

# Autonomous Gas Detection and Over Speed Production Using GSM and GPS

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**Abstract-** The insurance of the vehicle is vital nowadays. Along these lines, in this we are concentrating on this issue. We are in this undertaking we are shielding the vehicle from the LPG gas spillage, higher CO discharge, and the higher speed. Any of these paradigms happens, and after that the motor of the vehicle consequently stops and advises the proprietor of that vehicle as GSM SMS alongside the GPS area esteems i.e. Scope and Longitude esteems. To switch ON the motor, we give the slide switch. When you work the slide switch, at that point just the motor of the vehicle will begin. After this for distinguishing the distinctive risky measures like gas spillage, CO outflow, over speed, we should utilize the sensor like, gas sensor, CO sensor, IR photograph recognition sensor separately. To quantify the speed of the vehicle, we are utilizing the IR photograph identification sensor. To identify the gas spillage and the CO outflows, we are utilizing the gas and CO sensor individually. For each sensor, we should set the limit esteem. In the event that the sensor esteem goes past the edge level, at that point the vehicle will stop consequently, gives the bell alarm and sends the ready message alongside the GPS area esteems. Raspberry pi is used as processor to control all the sensors. LCD is used to display all the system data.

**Keywords:** — GSM, GPS module, gas sensor, CO sensor, IR sensor, Raspberry pi, LCD.

## I. INTRODUCTION

In this advanced, quick moving and uncertain world, it wind up plainly rudimentary should know about one's security. Most extreme dangers happen in circumstances where in a worker go for cash relations. The Company to which he has a place ought to know whether there is some troublesome, if the individual voyaging can be followed and furthermore secured on account of a crisis. Here's a system that capacities as a following and a security system. It's the shrewd vehicle control for basic remote area application. This system can manage both pace and security.

The GPS receiving wire show in the GPS module gets the data from the GPS satellite in NMEA (National Marine Electronics Association) organization and along these lines it uncovers the position data. The confirmation got from the GPS radio wire must be sent to the Base station wherein it is decoded. We utilize GSM module which has a radio wire. We have at the Base station; the entire information about the vehicle. At the point when car collision happens all of a sudden, the response of the crisis benefits now moves toward becoming race amongst life and passing. In this we are endeavoring to program a GPS and GSM module joining an accelerometer to report events of mishaps by means of GSM correspondence stage to the closest organizations, for example, healing centers, police headquarters, and fire administrations et cetera, giving the correct position of the point where crash has happened. For this venture, we are

utilizing the Raspberry Pi 3 microchip board. The Raspberry Pi 3 board contains the in-fabricated Wi-Fi module and the in-constructed Bluetooth module. It is the propelled adaptation of the Raspberry Pi 2 display. To change over the sensor esteems into the computerized, we are utilizing the serial SPI convention based ADC IC MCP 3204. The changed over computerized esteems are shown on the LCD screen consistently by the Raspberry Pi 3 chip.

## II. LITERATURE SURVEY

In this chapter, we will discuss about the information found by study and research that is critical and have an important value in the contribution of the whole paper.

Presently a day we are seeing expansive number of vehicles in the metropolitan ranges is running with LPG so there are odds of the gas spillages. On the off chance that the spillage can't be identified in time there could be a staggering scene. There are such a significant number of mishaps occurring due to over speed. These mishaps make an excruciating misfortune numerous families. On the off chance that we could stop the motor at whatever point the vehicle crosses as far as possible and advise somebody the correct position of the vehicle with the assistance of GPS we cloud spare a few lives. Similarly educating driver about any gas spill in vehicle by means of SMS with the assistance of GSM modem so the jumper cloud avoid potential risk beat this circumstances it would be truly useful.

To defeat these two primary issues in a vehicle we are persuaded to actualize this undertaking to guarantee a protected vehicle system for transportation utilizing GSM and GPS.

In the existing system, we were shielded the vehicle from the gas spillage and from the CO outflow. In the event that any of these identifies, at that point the ready message just will send to the proprietor of the vehicle and the motors stops. In any case, if the driver drives the vehicle with over speed, there is an opportunity to mishap and the proprietor can't know the area of the vehicle. To evade every one of these downsides, we are executing the proposed system.

## III. SYSTEM ARCHITECTURE

The paper design and principle are explained in this chapter using the block diagram. The block diagram discusses about the required components of the design and working condition. The proposed system will be show in block diagram and each and every block will be clearly explained in this chapter.

In the proposed system, alongside the existed sensors, we are utilizing the IR photograph recognition sensor to quantify the RPM of the wheel with the goal that we can gauge the speed of the vehicle. On the off chance that it goes past as far as possible, at that point the motor will stop consequently and send the ready message to the proprietor utilizing the GSM module, alongside the GPS area from the GPS module.

**A. GSM Modem:**

GSM modem is associated with the ARM cortex microcontroller. This enables the PC to utilize the GSM modem to convey over the versatile organize. These GSM modems are generally regularly used to give versatile Internet availability, numerous of them can likewise be utilized for sending and getting SMS and MMS messages. GSM modem must bolster a "reached out AT order set" for sending/getting SMS messages.

GSM modems are a financially savvy answer for accepting SMS messages, in light of the fact that the sender is paying for the message conveyance. SIM 300 is intended for worldwide market and it is a tri-band GSM motor. It 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. This GSM modem is a profoundly adaptable fitting and play quad band GSM modem, interface to RS232, it underpins highlights like voice, information, SMS, GPRS.



**Fig.1. GSM Modem**

**B. GPS (GLOBAL POSITIONING SYSTEM)**

Satellites broadcast signals from space that GPS receivers, use to provide three-dimensional location (latitude, longitude, and altitude) plus precise time. GPS receivers provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth.

The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defence. GPS was originally intended for military applications, but in the 1980s, the government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day. There are no subscription fees or setup charges to use GPS.

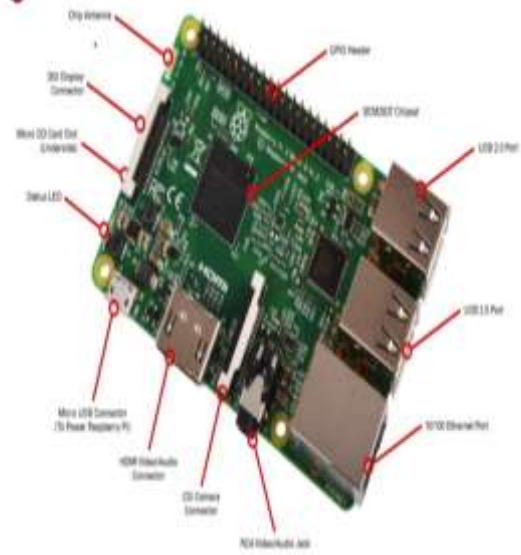


**Fig.2. GPS module**

**C. RASPBERRY PI**

The Raspberry Pi is a credit-card sized computer that plugs into your TV and a keyboard. It is a capable little computer which can be used in electronics projects, and for many of the things that your desktop PC does, like spreadsheets, word-processing and games. It also plays high-definition video. We want to see it being used by kids all over the world to learn how computers work, how to manipulate the electronic world around them, and how to program.

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games.



**Fig.3. Rasperry Pi3 Model 3**

**D. BLOCK DIAGRAM**

The block diagram of the design is as shown in Fig 1. It consists of power supply unit, Gas, CO, IR sensors, GSM, GPS, Raspberry pi and LCD etc. The brief description of each unit is explained as follows.

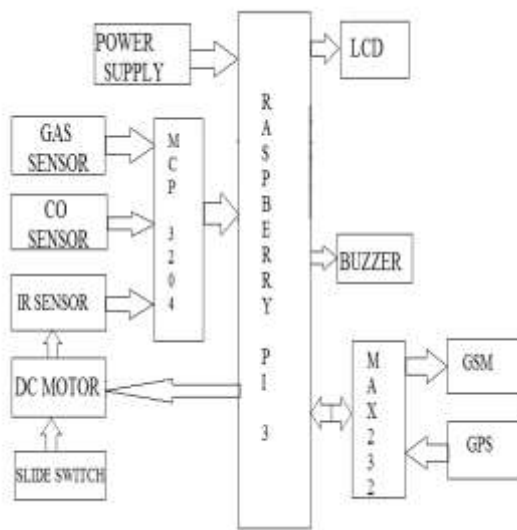


Fig.4. Proposed system block diagram

**E. WORKING PROCEDURE**

The primary point of this venture is to shield the vehicle from the higher CO outflows, GAS spillage and the over speed. To quantify every one of these parameters, we are utilizing the sensors, CO sensor, GAS sensor and the IR photograph discovery sensors separately.

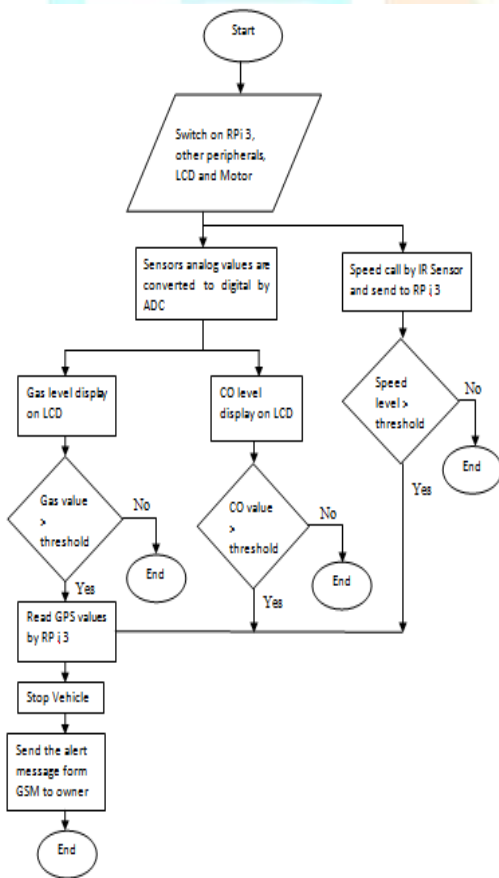


Fig.5. Flow chart of proposed vehicle system

To do this extend, we are utilizing the RaspberryPi3 microchip. At to start with, the motor of the vehicle will begin just on the off chance that we work the slide switch.

After motor begins, at first the sensor esteems must be changed over into the relating proportionate computerized esteems by utilizing the serial ADC MCP3204. The relating advanced esteems are perused by the Raspberry Pi 3 and show on the LCD screen.

For each sensor, we should set some predefined limit level. On the off chance that that level was crossed by the sensor, at that point the vehicle motor will stop consequently and the signal will give ready sound. In the meantime the ready message additionally sent to the proprietor of the vehicle about the status of the sensor esteems alongside the GPS area esteems. The GPS area esteems are caught by the GPS module from the satellites rotating around the earth.

**IV. EXPERIMENTAL RESULTS**

The execution of acknowledgment of "GAS DETECTION AND OVER SPEED PRODUCTION USING GSM AND GPS" is done effectively. The correspondence is appropriately managed with no obstruction between various modules in the outline. Configuration is done to meet every one of the details and prerequisites.

Circuit is executed in Orcad and actualized on the microcontroller board. The execution has been checked both in programming test system and equipment outline. The aggregate circuit is totally confirmed practically and is following the application programming. It can be inferred that the outline executed in the present work give versatility, adaptability and the information transmission is likewise finished with low power utilization. Design is done to meet all the specifications and requirements.



Fig.6. Proposed system prototype

**V. CONCLUSION & FUTURE SCOPE**

The keen vehicle security system proposed in this undertaking was completely created and tried to show its possibility and adequacy. In this system successful arrangement is given to build up the Monitoring vehicle which will screen different parameters of vehicle in the middle of consistent era and will send this information to the



base unit is clarified in this undertaking. We have utilized equipment like ARM11, GPS, GSM and Sensor modules. The entire Control system has the benefit of little volume and high unwavering quality.

In future, we can send all the sensor parameters measured in the proposed system was sent to the predefined site page by utilizing the Wi-Fi module. By this the proprietor of the vehicle can screen the status of his vehicle by only login into the website page from anyplace on the planet.

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