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# Advanced Vehicle Security System

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***Abstract:*** ***This most important & goal of this proposed venture work is an try to layout a complicated car security utility which could discover automobile accident detection and hearth detection alert can ship the info over GSM to authorized persons. In gift present security models, there's no such automation machine for you to ship alert to the consumer while an coincidence is meet or if it receives stuck with fireplace. It could be very difficult to perceive the automobile in this example we are featuring the brand new safety machine for four wheelers, with a purpose to have given protection to the car. In this gadget, the vehicle will have Position sensor and bump sensors inside the vehicle to discover the vehicle coincidence and we have a temperature sensor to stumble on engine overheating and alert the consumer inside the automobile with buzzer sound and an alert is dispatched over GSM module. The entire safety gadget is controlled with Arduino UNO board. This entire system is designed deliberating the low variety motors to offer them excessive protection.***
***Keywords: GSM module, fire detection, Accident detection, bump sensor.***

## I. INTRODUCTION

Road accidents are ever increasing in our country. The victims are losing their lives as there is inordinate delay in reaching the hospitals and getting the medical treatment well within the time. Also, with rapid urbanisation, vehicles are also increasing. Keeping in view the ever increasing death cases on the road accidents, we have developed a system to locate the accident vehicle at the soonest possible time and rescue the accidents victims as well as track the lost vehicle. Once we trace the accident vehicle, it will be easy for the rescue team or police or ambulance to reach the accident spot or place and take the victims to the nearest hospitals for immediate medical attention and save the lives. In this system we can detect the accident and fire and sends the message through the gsm module. By this system when an accident occurs our friends will know that accident has accured and they will have a chance to save the life.

## II. METHODOLOGY

We are enforcing the challenge by building a protocol referred to as robo vehicle. This robo vehicle includes dc motors, a voltage amplifier L293D, microcontroller ATMEGA8515 and switches. Dc vehicles are used to move the vehicle motion – forward, backward, right and left instructions. But the present day provided by way of the controller isn't sufficient for rotating the dc motor. Hence, an amplifier L293D which amplifies the modern is used to provide the sufficient contemporary. For the notification of thefts and accidents, we're interfacing GSM module on robo vehicle through serial verbal exchange.

GSM IS CMOS devices and the controller is a TTL tool. The very last output for all CMOS devices is RS232. The internal voltage ranges for CMOS devices are 18-23 volts. As the controller is a TTL device it operates at 5 volts. In order to convert the voltage ranges from 18-23 to 5 volts we used MAX232 which acts as amplifier.

## III. LITERATURE SURVEY

Propel vehicle protection framework that utilizations GSM to decide the perfect region of car has the detail of following the prevailing vicinity of automobile utilizing GPS framework, there are two styles of following applied one is internet following and other is disconnected monitoring .GSM framework is moreover brought in the automobile for sending the statistics to the region statistics from satellites. After that the framework introduce in the automobile requests a considered one of a kind password, that is basically on an electronic machine which can be utilized at the season of disaster whilst using a automobile .It has implanted the idea of far flung correspondence i.e. Zigbee and GSM and numerous specific sensors by means of the assistance of which activate reason can be conveyed to the individual who has met with a mishap. Along these lines this framework offers a pervasive automobile following framework with most extreme openness for the customer every time and any where.It likewise monitors the car by way of putting pace and topographical factors of confinement and on this way accepting SMS alarms when the car surpasses those predefined limits. To abstain from taking and to present more security to the cars. The actualized framework consists of unmarried-board inserted framework that is furnished with global body-work for portable (GSM) and worldwide situating framework (GPS) along a microcontroller brought inside the car.

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The utilization of GSM advances allows the frame-paintings to track the protest and offers the most leap forward information approximately ongoing outings. To distinguish practicable impact and to counteract it, an powerful utilization of safety framework for the moving cars using SMS prepared framework is applied. The framework employments microcontroller which makes it one in every of a kind much like the exclusive frameworks. The components utilized as part of the proposed paintings are associated with spotting the mischance, sparing the phone numbers, sending the SMs

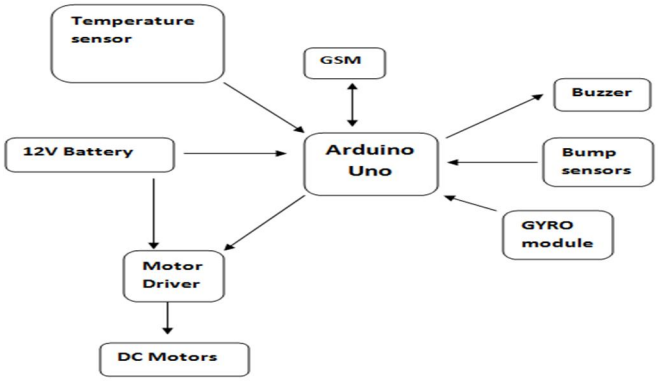
## IV. EMBEDDED SYSTEM

An embedded system can be described as acomputing device that does a particular targeted job. Appliances which include the air-conditioner, VCD participant, DVD participant, printer, fax system, cellular phone and many others. Are examples of embedded structures. Each of these appliances could have a processor and unique hardware to satisfy the unique requirement of the application in conjunction with the embedded software program this is done by means of the processor for assembly that unique requirement. The embedded software is also known as “corporation ware”. The computing device/pc pc is a fashionable reason computer. You can use it for a variety of packages which include playing games, phrase processing, accounting, software program improvement and so on. In assessment, the software inside the embedded systems is always constant indexed underneath:

· Embedded systems do a very particular venture; they cannot be programmed to do different things. . Embedded systems have very confined sources, especially the memory. Generally, they do not have secondary storage devices such as the CDROM or the floppy disk. Embedded structures should paintings towards some deadlines. A specific task has to be finished inside a specific time. In a few embedded systems, referred to as real-time systems, the deadlines are stringent. Missing a deadline may also cause a disaster-lack of lifestyles or damage to belongings. Embedded structures are limited for power. As many embedded structures perform through a battery, the electricity intake needs to be very low.

Some embedded systems need to function in intense environmental conditions including very high temperatures and humidity.

## V. BLOCK DIAGRAM




## VI. HARDWARE SPECIFICATIONS

For the designing of advanced vehicle security system we used some components. These components are attached together to form the final product.

The hardware components used are:

*1)* Power supply
*2)* Transformer
*3)* Voltage Regulator
*4)* Arduinouno board
*5)* IR sensor
*6)* Temperature sensor
*7)* Bump sensor
*8)* GSM module
*9)* Buzzerand DC motors.

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### *A. Power Supply*

The power supply section is the section which provide +5V for the components to work. IC LM7805 is used for providing a constant power of +5V.

### *B. Transformer*

A transformer is a tool that transfers electric powered energy from one alternating-current circuit to 1 or greater different circuits, both growing (stepping up) or reducing (stepping down) the voltage.

### *C. Voltage Regulator*

A voltage regulator is a circuit that creates and continues a hard and fast output voltage, regardless of modifications to the input voltage or load situations. Voltage regulators (VRs) hold the voltages from a power deliver inside a range that is like minded with the alternative electrical additives.

### *D. Arduino UNO Board*

Arduino UNO is a low-fee, bendy, and clean-to-use programmable open-supply microcontroller board that can be incorporated into quite a few electronic tasks. This board can be interfaced with other Arduino boards, Arduino shields, Raspberry Pi boards and might manage relays, LEDs, servos, and motors as an output.

The operating voltage of the unit is 5V which tasks the microcontroller at the board and its associated circuitry operates at 5V at the same time as the enter voltage tiers between 6V to 20V and the recommended enter voltage stages from 7V to 12V.

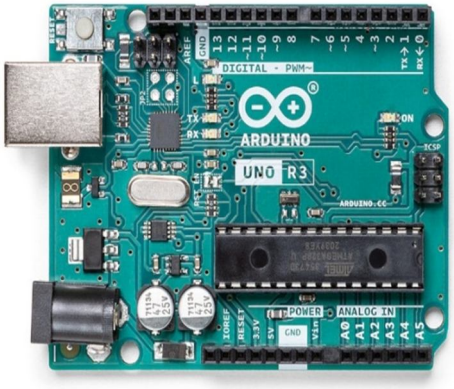



Figure 1: Arduino uno board

### *E. IR Sensor*

An infrared (IR) sensor is an digital tool that measures and detects infrared radiation in its surrounding surroundings. Infrared radiation changed into by accident determined by means of an astronomer named William Herchel in 1800. While measuring the temperature of each color of light (separated through a prism), he observed that the temperature simply beyond the purple light changed into maximum. IR is invisible to the human eye, as its wavelength is longer than that of visible light (though it's far still at the equal electromagnetic spectrum). Anything that emits warmth (everything that has a temperature above around five degrees Kelvin) offers off infrared radiation.

### *F. Temperature Sensor*

A temperature sensor is a device used to measure temperature. This can be air temperature, liquid temperature or the temperature of solid matter. There are different types of temperature sensors available and they each use different technologies and principles to take the temperature measurement.

### *G. Bump Sensor*

The bump sensors (bump switch) are digital sensors, with a robot program to perform a variety of tasks. the bump sensor (bump switch) can detect and avoid obstacles.

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*H. GSM Module*

A GSM modem or GSM module is a hardware device that uses GSM mobile telephone technology to provide a data link to a remote network. From the view of the mobile phone network, they are essentially identical to an ordinary mobile phone, including the need for a SIM to identify themselves to the network.



Figure 2: GSM module

*I. Buzzer and DC Motors.*

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short).
A DC motor or direct current motor is an electrical machine that transforms electrical energy into mechanical energy by creating a magnetic field that is powered by direct current. When a DC motor is powered, a magnetic field is created in its stator.

## VII. SOFTWARE

In this project we used Arduino cc software and written the functionality of the vehicle in the Arduino software.
The Arduino software uses the Arduino language which is just like our c language with different syntax.
The code which we are written in the Arduino software is compiled and the it will convert in to the hex code. This hex code is dipped into the Arduino through the cable.

## VIII. WORKING

First we give the power supply to the Arduino, GSM module and motor driver. Then we will insert a sim into the GSM module.
After giving the power supply then the vehicle starts moving forward. It wont stops until it gets any obstacle to it. When the vehicle is in motion and suddenly any accident accurs then the vehicle starts giving the buzzer sound and thorugh GSM module the message is passed to the whom we registered the sim in the code.
The IR sensor will detect the obstacle and sends the signal to the Arduino. From the Arduino the signal passed to the GSM module. And from the GSM module the message is passed.
We use the temperature sensor in the vehicle. So that when ever there is a fire accident occurs then the vehicle gives the buzzer sound and then send the message through the GSM module. When there is high temperature the temperature sensor will receive the signal and pass the signal to the Arduino. From the Arduino the signal is passed to the GSM module and then the message is passed to us through the GSM module.

## IX. SIMULATIONS AND RESULTS

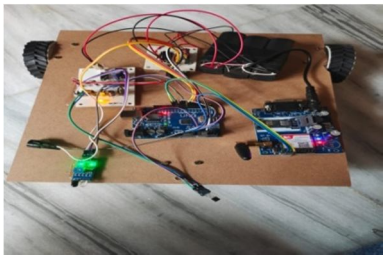


Figure 3: Advanced Vechile Security System

This type of security system is very useful for all the vehicles. With these system we can avoid accidents and detect the accidents. In these days most of the vehicles are coming with these feature for better security of the vechile and in future almost every vehicle comes with these features.

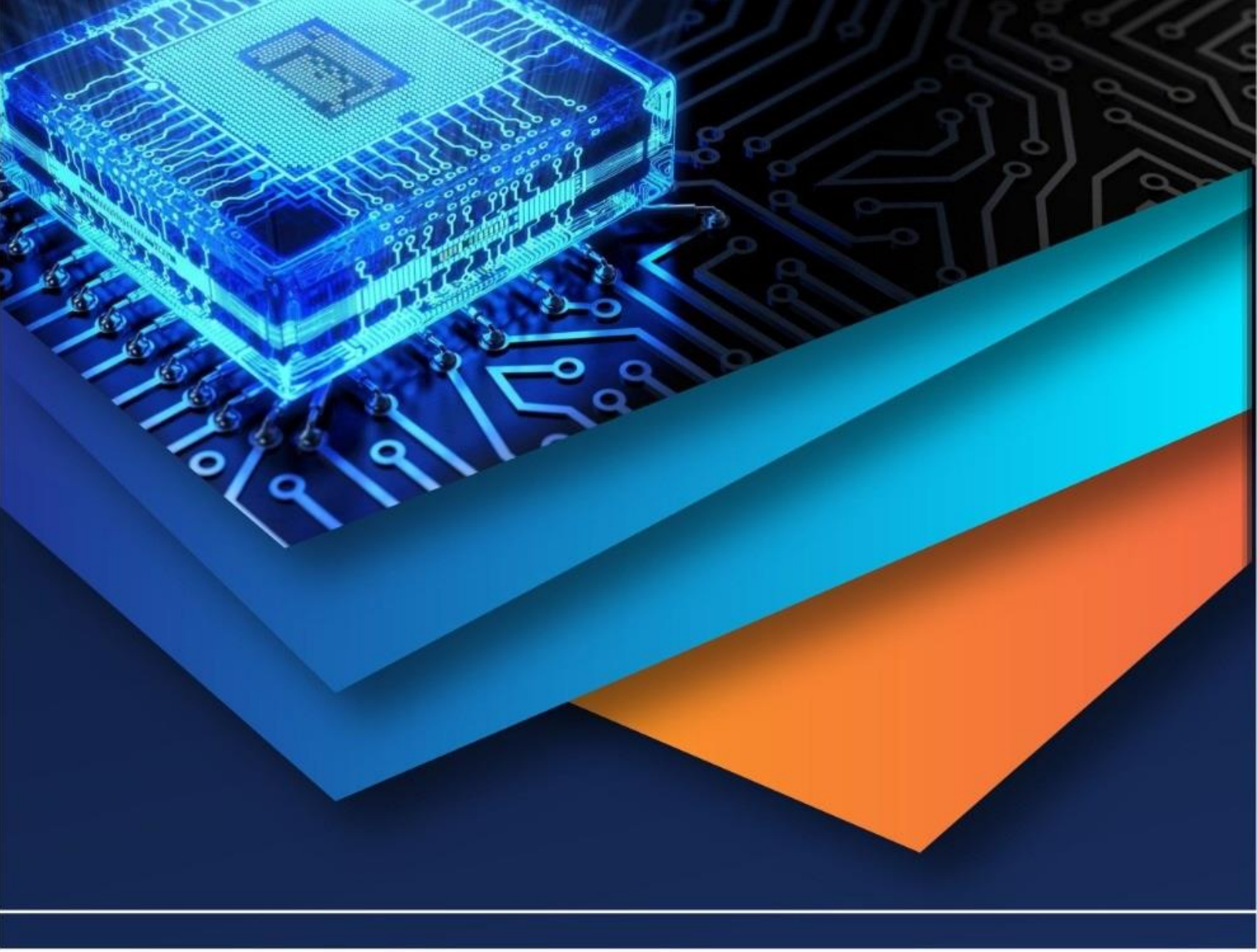
## X. CONCLUSIONS

The project has been successfully designed and implemented for the "ADVANCED VEHICLE SECURITY SYSTEM".
It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented and tested. Finally we conclude that GSM based Security System add a huge for the rapid growth of Technology

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