

# Auto Cruise Control: using GPS & GSM

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*Abstract*— In today's scenario, means of transport is playing a major role for convenient travel and quick means to reach the destination and this has raised demand for easy travel so badly that almost every third person wishes to own a private vehicle. The more number of vehicles in turn leads to more accidents. According to statistics the majority of the car accidents are caused by high speed and disrespect of the inter-vehicles security distance. In spite of this, more than 60% of drivers do not comply with speed limits on urban roads or trunk roads. The worst situation is when a trunk road passes through a village. There, almost 80% of drivers break the speed limit. In order to give to drivers the means for controlling the speed of their cars, several constructors have developed various systems such as the speed limiter or regulator already present in some cars. In this field, research continues to give more effective systems, like speed regulator systems with GPS (Global Positioning System) which allows adapting the car velocity to that authorized in its localization zone. In this paper we describe an Intelligent Cruise Control with GPS and Radar that combine GPS and radar systems to adapt the vehicle speed which will restrict the speed to the speed limitation and to avoid running up against others vehicles. The system integrates a GPS subsystem which makes it possible to locate the car and to determine authorized speed in its zone of localization. The radar subsystem detects any obstacle in front of the vehicle and gives the optimum speed to avoid the most dangerous one.

**Key words:** Auto Cruise Control, GSM, GPS

## I. INTRODUCTION

The motor vehicle environment has gone virtually untouched by the technology explosion of the past decade - especially the computer revolution. Except for the use of microprocessors as an adjunct to pollution control and engine management; technology has, for the most part, not effected the roadway environment - automated traffic lights notwithstanding. Every year many people lose their life and the people with serious injuries just cannot be estimated because of road accidents. Everything from simple carelessness, to fatigue, to driving-while-impaired, is responsible.

The cost to the nation is the thousands of lives lost, and tens of millions of rupees. There is a much more common cause of single vehicle fatalities than is generally thought. Only the high profile multiple vehicle accidents--including large "eighteen wheelers," capture the headlines. GPS Receiver receives the co-ordinates data and it gives to Embedded System. It compares signal from road speed limit signal with actual speed signal of car. If vehicle speed is more than speed limit, then initially alarm is given & then automatic brake is applied. In all but the most impaired driver, the response is imminent and Life Saving! The long dreamed of, "Smart Highway," has not only been technically feasible for some time, but its time may be now. To enlist the vehicle's existing computer for the added tasks involved in vehicle/highway interface management, will put great computing power at the disposal of the entire IVHS structure. There are two approaches: one would have smart vehicles operating autonomously, with minimal centralized control or supervision; the other approach would be an integrated tightly-coupled vehicle/highway interface. This latter approach is composed of three elements: the "smart" vehicle, the centralized authority or "network" and the communication between them. The resulting homogeneity would strengthen all functions taken on by such a system. It would be an entity that is greater than the sum of its parts. Surplus computing power would always be available, improving data access and distribution; and speed in evaluation and decision making.

The Various communication methods that would be used for such system comes with its own strength and weakness. There is no such technology which is self-sufficient. However among the available ones, RF-wave, approach has great advantages.

## II. LITERATURE SURVEY



Fig. 1: Die Every Hour, 1.14 Lakh A Year..! Times of India

The World Health Organization in its first GSR (Global Status Report) on road safety, revealed that more people are dying in India due to road accidents than anywhere else in the world, including the more populated China. Road accidents have been called epidemic, and said to gain the 5th position as largest killers by 2030. Although, the rich nations have had considerable success in reducing road fatalities, death rates have been on the rise in third world countries like India. It has also been pointed out that 90% of deaths on world's roads occur in low and middle-income countries, (21.5 and 19.5 per lakh of population, respectively) even though they have only 48% of all registered vehicles.

At least 13 people die every hour in India due to road accidents, as revealed by the report of the National Crime Records Bureau (NCRB). These statistics are chilling. In 2007, 1.14 lakh people in India lost their lives in road mishaps—that's significantly higher than the 2006 road death figures in China, 89,455. Road deaths in India registered a sharp 6.1% rise between 2006 and 2007. [2.3] Many road safety experts have noted that these numbers could be actually higher since many of these accident cases are not even reported. "There is no estimate of how many injured in road accidents die a few hours or days after the accident", as reported by the UN Road Safety Collaboration and Commission of Global Road Safety representing Asia. The report is based on 2006 and 2007 statistics collected from over 175 participating countries says that globally, over 1.2 people die in road accidents every year and 20-25 million people suffer non-fatal injuries. Baluja, a member of the UN Road safety Collaboration said both central and state governments, while pushing for construction of more highways and roads, were doing precious little to make them safe. "We don't have scientific traffic engineering which forms the basis of road safety improvement practiced in US and UK since 1930s. This still remains a matter of consultancy in India as we are yet to have our own traffic engineering wings," Baluja adds.

## III. COMPONENTS

- 1) ATMEGA 16:-It is the heart of the project and coupled with the relevant code, it decides the working and execution of speed, horn regulation along with other features of this project.
- 2) GPS 1269 module: -It actively receives the coordinates of its location and passes the data to the microcontroller.
- 3) LCD:-LCD display can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.
- 4) IC 7805:-It is used for voltage regulation.
- 5) MQ-3Alcohol Sensor:-Sensor used to sense whether the driver is drunk.
- 6) IR Sensors: -These sensors detect if there are any obstacles around the car as well as in case of an accident it is can send alerts through SMS using the GSM module.
- 7) GSM Module:- It is used for using the telephonic services in order to send SMS to registered phone numbers in case of collision or towing.
- 8) Relay:-The relay allows the car to switch between two or more speeds depending on the location it is passing through as well as decide if the car horn should work in that particular area
- 9) DC MOTOR: -A DC motor is a mechanically commutated electric motor powered from Direct current (DC).

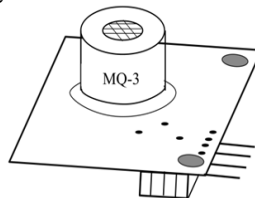


Fig. 2: MQ-3Alcohol Sensor

#### IV. SYSTEM BLOCK DIAGRAM

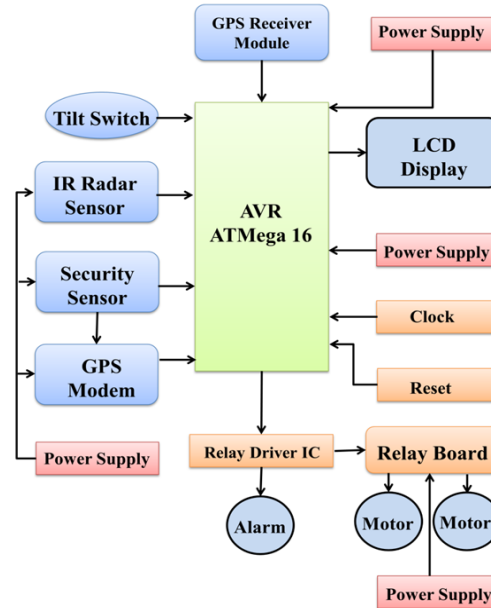


Fig. 3: System Block Diagram

#### V. PIN DIAGRAM

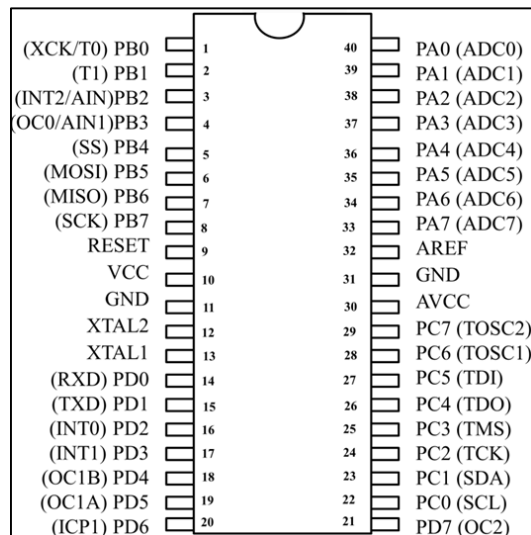


Fig. 4: Pin Diagram

#### VI. ADVANTAGES

- 1) The project has the potential to reduce large number of accidents.
- 2) It can save lives of many people.
- 3) It can bring discipline to driving.
- 4) Its implementation can save considerable private or government property damage.

#### VII. PROJECT APPLICATION

- 1) This speed Control system can be used for all types of vehicles.
- 2) This unit can be used for auto rickshaw, taxis, cool cabs, school busses, city busses, ST busses, private traveling luxury busses, transport vehicles, trucks, private cars, tourist vehicles, two wheelers.
- 3) This project can be implemented for trains.



Fig. 5: Speed Limit

### VIII. LIMITATION

- 1) Project Implementation Cost is high to existing vehicle.
- 2) For project implementation, detailed survey of accident prone areas is required.

### IX. CONCLUSION

This project is sufficiently capable of handling the needs for accident prevention arising today due to the ever rising number of vehicles on roads. The added features in this project facilitate other things like theft detection which will help in reducing the crime. Tow detection will help in rescuing owner's vehicle as soon as it is towed as they will be receiving an alert via text message. Alcohol detection is one of the highlighted features of our system as it will detect whether the driver is drunk and turn off the ignition if it detects alcohol. It is operating at the start as well as during the drive, if the driver consumes alcohol, the sensor will detect within a foot distance as the sensor will be placed on the steering wheel. The combination of all these features will make this system efficient and powerful when implemented on a large scale.

### X. FUTURE SCOPE

- 1) With the current rate of advancements in technology, it is safe to assume that we will be requiring a system of automotive transport providing efficient and safe means of commuting over small as well as large distances, in cities as well as on highways.
- 2) We can have an advanced version of this system by installing cameras on the dashboard of all the vehicles, thus providing crucial evidence which may be helpful in determining the cause of an accident and finding the person responsible for the accident.
- 3) This system intends to provide just that and a lot more, when properly planned and implemented on a wide scale, resulting in negligible accidents and loss of life on the roads, as well as providing a more economical and efficient environment for commuting.

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