



# Automatic Collision Detection And Acceleration Control Using GSM And RFID Technology

Shermin Sainudheen , Sony Thankachan, Thasleema K.,S.Subin Suresh  
Electronics and Communication Department  
Assistant Professor, Ilahia Collage of engineering and technologies  
Electronics and Communication Department Muvattupuzha, India  
Ilahia College of Engineering and Technology  
Sherminsainudheen1225@gmail.com  
Muvattupuzha,India

**ABSTRACT:**Nowadays people are driving very fast, accidents are occurring frequently, we loss our valuable life by making small mistake while driving (zone wise, hills area, highways). So in order to avoid such kind of accidents and to alert the drivers and to control their vehicle speed in such kind of places the highway department have placed the signboards. But sometimes it may be possible to view that kind of signboards and there is a chance for accident. So to intimate the driver about the zones and the speed limit automatically, is done by means of using RF technology.

**Keywords** - Collision avoidance, GSM

According to this project when a vehicle met with an accident, immediately the vehicle number and persons contact number will be transferred to a rescue center. From the rescue center they will find out the nearest hospital and intimate them. Thereby the loss of person's life can be avoided.

In Third application on an uncertain situation many of vehicle that has center locking system, Such as door locking system faces many problem due to automatic locking system. At that situation there is no way to open the lock. Our project will provide a suitable for this situation. This can be done by wireless system or GSM Technology.

## I.BACKGROUND

The main objective is to design a Smart Display controller meant for vehicle's speed control and monitors the zones for a different kind of speed limit, which can run on an embedded system. Smart Display & Control (SDC) can be custom designed to fit into a vehicle's dashboard, and displays information on the vehicle.

The project is composed of two separate units: zone status transmitter unit and receiver (speed display and control) unit.

Once the information is received from the zones (40kmph, 30kmph, 10kmph) vehicle's embedded unit is automatically alerts the driver, to reduce the speed according to the zone, it waits for few seconds, and otherwise vehicle's SDC unit automatically reduces the speed.

Suppose if you are going for above 80kmph in the sense mostly your vehicle is uncontrollable so any accident occurred means automatically the embedded unit senses the accident and immediately it will send an alert message to

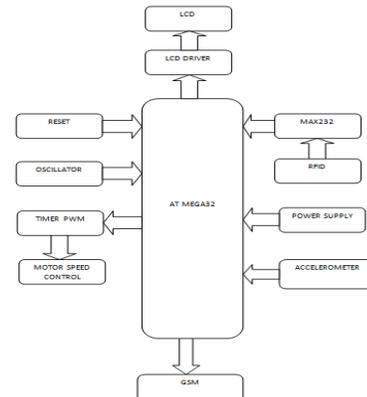
## II.LITERATURE SURVEY

GSM AND RFID BASED TX AND RX FOR COLLISION AVOIDANCE AND SPEED CONTROL, In today's world, there is a continuous need for automatic appliances with the increase in standard of living; there is a sense of urgency for developing circuits that would ease the complexity of life. Normally, this type of systems are useful in case of emergency areas where traffic is main concern & little carelessness may cause accident & death specially in the areas of schools as well as the places where crowd is more.

A collision avoidance control system for a vehicle is provided which is designed to determine a target collision avoidance deceleration required for a system vehicle equipped with this system to bring a relative speed between the system vehicle and a target object into agreement with substantially zero without a physical collision with the target object and to determine a possibility of collision with the target object as a function



EFFECTIVE COLLISION AVOIDANCE MECHANISM FOR RFID TAGS, RFID is technologies which transfer data between electronic tag and reader by radio frequency for the purpose of database auditing. RFID systems are used for automated identification. It is also called Automated Data Collection technology. In this, binary tree anti-collision protocol search all possible tags based on their unique identification numbers. Once a tag has been completely identified, it will be eliminated. For reset, we use unique sequence of no.'s for provide synchronization between reader and tags. The mode of operation is the reader inquiring and tag answering. Implementation of anti collision protocol is done by VHDL language using Xilinx software. The design methodology and results are useful for designing and implementing a practical RFID system.



### III. EXISTINGSYSTEM

In order to avoid accidents and to alert the drivers and to control their vehicle speed in different zones the highway department have placed the signboards. The main drawbacks of this existing system are, the sign boards may not be visible due to weather conditions. Also it is not necessary that drivers pay much attention for these types of signboards

### IV. PROPOSED DESIGN

The main objective is to design a Smart Display controller meant for vehicle's speed limit and crash alerts which can run on an embedded system. Smart Display & Control (SDC) can be designed to fit into a vehicle's dashboard, and displays information on the vehicle. Once the information is received from the zones, vehicle's embedded unit automatically alerts the driver with an alarm. If vehicle's speed is not reduced within the speed limit zone, vehicle's SDC unit automatically reduces the speed. When a vehicle met with an accident, immediately with the help of GPS receiver, it identifies latitude and longitude and the details are sent through GSM modem to the traffic police system.

### V. METHODOLOGY

#### 1. Microcontroller

The major heart of this project is microcontroller; a microcontroller (sometimes abbreviated  $\mu C$ ,  $u C$  or  $MCU$ ) is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals etc. However, compare to others microcontroller is fast and very ease to program in C language because of huge support can gain from the manufacturer for programming

#### 2. LCD Module

A liquid-crystal display (LCD) is a flat panel display, electronic visual display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. The most common application of liquid crystal technology is in liquid crystal displays (LCDs). A liquid crystal display consists of an array of tiny segments (called pixels) that can be manipulated to present information. The LCD screen is more energy efficient and can be disposed of more safely than a CRT. Its low electrical power consumption enables it to be used in battery-powered electronic equipment.

#### 3. MAX232 (Voltage Level Converter)

The MAX232 is an IC that converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits. The MAX232 is a dual driver/receiver and typically converts the RX, TX, CTS and RTS signals. The drivers provide RS-232 voltage level outputs (approx.  $\pm 7.5 V$ ) from a single + 5 V supply via on-chip charge pumps and external capacitors. The receivers reduce RS-232 inputs (which may be as high as  $\pm 25 V$ ), to standard 5 V TTL levels.

#### 4. RFID

Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by and read at short ranges (a few



source such as a battery, or else have no battery but collect energy from the interrogating EM field, and then act as a passive transponder to emit microwaves or UHF radio waves (i.e., electromagnetic radiation at high frequencies). Battery powered tags may operate at hundreds of meters. Unlike a barcode, the tag does not necessarily need to be within line of sight of the reader, and may be embedded in the tracked object. Radio frequency identification (RFID) is part of the family of Automatic Identification and Data Capture (AIDC) technologies that includes 1D and 2D bar codes. RFID uses an electronic chip, usually applied to a substrate to form a label, that is affixed to a product, case, pallet or other package. The information it contains may be read, recorded, or rewritten. RFID tags are used in many industries. An RFID tag attached to an automobile during production can be used to track its progress through the assembly line. Pharmaceuticals can be tracked through warehouses. Livestock and pets may have tags injected, allowing positive identification of the animal.

Since RFID tags can be attached to cash, clothing, everyday possessions, or even implanted within people, the possibility of reading personally-linked information without consent has raised serious privacy concerns.

#### 5. Timer PWM

Motor is controlled using PWM mechanism.

#### 6. Crystal Oscillator

A crystal oscillator is an electronic oscillator circuit that uses the mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a very precise frequency. This frequency is commonly used to keep track of time, to provide a stable clock signal for microcontrollers. The most common type of piezoelectric resonator used is the quartz crystal, so oscillator circuits incorporating them became known as crystal oscillators.

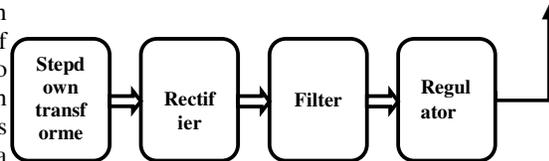
#### 7. Reset Function

Reset is used for putting the microcontroller into a 'known' condition. That practically means that microcontroller can behave rather inaccurately under certain undesirable conditions. In order to continue its proper functioning it has to be reset, meaning all registers would be placed in a starting position. Reset is not only used when microcontroller doesn't behave the way we want it to, but can also be used when trying out a device as an interrupt in program execution, or to get a microcontroller ready when loading a program.

#### 8. Power Supply

A power supply is a device that supplies electric power to an electrical load. The term is most commonly applied to electric power converters that convert one form of electrical energy to another, though it may also refer to devices that convert another form of energy (mechanical, chemical, solar) to electrical energy. A regulated power supply is one that controls the output voltage or current to a specific

#### Regulated Power Supply:



#### 9. Step down Transformers

Step down transformers are designed to reduce electrical voltage. Their primary voltage is greater than their secondary voltage. This kind of transformer "steps down" the voltage applied to it. Step down transformers convert electrical voltage from one level or phase configuration usually down to a lower level.

#### 10. Rectifier

A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which flows in only one direction. The process is known as rectification. Physically, rectifiers take a number of forms, including vacuum tube diodes, mercury-arc valves, copper and selenium oxide rectifiers, semiconductor diodes, silicon-controlled rectifiers and other silicon-based semiconductor switches.

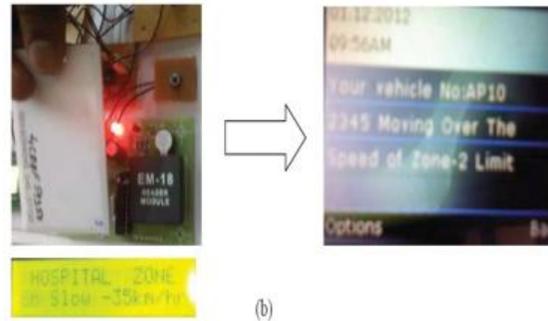
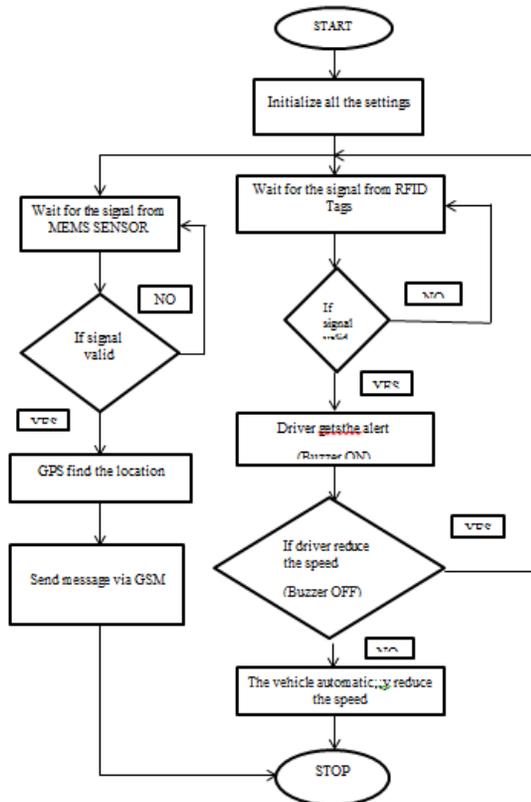
#### 11. Filters

Electronic filters are analog circuits which perform signal processing functions, specifically to remove unwanted frequency components from the signal, to enhance wanted ones, or both. The most common types of electronic filters are linear filters, regardless of other aspects of their design.

#### 12. Regulator

A regulator is a device which has the function of maintaining a designated characteristic. It performs the activity of managing or maintaining a range of values in a machine. The measurable property of a device is managed closely by specified conditions or an advance set value; or it can be a variable according to a predetermined arrangement scheme. We are using LM7812 & 1m7805 regulators.

VI.FLOWCHART



In case if any accident is occurred, the unit automatically senses the vibration and messages are sent to the nearest rescue centre.

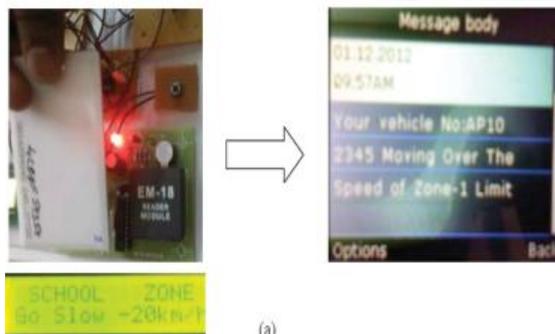


VII . RESULT

Drivers gets the alert and informations about each zones they were entering and even if they do not reduce the speed,this unit automatically reduces the speed.

VIII .CONCLUSION

It has been mainly designed in order to avoid accidents and to alert the drivers about the speed limits for safe traveling. Many existing systems has discussed about the road safety's and has proposed many methods for the speed limitations and accident detections. Controlling the vehicle speed automatically in real time is very difficult. So, in order to avoid that difficulties, instead of controlling the vehicle speed automatically, our project succeeded in alerting the driver about the speed limits and detecting accidents. When they enter into the speed limit zones, using GSM technology if driver neglect the speed limit in the zone, the details of zone and vehicle will be sent through message to the traffic police system such that challan can be sent to the drivers address and also controls the speed automatically.





**IX .REFERENCE**

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