

# Automated Cruise Control System

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## ABSTRACT

This is an electronic system that allows the vehicle to slow while approaching towards another vehicle or an obstacle and again start running after the obstacle or vehicle gets side. It also warns the driver and applies brake if there is a high risk of a collision. In this project we are going to develop a smart embedded system which can lower or stop this high risk of high vehicle accidents. Now-a-days we can see that more number of accidents happens in highways. Most of the reason for accident is driver mistake. To avoid this situation we make the system which is called adaptive cruise control system. This system consist of Ultra sonic based obstacle detector, whenever it detect the obstacle automatically speed will be reduced, when the distance of the obstacle increases automatically speed gets increased. In this system, driver no needs to give the acceleration and also break, which is entirely controlled by system. This system will not only protect from the outside danger to the passengers but it will alert after the driver feels sleepy. If he driver closes his or her eyes or more than 30 seconds then it will start blowing a buzzer and start reducing the speed of vehicle.

**Key words:** Cruise, Collision, Safety, Obstacle.

## INTRODUCTION

Autonomous braking that would brake on its own, if the driver does not, to avoid a forward collision. A

accident avoidance system is an automobile safety system designed to reduce the severity of an accident. Also known as precrash system, forward collision warning system or collision mitigating system, it uses radar and sometimes laser and camera sensors to detect an imminent crash. Once the detection is done, these systems either provide a warning to the driver when there is an imminent collision or take action autonomously without any driver input

Adaptive headlights that would shift headlights in the direction the driver steers. Unexpectedly, they found lane departure systems to be not helpful, and perhaps harmful. Collision avoidance features are rapidly making their way into the new vehicle fleet . If driver fall asleep or he will close his eyes for more than 30 sec then the eye blink sensor will detect and the system will blow buzzer.

Automatic cruise control (ACC) is an intelligent form of cruise control that slows down and speeds up automatically, partial ACC only works

at speeds of 20 or 25 mph. ACC works day In the proposed system we are going to use adaptive cruise control which will control the speed of the vehicle while approaching another vehicle. This is done using an ultrasonic sensor instead of using many other sensors. Pulse width modulation is used to control the speed of the vehicle automatically when a collision is going to occur. Using this system we can detect another vehicle even at a very far distance Collision avoidance features are rapidly making their way into the new vehicle fleet.

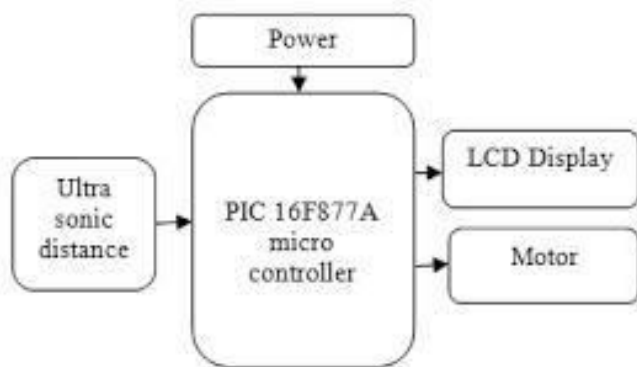


Figure 3. Block Diagram of Automatic Cruise Control

### Block Diagram

#### Hardware Required

1. Microcontroller (at89s52)
2. Power supply.
3. Ultrasonic sensor
4. Smoke sensor.
5. Eye blink sensor.
6. LCD display
7. Buzzer.
8. Dc motor

#### Software Required

1. MAPLAB IDE

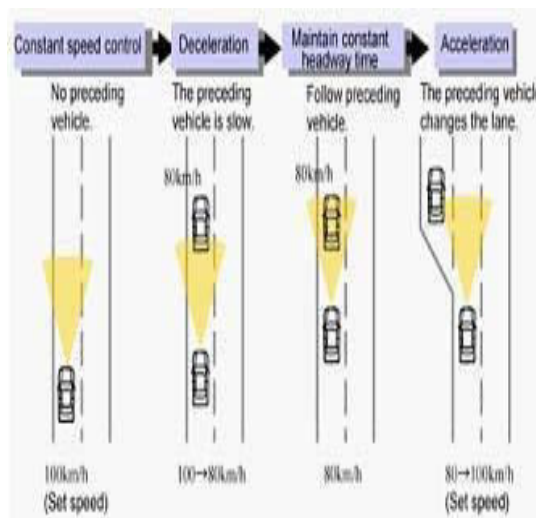
### Enhancement in ACC

The existing technologies provide, only a stop and go Adaptive cruise control, which reduces the speed of the vehicle according to the speed of the vehicle in front. But the proposed system provides

certain enhancements to the presently available adaptive cruise control system. When the ACC equipped vehicle detects a vehicle (in front) in the same lane it is traveling, initially the speed reduces and the sensors on the adjacent sides of the vehicle are engaged to check the adjacent lanes for any traffic movement. If the adjacent lane is unoccupied, the system automatically decides to steer the vehicle to the adjacent lane at an optimum speed without losing the stability of the vehicle and accelerates the car to the preset speed. After overtaking, which is decided by the input from the sensors on the adjacent side of the vehicle, it once again steers the car back to the previously occupied lane.

It is useful for long drives. This usually results in better fuel efficiency, reduction of accident rate for vehicles fitted with cruise control systems.

### Fig. 1. Working of ACC



### ***Advantages:***

- ☐ Low cost
- ☐ Advanced emergency break.
- ☐ Emergency stop signal.
- ☐ Intelligent speed assistant.
- ☐ Sleep mode control.

### ***Disadvantage***

- ☐ This system can operate certain distance only.

### ***Applications:***

- ☐ This system can be used to avoid accidents.
- ☐ Transportation applications.

### ***Conclusion:***

- Thus this automatic system will save life from the road car accidents and provide high security to the accidents.
- This will not help only from the outside obstacle collision but it will alert everyone inside car when the driver feel drowsy.
- In short this will be the life saver system

### ***Reference***

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### ☐ Weblinks:

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- ☐ [www.summitpoint-raceway.com](http://www.summitpoint-raceway.com)
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