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Review Paper on Design and Fabrication Emergency Braking System in Four-Wheeler

A. N. Madne[1], Ritik Bahoriya[2], Dhanshree Deshmukh[3], Pranav Soni[4], Vinit Ashtankar[5], Suraj Chavhan[6], Devansh Tambade[7]

[1]*Project Guide,* [2,3,4,5,6,7]*Students, Dept. of Mechanical Engineering ,K.D.K. College of engineering , Nagpur, Maharastra, India*

Abstract: Most people prefer to use cars and four-wheelers for efficient transportation. Vehicle technology is on the rise, especially in braking and detection systems.

Vehicles equipped with modern braking technology are designed with a simple collision avoidance system, which will help to detect a possible collision and to apply the emergency brake to avoid it. Such technologies will reduce the number of accidents that cause the most serious damage, serious injury and even death. In this automatic braking system, there is a four-wheeled trolley in which sparse wheels are motorized for the drive wheel. The front wheels have been pivoted for the fasteners. The new friction brakes are designed for emergency braking.

The brakes are operated by a motorized mechanism, which is loaded with a spring. Driving is controlled remotely. Two sensors are used for the front and rare to avoid damaging the car when parking. The sensors used are of the capacitive type which can detect both metallic and non-metallic obstacles. Two sensor relays are also used to activate the brake motor when obstacles are detected either in the forward or reverse direction.

I. INTRODUCTION

Driving is a mandatory activity for most people. People use their car to move from one place to another. The number of vehicles increases day by day. Today, accidents are increasing and uncertain. Accidents will happen every time and everywhere and will cause the worst damage, serious injury and even death.

These accidents are mainly caused by the driver's delay in applying the brake. This project is designed to develop a new system that can solve this problem where drivers cannot manually brake, but vehicles can automatically stop when obstacles are detected. This project is about a system that can control the braking system for safety. Using ultrasonic as the range sensor, its function is based on ultrasonic waves.

After transmitting by the transmitter, the wave can be reflected when an obstacle is detected, and then received by the receiver. The function of the braking circuit is to automatically slow down or stop the car after receiving the signal from the sensor.

II. LITRATURE REVIEW

Various attempts were made in the past to improve braking systems to achieve best accident prevention methods. The existing systems in current automobile industries and the novel approaches published in literatures were review. This approaches in preventing accidents is Honda‟s idea of Anti-lock Braking System (ABS) which helps the rider get a hassle free braking experience in muddy and watery surfaces by applying a distributed braking and prevents sliding . Volvo‟s new launch XC60 SUV will sport laser assisted braking which will be capable to sense a collision up to 50 km and apply brakes automatically. Existing Methods of Accident Preventions are:

A. Pre-Sense Plus

The version of the system (Pre-Sense Plus) works in 4 phases. In the 1phase, the system provides warning of an impending accident, while the dangerous warning lights are activated, the side windows and sunroof are not open and the front seat belts are tightned. In the second phase, the alert is followed by light braking, secure enough to win the driver's attention. The third phase initiates independent partial braking at a rate of 3 m/s². The fourth phase decelerates the car at 5 m/s² followed by instinctive deceleration at full braking power, harshly half a second before projected impacted.ct the car's

B. Pre-Sense Rear

A second system, called (Pre-Sense Rear), is designed to reduce the consequences of rear-end collisions. The sunroof and windows are shut and seat belts are prepared for impact. The optional memory seats are moved in front to protect the car'ss

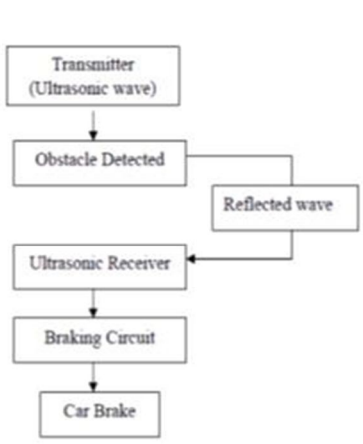
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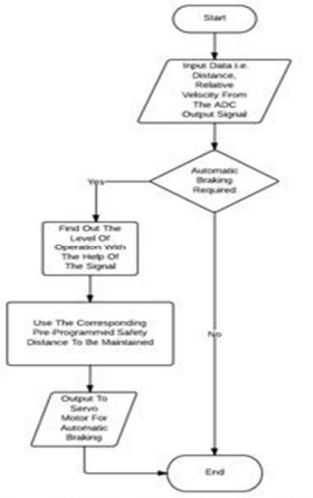
C. Collision Warning with Brake

Support Ford's Collision Warning with Brake Support was invented in 2009 on the Lincoln MKS and MKT and the Ford Taurus. This setup provides a warn through a Head Up Display that visually resets brake lamps. If the driver does not respond, the system pre-charges the brakes and impove the brake assist sensitivity to improve driver braking performance. Ford demonstrated its hurdels Avoidance technology relying on a combine of sensors, including a camera tucked at back of the rearview mirror, to scan the road for vehicles and pedestrians and steer away if the driver does not take any action.

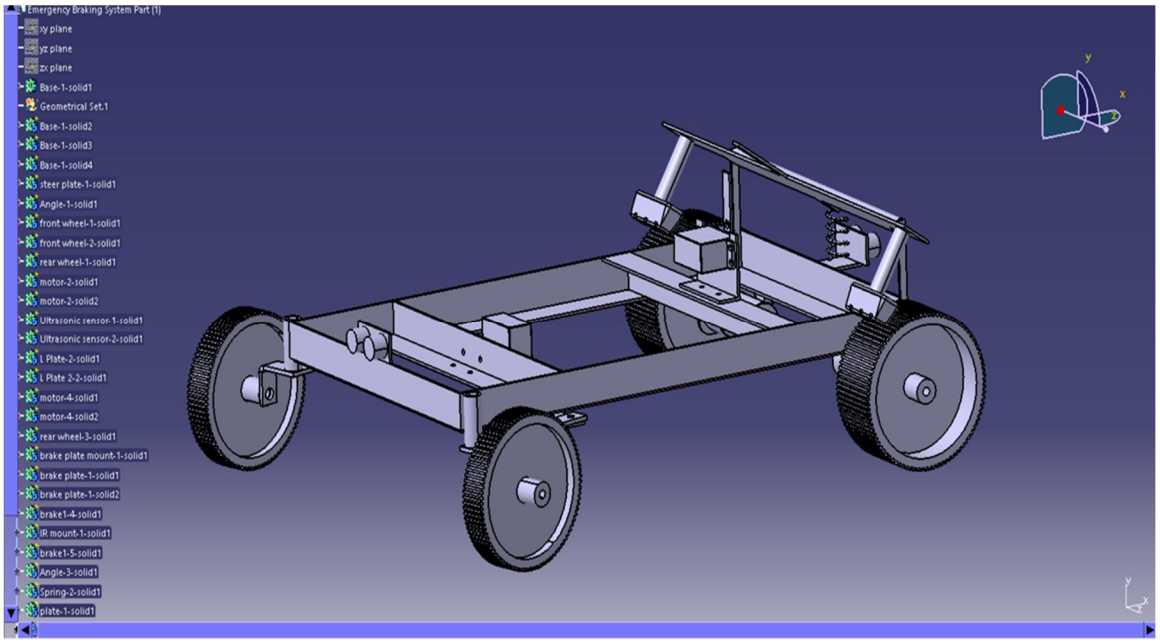
III. METHEDOLOGY

In this automatic braking system, Rare wheels are four-wheeled motors for drive wheels. The front wheels are rotated to look at the machinery. New friction brakes are designed for emergency brakes. The brakes are operated by a spring-loaded motor. The car is controlled by remote control. Two sensors are used in the front of the car to avoid damage to the car when parking is rare. The sensors used are capacitive types that detect metal and non-metallic barriers. In addition, Two relays are used behind the sensors that activate the brake motor when sensing obstacles in the reverse direction.





IV. CATIA DESIGN



V. FUTURE SCOPE

If we could reduce the braking disturbance of the brakes and assign an Intelligence Sensor that would trigger a response and trigger the alarm first. If it is closed at a distance, the brakes will be applied automatically and the vehicle will be stopped at a high level. Such distraction is a leading cause of death in traffic accidents. Therefore, by implementing this system, we can reduce the risk of accidents. By pulling the front seat in the opposite direction, the impact distance and direct impact time can be increased to reduce fatalities and increase vehicle safety, as well as add new features that appeal to car enthusiasts. Safety while traveling.
The results of the demonstrations showed that the use of an energy-efficient seat system effectively reduced the collision speed and significantly reduced it compared to conventional seat systems.

VI. CONCLUSION

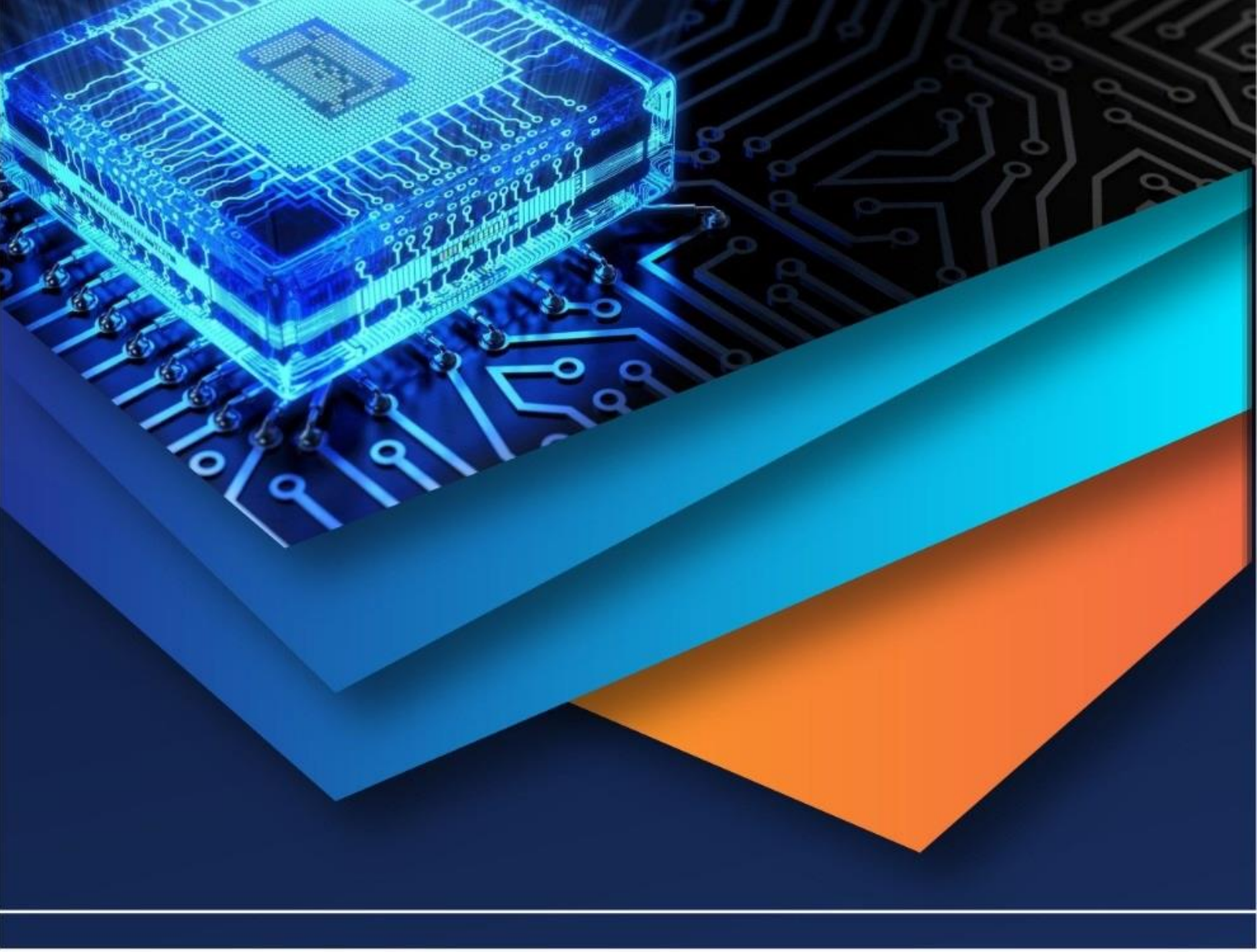
The proposed program for automotive braking systems has many potential applications in developed countries, especially in the field of smart vehicles and intelligent highway research. This system can be used in four-wheel drive vehicles to reduce the number of road accidents.

Automatic gravity control system; When combined with other subsystems, such as the intelligent braking system and the automatic cruise system, the system will be able to drive smart vehicles. In modern industry, it is necessary to handle carts and machinery as well as industries.

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