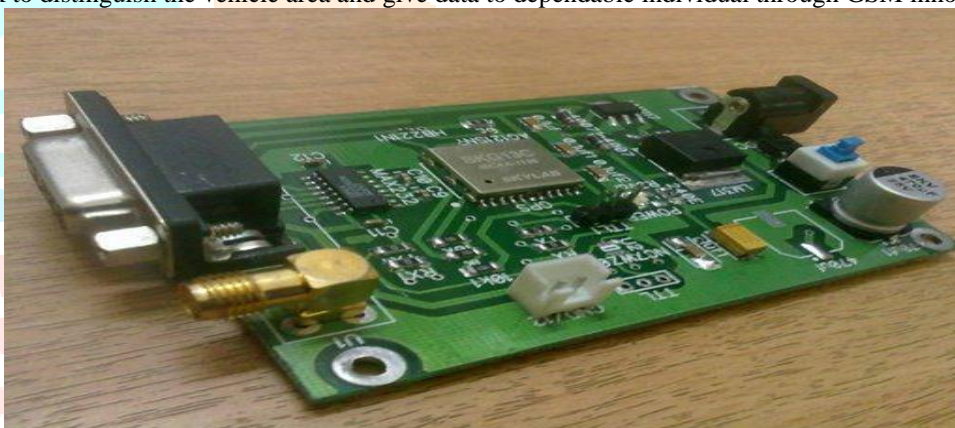


Fig. 4: GPS module

## VI.3.GSM Modem SIM300 V7.03

The GSM modem is a specific sort of modem which acknowledges a SIM card works on an endorser's versatile number over a system, much the same as a mobile phone. It is a PDA without show. Modem sim300 is a tri band GSM/GPRS motor that takes a shot at EGSM900MHz, DCS1800MHz and PCS1900MHz frequencies.GSM Modem is RS232-rationale level perfect, i.e., it takes-3v to - 15v as rationale high and +3v to +15 as rationale low.MAX232 is utilized to change over TTL into RS232 rationale level converter utilized between the microcontroller and the GSM board. The flag at stick 11 of the microcontroller is sent to the GSM modem through stick 11 of max232.this flag is gotten at pin2 (RX) of the GSM modem. The GSM modem transmits the flag from pin3 (TX) to the microcontroller through MAX232, which is gotten at stick 10 of IC1 [9].

Highlights of GSM
☐ Single supply voltage 3.2v-4.5v
☐ Typical power utilization in SLEEP Mode: 2.5mA.
☐ SIM300 tri-band
☐ MT,MO,CB, content and PDU mode, SMS stockpiling: SIM card
☐ Supported SIM Card: 1.8V,3V

Fig. 5: GSM module

### VI.4.Fuel Level Sensor

Level Sensors recognize the level of fluids and different liquids and fluidized solids, including slurries, granular materials, and powders that display an upper free surface. Substances that stream turn out to be basically even in their compartments (or other physical limits) as a result of gravity while most mass solids heap at a point of rest to a pinnacle. The substance to be measured can be inside a holder or can be in its characteristic shape (e.g., a waterway or a lake). The level estimation can be either nonstop or point esteems. Nonstop level sensors measure level inside a predefined extend and decide the correct measure of substance in a specific place, while point-level sensors just demonstrate whether the substance is above or underneath the detecting point. For the most part the last recognize levels that are exorbitantly high or low.

There are numerous physical and application factors that influence the determination of the ideal level checking technique for mechanical and business forms. The temperature, weight or vacuum, science, dielectric constant of medium, thickness fomentation (activity), acoustical or electrical clamor, vibration, mechanical stun, tank or receptacle size and shape. Likewise imperative are the application requirements: value, exactness, appearance, reaction rate, simplicity of alignment or programming, physical size and mounting of the instrument, checking or control of constant or discrete (point) levels.



**Figure 7.**Fuel Level Sensor

To put it plainly, level sensors are one of the essential sensors and assume vital part in assortment of customer/modern applications. Similarly as with other kind of sensors, level sensors are accessible or can be outlined utilizing assortment of detecting standards. Choice of a proper sort of sensor suiting to the application prerequisite is essential.

### VI.4.2.Fuel Level Sensor Transistor Logic Gate

The circuit outline appeared beneath is a water level marker. It comprises of a transistor which go about as a switch and a drove which gleams when the circuit is shut. The +ve and – ve closes are set in water tank with division between them. At the point when the water level is full around then water goes about as an interfacing media between two closures and the circuit winds up plainly shut one. At the point when the water level not up to the stamp then it go about as an open circuit and drove pointer will off.
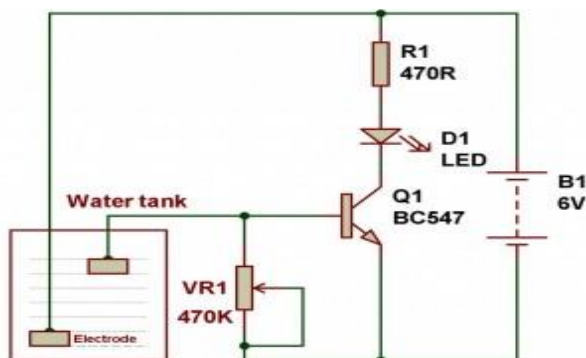
**Figure.8.** Circuit Diagram of Level logic gate

## VII.WORK FLOW

The workflow of GPS based Vehicle Tracking System is as per the given Fig.2. Users can use this system by performing actions mentioned in flowchart.
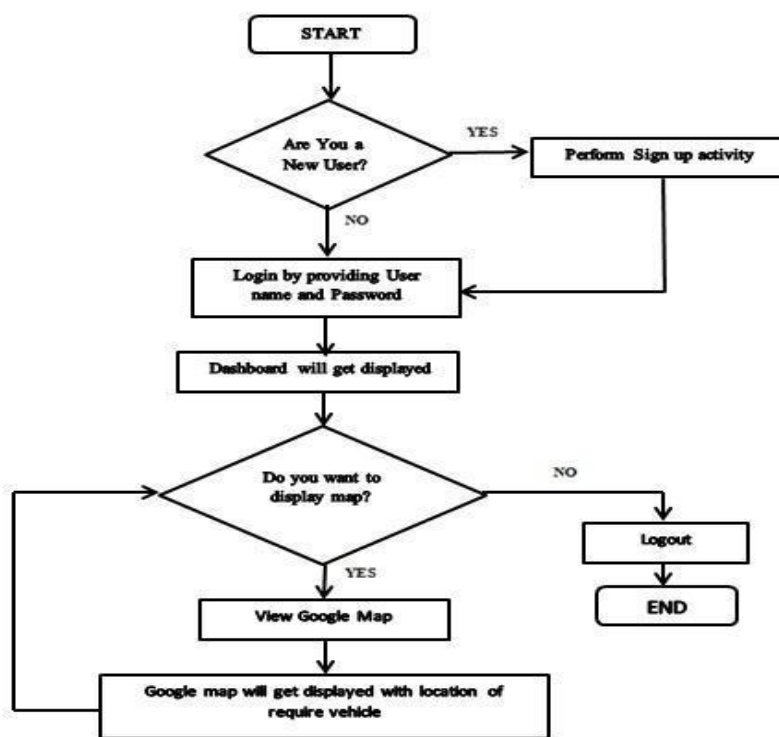


Fig. 9. Work Flow

**Tracking Device**

[1] The tracking device will continuously request to the GPS satellite for its location information.

[2] At the same time GPS satellite will provide the location information to tracking device installed in vehicle.

[3] The tracking device will send the location information back to the server through GPRS and continuously update the database.

## VIII.INVESTIGATING AND TESTING PROCESS

A microcontroller-based framework is a mind boggling movement that includes equipment and programming interfacing with the outside world. Doing admirably outline of a microcontroller-based framework expects abilities to utilize the assortment of investigating and testing apparatuses accessible. The investigating and testing of microcontroller-based frameworks isolated into two gatherings: programming just devices and programming equipment apparatuses. Programming just apparatuses come as screens and test systems, which are autonomous softwares the equipment a work in progress. Programming equipment apparatuses are generally equipment reliant, more costly and range from in-circuit emulators and in-circuit test systems to in-circuit debuggers. All in all, the higher the level of reconciliation with the objective equipment, the more noteworthy the advantage of an instrument, bringing about a shorter improvement time, however the more prominent the cost also. The variables to consider while picking an investigating instrument are taken a toll, convenience and the highlights offered amid the troubleshooting procedure.

A product test system is a PC program running on a free equipment and it mimics the CPU, the guideline set and the I/O of the objective microcontroller. Test systems offer the least cost improvement devices for microcontroller-based frameworks and most organizations offer their test system programs for nothing out of pocket.

The client program worked in a mimicked domain where the client can embed breakpoints inside the code to stop the code and afterward investigate the inner registers and memory, show and change the estimations of program factors et cetera. Erroneous rationale or blunders in calculations can investigate by venturing through the code in reenactment. Test systems keep running at speeds 100 to 1000 times slower than the genuine miniaturized scale controller equipment and, accordingly, long time postponements ought to keep away from while reenacting a program. Smaller scale controller-based frameworks more often than not have interfaces to different outside gadgets, for example, engines, I/O ports, clocks, A/D converters, shows, push catches, sensors and flag generators, which are typically hard to reproduce. Some propelled test systems, for example, the Proteus from Lab center Electronics permit the reenactment of different fringe gadgets, for example, engines, LCDs, 7-section presentations and consoles, and clients can make new fringe gadgets. Contributions to the test system can originate from records that may store complex computerized I/O signs and waveforms. Yields can be as type of computerized information or waveforms, for the most part put away in a document, or showed on a screen. A few test systems acknowledge just the low level computing construct of the objective microcontroller. The majority of the microcontroller programming has composed an abnormal state dialect, for example, C, Pascal or Basic, and it has turned out to be important to recreate a program has written in an abnormal state dialect.

The product program has written in c or low level computing construct and accumulated utilizing Keil programming. After compiler operation, the hex code produced and put away in the PC. The hex code of the program ought to be stacked into the AT89C52 by utilizing Top win Universal software engineer.

## APPLICATIONS

• Cabs.
  To share the courses delineate companions or relatives and to maintain a strategic distance from course deceive.
• Private vehicles enlisted for School youngsters.
  Guardians are sending their kids to class over private employed vehicles like cars or taxicabs can screen their area and track that vehicle speed.
• RTC transports.
  Traveler will have the capacity to know the correct area of required course numbered transport and how much time will it take to arrive the quit contingent upon the speed of transport.
• Own vehicles.
  On the off chance that the vehicle is been driven by youngsters at that point guardians can screen their speed and give legitimate directing in the event of over speed. Vehicles can be followed in the event that they were robbery.

## ADVATAGES

• Speed checking.
  The speed of any vehicle can be resolved with no additional equipment gear and can have the capacity to screen by an approved individual through android application..
• Fuel checking.
  The android is able to show the fuel level of the vehicle whether it is high or low.
• Determining travel course.
  With the assistance of Google maps which we are utilizing to track the area we are additionally ready to explore with the assistance of same application.
• Low cost.
  The equipment cost for this task is low as it comprises of arm7 processor alongside GPS, GSM module and an android cell phone which is very normal handset these days.
• Less upkeep issues.
  For this task there will be less upkeep cost and it for reviving the SIM card for nonstop sending of area data to approved individual's portable number through GSM module.

## CONCLUSION

In our project we track the current exact location of the vehicle through GPS Technology and getting alertness through mobile phones via GSM module. We used to monitor the vehicle fuel level condition at every moment and also the we can get intimation of the present speed of that vehicle and each moment of that vehicle per seconds. Hence this is easy way to control the accidents and control other criminal problems out based on advance technology.

## FUTURE SCOPE

We implemented a project based on android application which is used to protect theft incident occurred in any situation and intimate through mobile phone via Bluetooth. We also track exact location using GPS Technology. Hence this is useful for finding exact location and get alertness to a specified person or to a police station. In future we maintain a database and give update to server HTTP. Speed lock Moment in fraction of seconds also we can implement with this.

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