

A Review on Smart Braking System

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ABSTRACT: *The braking mechanism was engineered and added to the car to ensure the safety of the driving phase using the built-in system architecture. Most of the crash happens due to the delay of the driving force to touch the brake, but during this project work braking mechanism is defined when it is working that the brake should be applied based on the ultrasonic sensor and the speed of the vehicle. Today, cars are also fitted with active protection devices to reduce the risk of collisions, many of which occur in urban areas. Antilock Braking Systems (ABS), Traction Control and Stability Control are the most common of these devices, various types of sensors are used to continuously track the environment of the vehicle and to respond in an emergency situation. Intelligent braking mechanism involves an ultrasonic wave emitter on the front side of the vehicle. In addition, the receiver is located on the front portion of the vehicle and receives a reflective ultrasonic pulse. The reflected wave (detected pulse) gives the distance between the problems and the car and the RPM counter gives the speed of the car. The microcontroller works to handle the braking of the vehicle assisted by the identification pulse information to shift the foot lever to apply the brake to the car surprisingly for safety purposes.*

KEYWORDS: *Antilock Braking System (ABS), brake, Hydraulic Brake, Intelligent, Microcontroller, Sensor.*

INTRODUCTION

Braking devices for commercial vehicles have always been given the highest priority in terms of safety concerns and, in particular, active safety. Inappropriate braking of these vehicles can trigger serious accidents. Relatively longer stopping distances and improved energy performance of the brakes, especially in the case of car combinations [1]. The traditional medium used for braking (compressed air) is also operated at a speed and the accuracy provided by new electronic capabilities. IBS has been implemented in commercial vehicles to provide rapid brake reaction and release for any single wheel. Rapid quantity given by electronic control is also used

To reduce the braking distance critically by implementing improved braking system control. Such an elaborate duty placed on the control of the braking mechanism cannot be supported by the capacity of the driving force and needs to be carried out independently of the driving force. Improved control of the ABS braking powers [2] would certainly make it easier to carry out the task. The braking force management technique presented here relies on intelligent control of the application of braking forces between the front and rear axles of the propelled vehicle and/or between the towing/trailer combination and/or between the tractor/semi-trailer combination.

Intelligent braking system has many potential applications, especially in developing countries, where research on smart vehicles and intelligent highways receives a great deal of interest. The system, when combined with other subsystems such as automatic traction system, intelligent throttle system, auto cruise system, etc., would end with smart vehicle maneuvering. The guiding force at the end of the day will become the rider, safety will be given the highest priority and the journey will also be configured in terms of its slow length, expense, productivity and luxury capacity [3]. The effect of such design and production would be commensurate with the need of a society up to this stage, which also aspires to quality drive in order to satisfy the need. Advances in technology, especially in the field of smart sensors and actuators [4]. The development of a digital signal processor increases the power and functionality of the microcontroller. The overall system is meant to be the same as the the value of the inter-vehicle distance from the infrared laser sensor and the speed of the follower car from the speedometer are fed into the DSP for processing, resulting in the proper working of the DSP to the actuator [5].

1.1 NEED FOR THE PROPOSED FRAMEWORK

Accidents are caused by a mechanical malfunction inside the car or by a driver's error. Often drivers lose control of the car and sometimes there is an accident due to reckless driving. Where it comes to drivers, It come to see where the car goes to the crash, they get scared, and they don't apply the brakes. The bulk of injuries happen in this manner [6]. The device designed to avoid such injuries. Keeps track of all type of vehicles which are just ahead. It's going to keep track of the gap between the two cars. If two cars are dangerously closed, the microprocessor inside the system can actuate the brakes to stop the car [7].

1.2 Current System

Honda's concept of ABS, which allows the rider to obtain stress-free braking experience on slippery and watery surfaces by applying dispersed braking, and avoids skidding and wheel locking, in addition to Volvo, which was fitted with Laser-assisted braking. This can predict a crash up to 50 mps and apply the brakes automatically. ABS can only activate support if the rider manually applies it to the proper time and manages the space measurements.

LITERATURE REVIEW

The Intelligent Braking Device, if executed, would prevent many accidents and could save human lives and property. The introduction of such a complex system is often made obligatory much like wearing seat belts, meaning that injuries are often avoided to some degree. Our Intelligent Braking Technology offers a snapshot into the long-term protection of vehicles, and the manner in which these specific devices are more sophisticated is also used to deter collisions and protect car passengers after they are combined into a single system [8].

DISCUSSION

Arduino is an open-source framework used for the development of electronic ventures. Arduino consists of both a microcontroller and a bit of software, or an IDE (Integrated Programming Environment) that runs on the device, is used to write and upload code to the physical screen. The Arduino doesn't require a special piece of hardware (called a programmer) to load new programming onto the board – you'll only be able to use a USB cable. In comparison, the Arduino IDE uses a simpler version of C++, making it easy to find out about the programme.

Ultrasound spectrum and identification of high-frequency sound wave instruments to track and detect the presence of an entity. This devices either calculate the reflection of the sound waves on the surfaces or track it. Interruption of the sound beam when the artifacts are moving between the transmitter and the receiver. The ultrasonic sensor naturally uses a transducer that induces electrical output signals in response to the received ultrasonic wave. In this case, the horizontal opening angle shall be at least 8 degrees for a span of 75 meters between vehicles.

The hydraulic braking system operates under Pascal law, which specifies that "pressure force acting within the system is the same overall direction." According to this rule, as the friction is applied to the fluid, it will travel similarly. The instructions also extend consistent brake operation to all four wheels. When the force is applied to the foot pedal, the brake cylinder will feel the force at the connecting rod that allows the piston to move. Inside the brake cylinder cavity, the fluid inside the chamber rushes into the brake caliper, and the pistons inside the caliper feel the fluid friction that allows the pistons to press the brake pad towards the caliper. Rotating disc with a braking force.

CONCLUSION

The Intelligent Braking Device, if executed, would prevent many accidents and could save human lives and property. The introduction of such a complex system is often made obligatory much like wearing seat belts, meaning that injuries are often avoided to some degree. Our Intelligent Braking Technology offers a snapshot into the long-term protection of vehicles, and the manner in which these specific devices are more sophisticated is also used to deter collisions and protect car passengers after they are combined into a single system. The long run of vehicle safety is over the development of advanced technology; the approach to safety is changing. The approach of the Intelligent Braking System reflects a significant change from the traditional approach to safety, but it is necessary to gain meaningful benefits.

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