Novel Security Enabled Zone Sensing System for Vehicle utilizing Wireless Technology

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Abstract – **The principle reason for this venture is to avoid vehicle robbery. This usefulness is accomplished by recognizing vehicle status in burglary mode and by sending a SMS which is produced naturally. This SMS is then sent to the proprietor of the vehicle. The proprietor can then send back the SMS tin request to impair the start of the vehicle. Along these lines thusly wrongdoings can be lessened, all things considered, as vehicles today are being stolen in vast number. Consequently, vehicles today require high security which can be accomplished with the assistance of this application. How the framework functions is the point at which a man tries to take the vehicle, the microcontroller is hindered and the summon is sent to the GSM modem to send SMS.**

On the receipt of the message, the proprietor sends back the SMS to the GSM modem. This is done to stop the motor. This GSM modem is interfaced to the microcontroller. This microcontroller on the receipt of the message utilizes a system that stops the motor. Engine is being utilized as a part of this venture with a specific end goal to show vehicle ON/OFF state. There has been a huge extension in road fiasco appropriately of tiredness of driver while driving which prompts gigantic dangerous challenges .The driver lose his control when he falls rest which prompts scene .This is by reasonability of when the driver is not set up to control his vehicle at brisk out on the town. This wind can make a model which can expel such scenes. In India various accidents are realized in view of human remissness. Label recognizable proof and affirmation is a key technique in most by far of the movement related applications, such as signal jumping road traffic monitoring. In this venture can produce a model which can forestall such as vehicle theft,accidents, and signal Jump.

Keywords: GSM, GPS, Eye Blink sensor, RF Tx & Rx .

I. INTRODUCTION

In the most recent decade, loads of occurrences like drivers exhaustion amid driving and vehicle robbery action which causes social ongoing issue like mishaps and numerous more risks conditions are going on. This will bring up the issue of our well being and security in both open and private parts. So there is a need of continuous observing and following of vehicles. In the urban territories, the following framework gives a completely robotized following and observing of the vehicle which is useful for vehicles, vehicle's proprietors, and explorer's security and furthermore it gives the specific area of vehicle.

At long last the following framework gives simple following arrangement utilizing coordinated implanted framework. Vehicle tracking and motoring the system is the innovation used to decide the area of a vehicle utilizing distinctive gadgets like GPS GSM and Renesas microcontroller. It can be seen on computerized maps with the assistance of programming by means of Internet. Vehicle following framework is an imperative device for following every vehicle at a given timeframe and as of late it is winding up plainly progressively famous for individuals having costly autos and consequently supportive in burglary counteractive action and recovery of the vehicle. The framework comprises of present day equipment and programming segments empowering one to track their vehicle on the online or offline. The driver sleep down or not checking by IR Sensors and Identifying Signal Jumping vehicle using RF TX & RX.
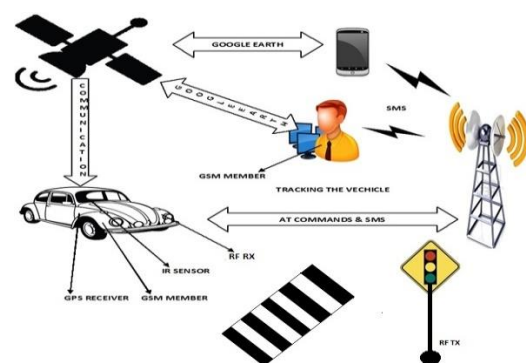
II. SYSTEM MODEL

Fig. 2.1 Block Diagram

The block diagram figure 1 contains mainly sensors, GSM module, GPS module Renesas microcontroller, IR Sensors, Eye Blink Sensor, RF TX & RX, Android Mobiles and Power supply module. These modules are integrated to do a single task. The proposed system is controlled with Renesas microcontroller. Initially Vehicles theft then starts the whole operation. After that GPS and GSM SIM900 module communicate with Renesas microcontroller. The latitudes and longitudes current position of the vehicle received from GPS get in Android Mobile . The alert massage will be sent to the owner mobile using GSM module to track the vehicle, and this system provides passengers safety with the Drowsy Driver Detector by using IR Sensors, Eye Blink Sensors and RF tags are used to identify the Traffic signal violation Alertness. These sensors get interface with Renesas Microcontroller.

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- *SOFTWARE*

In this level we code written in cube suite software use for Embedded code and JDK ECLIPSE & SDK application use for create a apk file for Android application.

- *Hardware*

In this level integration of the hardware components into Android Application.Here we using Renesas Microcontroller interacting between all Modules. GSM Module (SIM 900) use for messaging. GPS Module use for Global Position. vibration sensor is fit for measuring vibration.IR Sensor and Eye Blink Sensor use for Drowsiness detection. RF TX & RX use for identifying vehicle signal Jump. In Android Application we can stop the vehicle and see exact position using goggle Map.

Snapshot overall vehicle monitoring and tracking system module

III. PREVIOUS WORK

1. GSM based password authentication

When the vehicle comes in contact with an external object or intruder the vibrating system generates an alarm and alerts the owner. If the owner is nearby then he can check what has happened. But if the owner is far away from the vehicle then the vibrating system will continue to alert until the vehicle shuts down. This acts as an irritant to the people nearby and also causes noise pollution. Moreover, the vibrating system is so sensitive that it generates an alarm when it rains or even due to the vibrations of the vehicles passing by. Also the general tendency of human beings is that while walking on the road they tend to touch the vehicles parked by the roadside. Even though all these certainly are not security issues, the vibrating system unnecessarily alerts the owner. This is the major drawback of vibrating system. Every car is provided with a remote to lock and unlock the door using a particular IR frequency. But if someone could be able to get the remote with the same IR frequency, then the car can be easily stolen. This is the major drawback of remote control system.

2. Drowsiness detection

The present technology used for drowsiness detection is based on yawning detection which is determined by the changes in the geometrical features of the mouth. This technology uses an Image Processing system to keep track of changes in the facial features. But the major drawback of this technology is that yawning need not imply that the driver is drowsy. Moreover, this system simply alerts the user through warning message upon the detection of drowsiness and it is not taking any exceptional action when the driver neglects the messages and he is still drowsy.

IV. PROPOSED METHODOLOGY

1. GSM Module (SIM 900)

SIM900 is a Tri-band GSM/GPRS motor that takes a shot at frequencies EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. SIM900 highlights GPRS multi-opening class 10/class 8 (discretionary) and bolsters the GPRS coding plans CS-1, CS-2, CS-3 and CS-4. You can use AT Command to get data in SIM card. The SIM interface bolsters the usefulness of the GSM Phase 1 detail and furthermore underpins the usefulness of the new GSM Phase 2+ determination for FAST 64 kbps SIM (expected for use with a SIM application Tool-kit).Both 1.8V and 3.0V SIM Cards are upheld.

The SIM interface is controlled from an interior controller in the module having ostensible voltage 2.8V. All pins reset as yields driving low. The "AT" or "at" prefix must be set toward the start of each summon line. To end a charge line enter <CR>. Summons are generally trailed by a reaction that includes."<CR> <LF> <response> <CR> <LF>". All through this record, just the reactions are exhibited, <CR><LF> are discarded deliberately.

Figure 2 SIM 900 modules

2. GPS Technology

The Global Positioning System(GPS) is a framework in view of worldwide route satellite system(GNSS) that give dependable area and time data at untouched in any whether condition on earth. It is made out of a system of 24 satellites of the United States which are beforehand utilized as a part of military administrations, and later took into account business utilize. The satellite discharge radio flag of short heartbeats to GPS recipient occasionally. A GPS beneficiary gets the motion from no less than four satellites to register its three measurement position that is scope, longitude and height. Along these lines GPS is a key innovation for finding a gadget area. We utilized SIM 908 consolidate module of GPS and GSM.

3. Vibration Sensor

A vibration sensor is fit for measuring vibration. At the point when some person or any hindrance hits the vehicle, the sensor sends a flag showing the force of movement. We utilize this sensor with respect to security of rider. It detects

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the vibration, send flag to the microcontroller what's more, microcontroller send the message to the contact number put away in the controller.
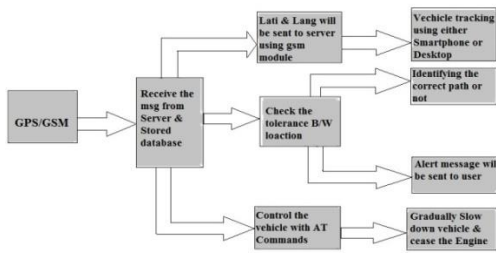

Figure 3 Tracking Data Flow

1. The system has two main units. The first is security unit which is embedded in the vehicle. This unit consists of a GSM modem, GPS receiver, control relay, current sensor and Microcontroller.
2. The microcontroller will send SMS directly to the owner for conformation.
3. The GPS Receiver retrieves the location information from satellites in the form of latitude and longitude readings in real-time.
4. Identifying the path and deciding to stop the vehicle based on location by using android phone or desktop.
5. User can send AT Commands to slow down the vehicle, gradually engine will be ceased and stops the vehicle.
6. If in case removal of any components of the vehicle, buzzer will be buzzed and alter the surrounding people regarding theft.

4. Eye Blink Sensor

The squinting of eye is essential in this venture, since it is used to drive the gadget and to work occasions. Eye squint location must be done, for which we can benefit promptly accessible squint indicators (Catalog No. 9008 of Enable gadgets) or we can join it with an exceptional direction written in picture handling that, if there is no eye top development found for the specific time of foreordained i.e. time more note worthy than the human eye flickering time then consider an occasion called "flicker", for which the set of operations will be taken after. Here, in this venture we require to set time as 5 second or above it, as "flicker occasion" is not the same as "regular eye squinting". We have to lead testing for just flicker occasion, and not to discover normal flickering of human eye.

Algorithm
The algorithm is as follows
Step1: Initialization of process
Step2: Sense the data from eye blink sensor
Step3: If the data send by sensor
Step4: Process the sensed data
Step5: Check the mode
Step6: Normal mode else sleeping mode
Step7: Normal mode
step8: Engine on
Step9: Else if sleeping mode
Step10: Buzzer on
Step11: Engine off
Step12: stop the process

5. IR Sensors
Infrared transmitter a gadget that emanates infrared beams. So also IR Receiver is utilized to get the IR beams transmitted by the IR transmitter. One essential point is both IR transmitter and beneficiary ought to be set parallel to each other. The flag is given to IR transmitter at whatever point the flag is high, the IR sensor is directing it passes the IR beams to the collector. The IR beneficiary is associated with comparator. The comparator is associated with operational speaker. In the comparator circuit the reference voltage is given to reversing input terminal of the circuit .The Non inverting input terminal is associated with IR collector. At the point when there is an interference in the IR beams between the IR transmitter and collector, the IR recipient progresses toward becoming not leading. So the comparator non transforming input terminal voltage is higher than rearranging input. The comparator yield is at the scope of +5V.

This voltage is given to microcontroller. At the point when IR transmitter passes the beams to collector, the IR beneficiary moves toward becoming leading because of non inverting input voltage is lower than rearranging input. Presently the comparator yield is GND. So the yield is given to microcontroller. This circuit is for the most part used to for tallying eye top development transmitter and beneficiary, the IR collector moves toward becoming not directing. So the comparator non transforming input terminal voltage is higher than modifying input. The comparator yield is at the scope of +5V. This voltage is given to microcontroller. At the point when IR transmitter passes the beams to collector, the IR recipient progresses toward becoming leading because of non inverting input voltage is lower than upsetting information.
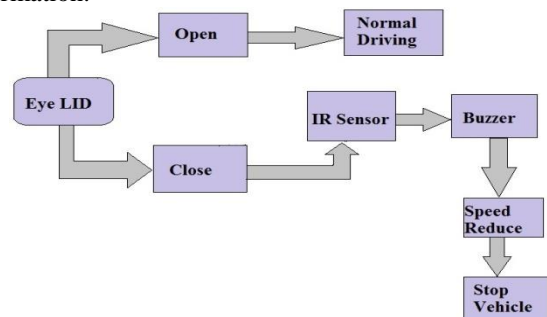

Figure 5 Drowniness Data Flow

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1. In real time IR sensor will be installed to the front mirror of the driver seat.
2. Based on the eye lid blinking IR sensor will check the whether the driver is awaken or not, if he is awake he will drive the vehicle carefully.
3. Driver starts drowsing will driving IR sensor will detect the eye lid close and starts giving alert through Buzzer.
4. Post alter if user is not able to drive the vehicle safely, it automatically slow down the speed and Gradually vehicle will be stopped.

6. RF Tx & Rx

To screen the thickness of the development, we will keep a few arrangements of IR transmitter and beneficiary sensors for the boulevards. On side IR transmitter will be put and right backwards to the IR transmitter, an IR beneficiary will be kept. This course of action of IR transmitter and beneficiaries' beneficiary will be proceeded with roads at different between times. The IR transmitters are related with supply, so they will transmit high banner constantly. The IR beneficiaries are related with the comparator circuit, to get automated signs. A low power operational speaker LM324 IC has been used to develop a comparator circuit.
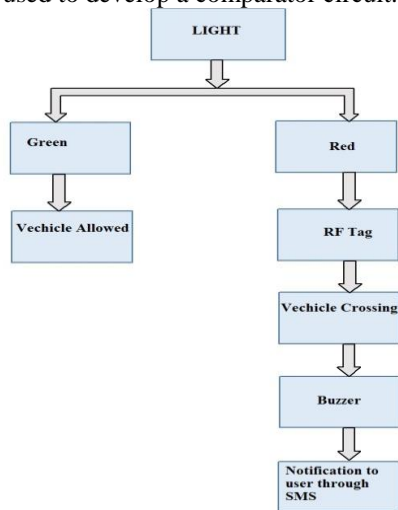

Figure 6 Signal Jump Data Flow

1. Traffic rules violation is major concern now a days, RF Tag can give alertness to user .
2. Based on the color of the signal vehicle will be moved based on green color.
3. If vehicle crossed in the red signal buzzer will give alertness to user.
4. Simultaneously it notify the user through SMS.

V. CONCLUSION

In novel Security Enable Zone Sensing System for vehicle utilizing Wireless Technology is becoming increasingly important in large cities. For vehicle security against thief this system is very much important. GSM and GPS are included to track the position of vehicle at remote place with the help of Android App. Through SMS vehicle can be turned off from remote place. Along with theft protection three important features are added in this system, which are not observed in most of vehicles. First feature is Drowsiness Detection Buzzer alert and SMS alert which is important to protect the Owner when he falls asleep. Second one is SMS alert and Buzzer alert for Vibration Detection in order monitor Vehicle from remote place when it is parked in Parking Places. Third one Signal Jump condition, when any of the vehicle jumps the signal when signal status is Red. The system displays signal jump condition along with the buzzer alert. This system is applicable in any type of moving vehicle and public/private transport companies.

V. FUTURE SCOPES

In future this framework can be altered for mishap recognition and its evasion by utilizing Accelerometer and extra sensors. Alongside secret word insurance if thumb acknowledgment and face acknowledgment is utilized then security against robbery can be progressed. In the event that driver in Drowsiness mode then sensor will recognized then back off the speed of vehicle then naturally stopping. A framework can be enhanced by utilizing a bunch procedure to track the vehicle. The framework can be utilized further to take participation.

REFERENCES

[1] Suraja P Joy,Sowmiya devi V R,Sneha A,Deepak S,Abin Jhon Raju"A Novel Security enabled speed monitoring System for two wheels using wireless Technology", In IEEE, 2016.
[2] Champa Bhagavathi R,Gowri B R,Kasturi R,Pooja C "Vehicle Theft Detection and Prevention using GSM & GPS", In IJIRCCE, 2016.
[3] Rajasekar R,S Vanangamudi, Pattni "Drowsy driver sleeping device & driver alert System", In IJSR, 2014.

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