DEVELOPMENT OF SAFE OVERTAKING AND SPEED CONTROL SYSTEM

Mr.V.GANESAN[1],P.T.SARAVANAKUMAR[2],
T.MATHIVANAN[3],M.MOHAMEDFARVESH[4],M.RAVINDRAN[5],RVIGNESHWARAN[6]

1Assistant professor, Department of Automobile Engineering
2 Professor, Department of Automobile Engineering3456
3,4,5,6 Students, Department of Automobile Engineering
Hindusthan Institute of Technology ,Coimbatore, India

***Abstract*—** Overtaking is common scenery in the high way roads. Sometimes, road accident occurs due to overtaking. It is happening all over world. Because, the drivers are not so careful about road accident during driving. Also the roads which are not divided in to several lines, there is a possibility of accident during overtaking. But overtaking is necessary for various purposes. So a safe overtaking system is required for us for safety during driving the vehicles. It is seen that, when a car or small vehicle wants to overtake another vehicles or truck or lorry, then road accident can occur. So I would like to propose a system that will help someone to know the existence and distance of a vehicle when he is at the back of a big vehicle or truck. It will help to overtake safely without any road accident.In this project,we provide safety for the passenger and driver by a signal light which assists the drivers during some hard situations.

IndexTerms—sensor,overtaking,safetysystem,light indication,collision avoidance,artificial intelligence.

I. INTRODUCTION

The number of automobile users is increasing day by day. At the Same time, traffic congestion has become a worldwide problem. This problem is mainly due to human driving which involve reaction time delays and judgment errors that may affect traffic flow and cause accidents. Road accident is most unwanted thing that happens to road user. In Indian scenario, normally vehicles equipped with ABS (Anti-Lock Braking System), traction control, brake assists etc. for driver's safety. All these systems employ different types of sensor to monitoring the condition of the vehicle and respond in an emergency situation. This smart braking system has to be work with ABS (Anti-Lock Braking system) equipped in vehicle in order to increase vehicle stability during emergency braking. The primary objective of this paper is to develop a safety car braking system using ultrasonic sensor and to design a system with less human attention to driving.

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II. METHODOLOGY

A.WORKING

The OA is a safety application that serves during overtaking situations. It generates a warning if a driver attempts to pass a slower moving vehicle ahead while one or more vehicles occupy the opposite direction lane. Many luxury cars support overtaking maneuvers. For instance, the BMW 5-series can overtake at the touch of a button, which triggers an automatic maneuver. The sensors allow estimating whether it is safe to pass the car in front or not. However, overtaking a long vehicle or two or three vehicles can be dangerous, due to distance and low visibility. Moreover, the OA system can be defective in bad weather conditions, including fog, ice, snow, and rain. Thus, the system is not able to detect the oncoming vehicles from the opposite direction due to the limited detection capacity of the sensors. In favor of improving safety, the inter-vehicle communication has been developed in the OA system, giving a *Cooperative Overtaking Assistance* (COA) system. Many COA systems rely mainly on the periodic transmission of the status information by every vehicle to all other vehicles in range. These messages, called beacon messages or beacons, contain information about current position, speed and direction.

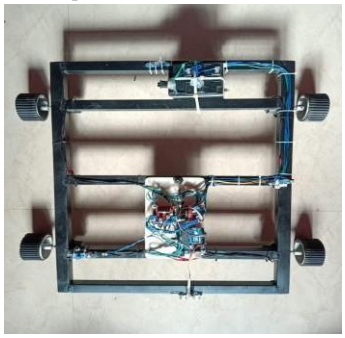


FIG 1 PROTOTYPE

III. COMPONENTS

A.ULTRASONIC SENSOR

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear).

B .ARDUINO MICROPROCESSOR

Arduino refers to an open-source electronics platform or board and the software used to program it. Arduino is designed to make electronics more accessible to artists, designers, hobbyists and ayone interested in creating interactive objects or environments. An Arduino board can be purchased pre-assembled or, because the hardware design is open source, built by hand. Either way, users can adapt the boards to their needs, as well as update and distribute their own versions.

FEATURES OF ARDUINO MICROPROCESSOR

- The operating voltage is 5V.
- The recommended input voltage will range from 7v to 12V.
- The input voltage ranges from 6v to 20V.
- Digital input/output pins are 14.
- Analog i/p pins are 6.
- DC Current for each input/output pin is 40 mA.
- DC Current for 3.3V Pin is 50 mA.
- Flash Memory is 32 KB.

C.INFRARED SENSOR

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called a passive IR sensor.

D.GEAR MOTOR

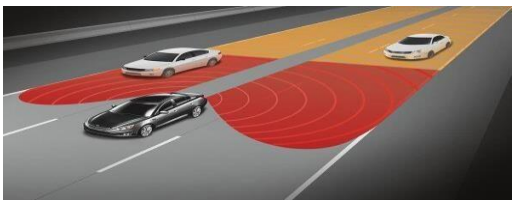
A gear is a rotating circular machine part having cut teeth or, in the case of a cogwheel or gearwheel, inserted teeth (called cogs), which mesh with another toothed part to transmit torque. A gear may also be known informally as a cog. Geared devices can change the speed, torque, and direction of a power source. Gears of different sizes produce a change in torque, creating a mechanical advantage, through their gear ratio, and thus may be considered a simple machine. The rotational speeds, and the torques, of two meshing gears differ in proportion to their diameters. The teeth on the two meshing gears all have the same shape.

Two or more meshing gears, working in a sequence, are called a gear train or a transmission. The gears in a transmission are analogous to the wheels in a crossed, belt pulley system. An advantage of gears is that the teeth of a gear prevent slippage. In transmissions with multiple gear ratios—such as bicycles, motorcycles, and cars—the term "gear" (e.g., "first gear") refers to a gear ratio rather than an actual physical gear.

E.SIGNAL LIGHT

A safe overtaking system is required for us for safety during driving the vehicles.It is seen that, when a car or small vehicle wants to overtake another vehicles or truck or lorry, then road accident can occur. So I would like to propose a system that will help someone to know the existence and distance of a vehicle when he is at the back of a big vehicle or truck. It will help to overtake safely without any road accident.

It can work within the range 10 cm distance. During practical application, it needs to be increased. If the distance between the front vehicle and truck is more than 10 cm distance, green light will on. It means that overtake is safe. If the distance between the front vehicle and truck is less than 10 cm distances, it means that overtake is not safe and the red light will be on.



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While driving on roads with more than one lane, lane changing may be required to overtake another vehicle, to avoid a parked vehicle or when the vehicle ahead slows to turn at an intersection. Proper signal or indicator is very important while changing lanes to ensure safe move. Vehicle overtaking, also known as 'passing,' is changing lanes or driving around another vehicle to move past a slower vehicle. Do not overtake other vehicle unless you are sure that you can do so without placing yourself in a dangerous position.

IV. CONCLUSION

Overtaking is one of the main reasons of road accident all over the world. Most of the time, drivers are not so careful when they overtake a vehicle in front of him. Sometimes they try to overtake without knowing the existence and distance of another vehicle. As a result, the development of a technology with a view to overtaking safely is too much important now. So we should involve in such technological field to ensure safety. Because, one of the main reason of development of a country, also depends on the safe transportation.

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