

# Automation of Automobiles - A Vision for Automotive Assistance

*Niveen and Vignesh*

**Abstract**— The number of the accidents that occur within the world will increase each year however the number of fatalities has minimized attributable to new technology developed by the car trade. But the sole thanks to save way more lives is to stay cars from smashing into one another within the 1st place in this paper; a system is given to avoid accidents caused by careless driving of the motive force. This system warns the driver once it finds obstacles on its path that aids the motive force in preventing accidents. An easy technique is usually recommended, to boost the protection of the vehicle by victimization unhearable sensors for obtaining an image of the obstacles within the path of the vehicle. Another technique is usually recommended to alter the top lamps of the vehicle from of sunshine to irradiation by sensing the intensity of light from opposite vehicle. These techniques increase the comfort and safety of night driving to an oversized extent.

*Index Terms* – Automation, Automobiles

## I. INTRODUCTION

The number of the accidents that occur within the world will increase per annum however the quantity of fatalities has decreased as a result of new technology developed by the industry. Engineers are splintering away at the staggering numbers of facilities for a protracted time, coming up with air baggage and seat belts, stronger frame and special interior styles to extend the security of a automotive. but the sole thanks to save much more lives is to stay cars from smashing into one another within the 1st place. Accidents happen largely as a result of the carelessness and laziness of the motive force. during this paper, a system is conferred to avoid accidents caused by careless driving of the motive force. This system warns the driver once it finds obstacles on its path that aids the motive force in preventing accidents and that we additionally give a system that automates the pinnacle lamps from high to low beams on crossing another vehicle that aids in preventing accidents.

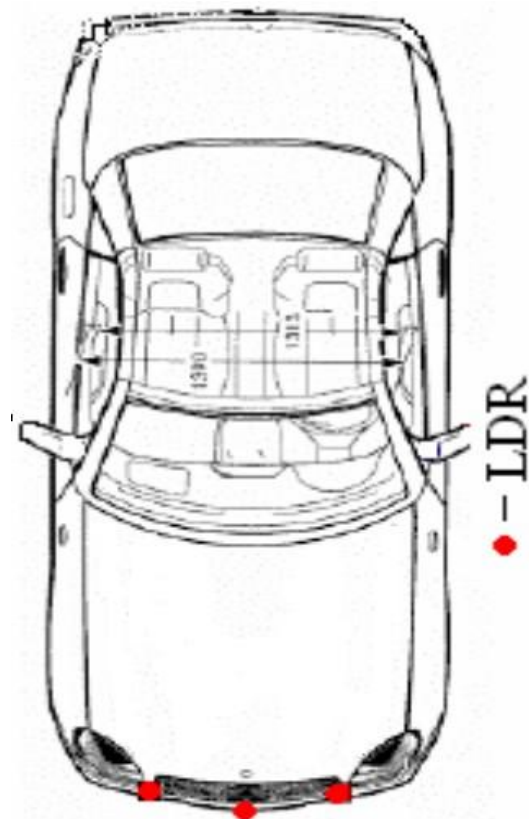
## II. PROBLEMS IN NIGHT DRIVING

On judging day and night driving, the later is quiet complex and risky for the drivers. So they always prefer day driving due to risk of accidents in night driving. It is mainly due to the obstruction caused by high power beams of the opposite vehicles and due to poor vision and darkness, at some conditions. The most important reason is the carelessness and laziness of the driver. So a simple method is suggested, to

improve the safety of the vehicle by providing guidance to the driver, in darkness, by using ultrasonicsensors for getting a picture of the obstacles in the path of the vehicle. Another major cause of accidents is the glaring headlamps of the approaching vehicle. It is also due to the laziness of the driver in switching over the lights from high beam to low beam. So, a method is suggested to automate the head lamps of the vehicle from high beam to low beam by sensing the intensity of light from opposite vehicle and when the other vehicle passes by, the beam automatically lowers down and when the vehicle crosses by, it changes the beam back to high beam.

## III. AUTOMATIC HEADLIGHTS

The LDRs are placed in front of the vehicle in a position such that the light from the opposite vehicle falls on the LDR so that the circuit senses light and switches the beam from high beam to low beam and when the vehicle passes by, it switches to low beam.



Output of the comparator will be positive which switches on the transistor Q1 and therefore current flows through the exciting coil of the relay. Therefore the relay switch is closed and as a result, the LED2 will glow which denotes low beam position of lamps in the car. The diode D2 (free wheeling diode) is placed to avoid reverse inductance current from the inductance coil of the relay.

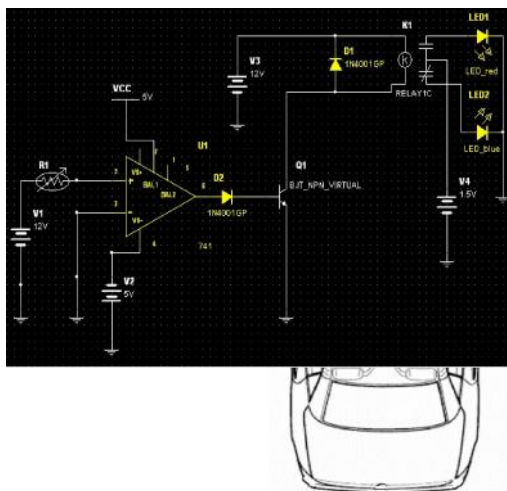
The voltage V4 is given as supply for the light emitting diodes (LED1 and LED2).

LED1 corresponds to the high beam of lamps

LED2 corresponds to the low beam of lamps

Here the supply voltage for LED1 and LED2 is given as 1.5V. Whereas for the headlight of vehicles, 12V supply should be given from the car battery.

The circuit for automating the head lamps of the vehicle is shown in the figure 2.



IV. VEHICLES COLLISION AVOIDANCE SYSTEM

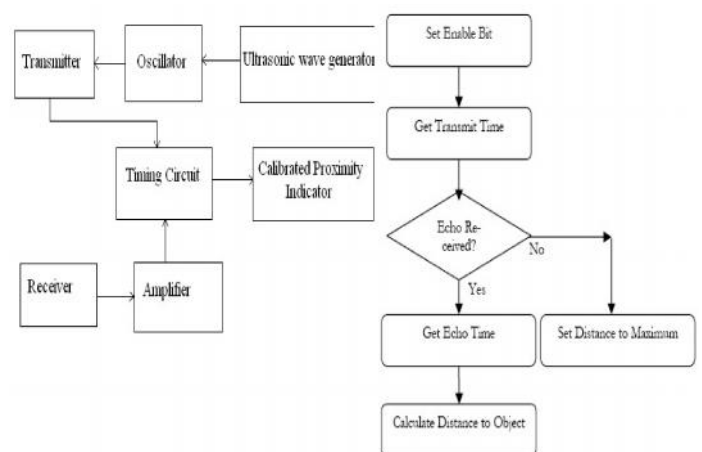
For obstacle detection operation, an ultrasonic ranging system was chosen. The ultrasonic detection module works on a very simple principle. It transmits a 40 kHz signal from an ultrasonic transducer. The echo from the transmitter is monitored with the receiving transducer. When an echo is received, the resultant output from the receiver is then conditioned. By measuring the time between signal sent and signal received, the distance between the vehicle and obstacle is calculated. For this application, ultrasonic transmitters and receivers are placed in front of the vehicle

Figure 3 shows the positioning of the ultrasonic sensor and receiver.

Figure 4 explains the block diagram of the working of the sensors.

Figure 5 shows the flowchart of the transducer system.

V. BLOCK DIAGRAM:



a) WORKING

The timing circuit calculates the time duration between transmission and reception of the wave.

Figure 4: block diagram of the operation of ultrasonic sensor and receiver circuitry.

Figure 5 : The flowchart for the operation of the ultrasonic circuitry.

The calibrated proximity indicator

indicates the distance between the obstacle and the vehicle. The algorithm for this is shown above.

$$\text{Distance} = (\text{Time calculated}/330) - (\text{time calculated} * \text{velocity of vehicle})$$

Different colors of lights are used to denote different ranges of distances which alert the driver to drive safely. By using these lights the driver can predict the distance of obstacles in the path of the vehicle and he will be able to plan his course of path which reduce the risk of accidents and provide the inmates of the vehicle an effective and safe journey.

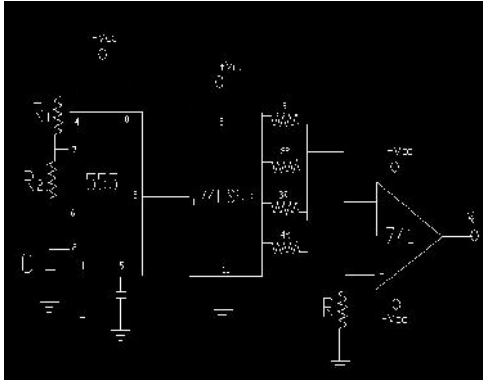
b) Sensors for Parking

These types of sensors mentioned above can also be placed at the rear side of the vehicles which can also provide parking assistance to the vehicle because most of the drivers find that parking a vehicle is more difficult than driving the vehicle in a straight road. Therefore these sensors also help in aiding in parking a vehicle even in congested area effectively.

c) Advantages of Automotive Assistance

- This method is quiet simple compared with other methods of automation.
- It can be implied in all kind of vehicles.
- It is very cheap as it contains only simple components.

- It is compatible with old vehicles.
- It is more accurate and response time is faster.



*Niveen (Muthayammal Engineering College, Rasipuram)*  
*Vignesh (Muthayammal Engineering College, Rasipuram)*

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