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Automatic Braking System

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ABSTRACT
In the fast moving world it is very difficult to keep distance between vehicle.If a vehicle is going on the road, suddenly the driver loses the vehicle's control, an accident may occur. Death rate due to accidents is increasing due to the drastically increasing usage of vehicles.Automotive vehicles are increasingly equipped with collision avoidance and warnings systems to avoid accident mishaps. Sensors help to detect obstacles in the way of vehicles to void accidents. The sensors give the signal to the microcontroller which signals the vehicle motor to stop. The aim is to design and develop an automatic braking system that is automatically controlled.
KEYWORDS: Automatic Braking System, Ultrasonic Transmitter and Receiver, Microcontroller, Arduino UNO.

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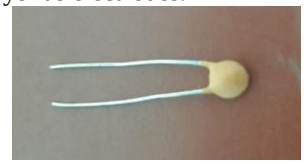
I. INTRODUCTION

Driving is a necessary activity, but it could become dangerous too, depending on the lack of focus of drivers. India has an increased rate of accidents, this system is created to cut the injury to drivers and pedestrians. Most common reason for accidents is the failure of application of brakes in time, due to drivers lack of concentration, sleepiness, distraction, weather condition, heart attacks/seizure and sudden road obstructions, technical problems within vehicle and due to drivers mistake. The research carried out covers a broad range of issues and challenges. The Automatic Braking System involves ultrasonic transmitter and receiver, microprocessor, electric motor. Automatic Braking System uses ultrasonic sensors to sense the obstruction in the path of the vehicle. The ultrasonic sensors transmit the signal continuously towards the obstacle. After transmission by the transmitter, the waves can reflect when the obstacles are detected and received by the receiver. The receiver sends this signal to microcontroller for control system purposes. The controller warns the drivers about the obstruction and reduces the speed of the vehicle as per the distance between the vehicle and obstruction. Accidents could occur at anytime and anywhere, and it could take everything from us, or cause serious damage. The focus of this research has been on the benefits relating to human factor issues.

COMPONENTS USED:

1. Ultrasonic Transmitter and Receiver : An ultrasonic transmitter is used to transmit ultrasonic waves. The ultrasonic waves are produced by an ultrasonic transducer. The ultrasonic transmitter sends waves at a distance that is previously determined.The distance is determined by the range of the ultrasonic sensors used. The ultrasonic waves emitted by the ultrasonic transmitter after collision from an obstacle are reflected back to Ultrasonic Receiver which senses the obstacle.

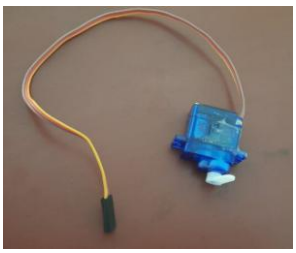
2. Capacitor ceramic: A ceramic Capacitor is capacitor in which ceramic layer acts as a dielectric material and metal layer as electrodes.



3. Atmel Microcontroller : An atmel microcontroller acts as a memory storage device.

4. Arduino Uno : It comes with a crystal oscillator. It works alongside microcontroller.It is used for programming for beginners in an electronic project.

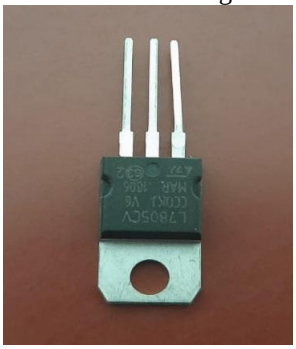
5. Servomotor : Servomotor is a device that acts as rotary actuator which precisely controls angular or linear rotation, velocity and acceleration.



6. DC Gear Motor : DC gear motor converts direct current or electricity to mechanical energy.

7. Crystal oscillator: Works along with arduino uno.

8. Voltage regulator: voltage regulator is a device that regulates voltage as required.



ADVANTAGES :

1. Vehicle brakes can be applied in time.
2. Safety is increased with the use of automatic braking technology.
3. Provides more safety to passengers.

4. Sureness of accident prevention is increased.

II. CONCLUSION

This Braking System when implemented can prevent accidents. It can save lives and casualties can be averted at maximum possible extent. Automatic Braking System can be used to provide automatic safety without manual intervention which gives us a peek into the future automated technologies. The future of Automatic braking system lies in the safety of vehicle occupants and prevention of accidents. Apart from that it also adds a new technology to future.

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