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Intelligent Reverse Braking System

Hitesh Kumar S P[1], Jayanth H[2]
[1, 2]*Dept, of Mechanical Engineering, Dr. Ambedkar Institute of Technology, Bangalore*

Abstract: Vehicle is very important source for human beings in currents world, the brakes in vehicle is critical area which can save and take life. So, we developed the intelligent reverse braking system which consists of a Microcontroller and ultrasonic sensors. This ultrasonic sensor detects objects and brakes automatically so this avoids accidents and saves car also life present in it. Our aim is to avoid accidents in back of the car also there are many system used in front for automatically brake but in case of ditch presence while reversing is problem for the driver safety. so, we came to implement intelligent braking system to sense ditches and objects then applies brake automatically.

I. INTRODUCTION

The braking system of vehicles are very important area, there are main research and innovations are came in collision avoiding front braking systems, and they also used cameras and made system complicated, we concentrated this area and came with the concept of the reverse ditch and obstacle sensing using the ultrasonic sensor so by this the ultrasonic sensor detects the ditches, plot holes and unconditional imbalance of roads it's automatically apply brakes then save car as well as life present in it. It also important to add a safety device in back side of car also, this system can be opted for all automobile vehicles. The operation of our prototype is controlled by Microcontroller.

II. LITERATURE REVIEW

A. An intelligent reverse braking system is compiled with IR sensor circuit which operates a pneumatic braking system. The main target for this project is cars can run reverse automatic braking due to obstacles when the sensor senses the obstacles. The braking circuit function is to brake the car automatically after received signal from the sensor. This mainly concern in replacement of human effort by the mechanical braking. So it is the best safety feature for the vehicles.

1) *Limitations:* This project is implemented to only obstacle not for ditches, and also used IR sensor which detects object when it is too nearer.

B. To develop safety, when car gets too close to an obstacle, an alarm is triggered which may warn the driver. In this process, human error is also included. The actual time to stop the car is response time taken by the driver plus the time required by the braking system to brake the car and time of response of driver is much of a greater influence. Hence, it is required to make an automatic reverse braking system. Pneumatically operated reverse braking which is activated when ultrasonic sensors sense an obstacle

1) *Limitation:* All this system is designed only for obstacles not ditches.



2) *Solution:* By reviewing all the two paper we came up with a solution to use ultrasonic sensor for ditch and obstacle with micro controller to process the input and actuate the brakes

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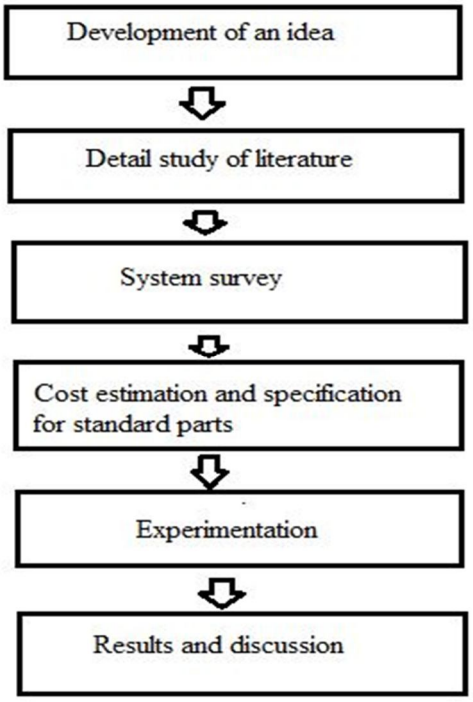
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III. OBJETIVE AND METODOLOGY

A. Objective

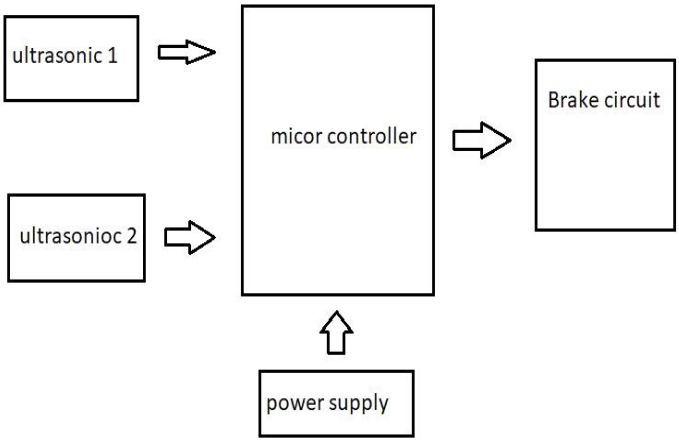
The main objective of the project is to reduce the accident caused in back side of car while taking reverse. It is difficult of driver to see condition of road in back side of car, so this project solves all the problem faced by driver while taking car reverse.

B. Methodology



IV. EXPERIMENTAL SETUP

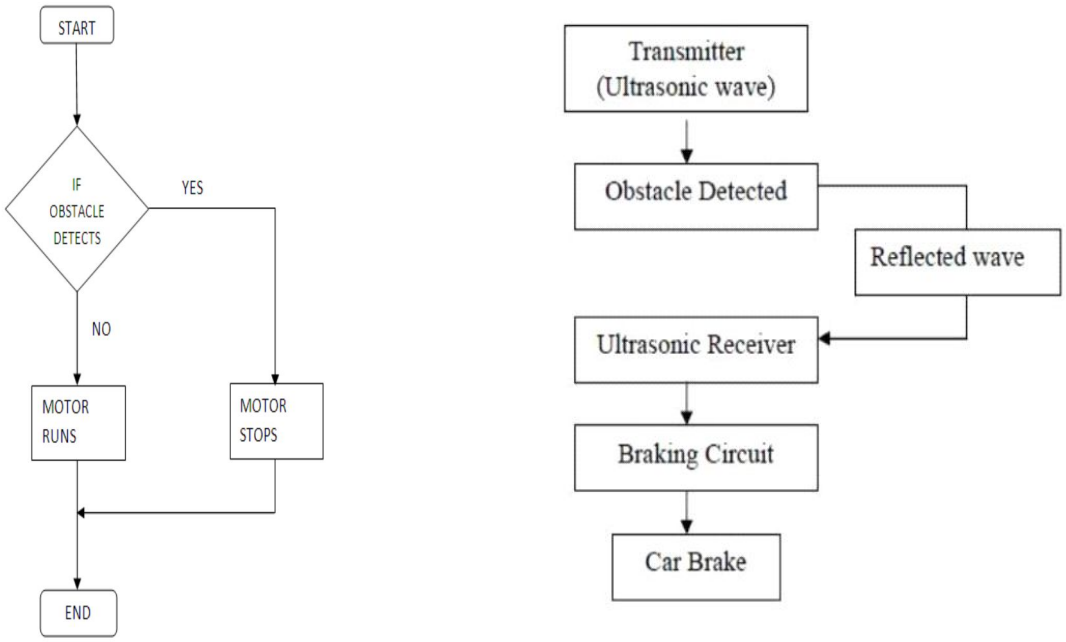
A. Construction



The above figure shown is a block diagram of the intelligent reverse braking system, in this system we used ultrasonic 1 for obstacle detection and ultrasonic 2 for ditching both sensors are placed back side of car to sense the parameter, the controller monitor inputs from sensor and activates the output according to it.

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B. Working



Flow chart of the system

This sensor is fitted in back of the vehicle. This sensor gets switched on once the vehicle is started and the sensor gives out the analog output continuously depending on the position of obstacle. When the obstacle is present back side of car the ultrasonic sense the distance and apply the brakes, the other ultrasonic sensor is used to detecting the ditches present while taking car reverse and apply the brake automatically. The micro controller is a power pack device which monitors the input from sensors and actuates the braking circuit.

V. ADVANTAGES

A. An ultrasonic sensor, cheaper and less demanding of hardware than other types of sensors presently used.
B. As ultrasonic sensors can detect any kind of obstacle, this system can also prevent collision of the vehicle with pedestrians, or can at least reduce the injuries occurring.
C. This lower cost of ultrasonic sensors compared with other kinds of sensors, could facilitate the application and mounting of the system in many low-end vehicles, helping to improve comfort and safety and offer a hassle free driving experience at a reduced cost.
D. As system does not take whole control from driver, the ‘ risk ‘factor due to false indication gets reduced.
E. It allows the driver to maintain directional stability and control over steering during braking.
F. Safe and effective
G. Less time and more profit.
H. An ultrasonic sensor, cheaper and less demanding of hardware than other types of sensors presently used.
I. As ultrasonic sensors can detect any kind of obstacle, this system can also prevent collision of the vehicle with pedestrians, or can at least reduce the injuries occurring.
J. This lower cost of ultrasonic sensors compared with other kinds of sensors, could facilitate the application and mounting of the system in many low-end vehicles, helping to improve comfort and safety and offer a hassle free driving experience at a reduced cost.
K. As system does not take whole control from driver, the ‘ risk ‘factor due to false indication gets reduced.

VI. LIMITATIONS

A. Continuous power supply for circuit
B. The circuit design should be away from moisture otherwise shock circuit may occur.

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VII. APPLICATIONS

A. We can use this system as safety purpose.
B. Highly accurate system for automatic braking system.
C. Less operating force is required
D. Automated operation
E. Used in cars and trucks

VIII. CONCLUSION

Finally, we implemented this intelligent to reduce the accident occur while taking reverse of car, by adding the above features we enhance the safety of car in back side. So by all the braking system enhancement we can achieve 360 degree protection of car.so this all feature is safe for all humans and reduce many accidents and saves many lives.

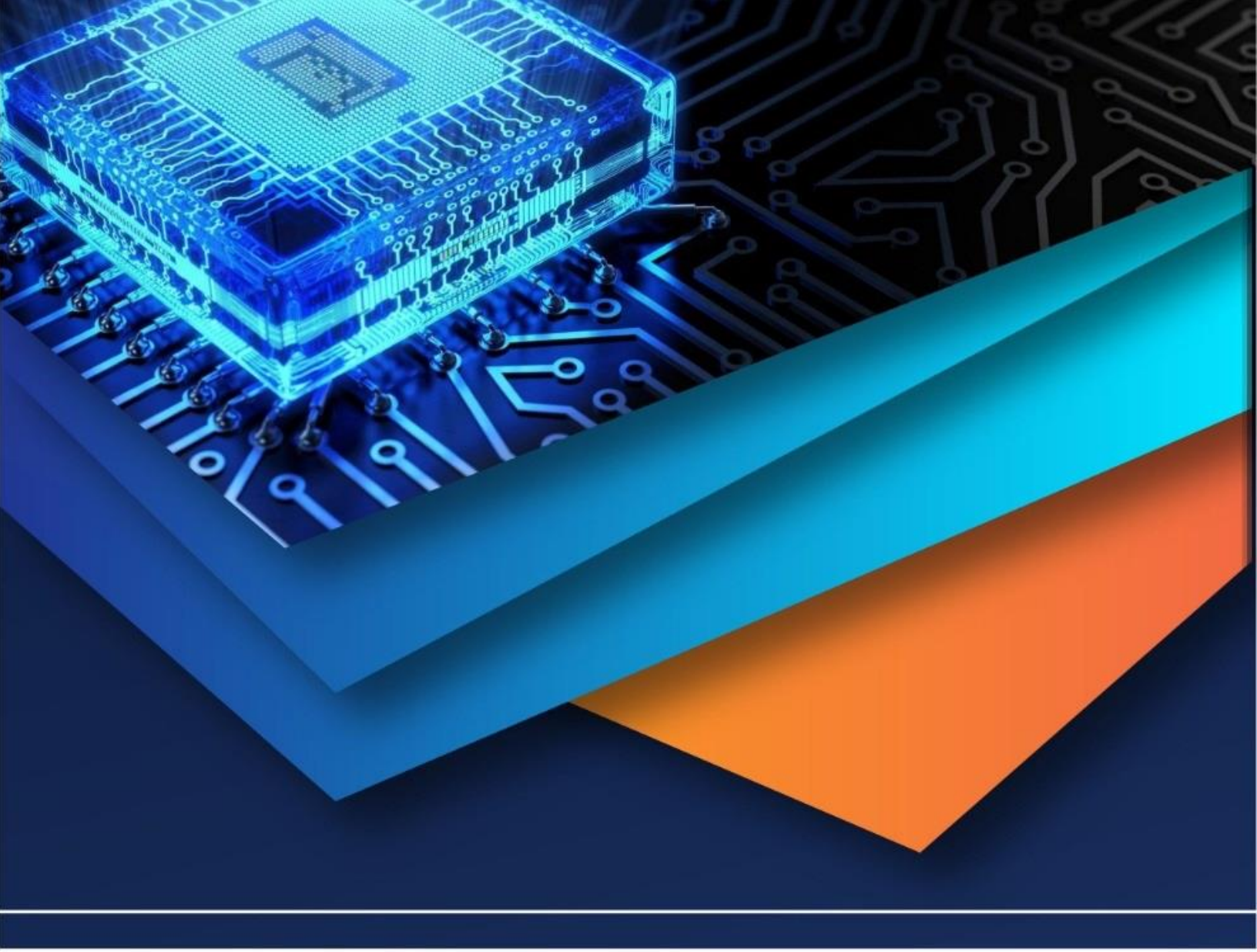
IX. FUTURE OF SCOPE

With minor modifications we can increase the range, process speed, and response speed by introducing advance controllers and sensors.

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