

**International Journal of Research Publication and Reviews** 

Journal homepage: www.ijrpr.com ISSN 2582-7421

# **Intelligent Braking System and Motorized Braking**

# B. Rojasree<sup>1</sup>, B. Adarsh<sup>2</sup>, K. Narendra<sup>3</sup>, S. Mohammed Kaif<sup>4</sup>, K.M. Lakshmi Narahari<sup>5</sup>, G.Sudhakar<sup>6</sup>, Y. Girish<sup>7</sup>,

12.3,4,5,6,7 Department of Mechanical Engineering, Sanskrithi School of Engineering, Puttaparthi, Sri Sathya Sai Dist., Andhra Pradesh, India.

#### ABSTRACT :

The vehicles in city signals are stopped nearer to each other in a fastmoving world and it is very difficult to maintain distance between the vehicles. The driver suddenly loses the vehicle's control if the vehicle is going in the road, then the driver dashes the vehicle to the tree. This will result in loss of lives and a damaged vehicle itself. When two vehicles are successively on road or while overtaking other vehicle, and suddenly the first vehicle applies brake and slows down the vehicle, then second vehicle dashes the first vehicle because there is no proper distance between the vehicles. This will damage the vehicle. The above things is to reduce by device so that the accidents and damages to the vehicle can be prevented. This is very useful for autonomous vehicles, emergency braking cases, and adaptive cruise control systems where response time must be as quick as possible. Such a system can be implemented to great effect to road safety, reduce accidents and improve vehicle performance in general. The objective of this project is to develop a prototype of intelligent braking systems in modern transportation to show the feasibility of such systems which would lead to safer and energy efficient transportation.

Key Words: ATMEL microcontroller, Ultrasonic Transmitter, Receiver, Buzzer, Frame, Battery, Motor, shaft&Bearings.

# 1. INTRODUCTION

While we tend to travel inside the vehicle, we must always control the break if any objects are approaching people. For that, we have designed this project for automatic braking system. Whenever we tend to control the break, at the moment what occurs inside the system indicates that one among the coil winding is wrapped around it. It produces the emf and it's equipped with the right mechanical set. Once we release the break the generation of force ceases and also the coil winding disengages from the mechanical set. As autonomous vehicles, smart manufacturing, and industrial automation gain wider usage, intelligent braking solutions are gaining importance. This project investigates the design and application of a motorized braking system that uses contemporary control methods and sensor feedback to improve braking performance.

#### 2.LITERATURE REVIEW

Literature survey is conducted to know the state of art of sensor technology applied in automotive engineering. Following are the following journals. Hemalatha B K, Paper includes the application of Infrared sensors for detecting obstacles with the assistance of PIC microcontroller. This aided microcontroller technology in aggregation data related to speed and transmitted it via a transceiver to a base station which processes the transmitted data and makes relevant decisions related to regulation and management requirements, paper includes utilization of ultrasonic sensors with assistance of PIC microcontroller, transducers and servo motor braking system. It is designed to use in cars wherever the drivers may not apply brakes manually, but the velocity of the car is decreased mechanically due to sensing the obstacles.

#### **3.CONSTRUCTION**

#### Components

Intelligent Braking System and Motorized Braking has a number of important components that collaborate to effectively vehicle. The core components are:

- 1. Frame: This offers structural strength and stability to the machine.
- 2. Ultrasonic Distance Meter: A technique and system is revealed for imperative the condition of a member of a class of individual transmitter-receiver units dispersed in an demarcated facility.
- 3. Ultrasonic Transmitter and Receiver: Ultrasonic is any research or usage of sound waves higher frequency than the human hearable vary. Music and ordinary sounds that we generally think about pleasant typically twelve kilocycles per second or lower, while some humans will perceive frequencies as high as twenty kilocycles per second.

- 4. Atmel Microcontroller: It is discovering employing various area, ranging from plain children toys to extremely complicated spacecraft.
- 5. Micro Controller: A micro controller is a full microprocessor system developed on a single IC.
- 6. Buzzer: It consists of assortment of switches or sensors connects to a sway unit.
- 7. Bearings & Shafts: Minimizes friction and allows smooth motion of a vehicle.
- 8. Safety Cover: to minimize accidents in a road.



# 4. ADVANTAGES

- 1. The smart braking system ensures safe braking behavior on all road conditions, thereby preventing turning over of the vehicle. no electricity or fuel is needed, which makes it perfect for environmentally friendly family.
- 2. The intelligent braking system decreases friction on road and wheels, therefore improves tire efficiency (up to 30%).
- 3. The Intelligent braking system vehicle can be brought to a shorter distance compared to a vehicle without Intelligent braking system.
- 4. Steering control is efficient, i.e., the car can be controlled smoothly while braking. Thus reduces the accidents.
- 5. As noted earlier, an IBS does not lock up and skid, even under wet conditions. IBS brakes have been used to save lives in certain situations by enabling drivers to maintain control of a vehicle.
- 6. An ultrasonic sensor, less expensive and less taxing on hardware than the other sensors currently employed.

# **5.APPLICATIONS**

- 1. In today's days due to high accidents, it is installed in road transportation like Buses, Taxis, Cars, Passenger Vehicles.
- 2. Even it is fitted in Motorcycle, Mopeds and Light good vehicles.
- 3. Used in Electric Vehicles too.
- 4. For automotive use
- 5. It is applied in every Industrial application.

# 6.RESULT

The Intelligent Motorized Braking System was experimented on a test car under laboratory conditions. The system was found to respond very fast with a response time of around 0.18 seconds, much faster than manual braking. The braking distance decreased by 25–30% over manual braking, improving safety. Ultrasonic sensor-based obstacle detection had an accuracy of 97.5% at a range of 2 meters. In 50 consecutive test cycles, the system completed safe braking in 96% of the instances. The DC motor employed for actuation offered good consistency in performance, with steady torque and safe current levels during operation.

### **7.FUTURE SCOPE**

The development of the Intelligent Braking System (IBS) for motorized vehicles is an important step toward vehicle safety, but there are still many areas that need to be developed and explored. Areas for improvement and future development can include optimizing system performance, maximizing integration with future technologies, and broadening its use across a broader array of vehicles and driving conditions future. Future developments could also target optimizing driver interaction with the braking system. For example, feedback mechanisms can notify drivers of their current driving behavior and the way the system is modulating braking forces. This may be especially beneficial to educate drivers and enhance road safety awareness. Integrating haptic feedback in the brake pedal or steering wheel, notifying the driver of the system's activation.

#### CONCLUSION

In this report the innovative concept of implementing intelligent braking system is being talked about and hence analyzed its many parameters for dayto-day realistic application. Intelligent braking is one such smart option which can be applied in many applications for halting a moving body without any jerky motion. The prior research study explains clearly that action of microcontroller and Ultrasonic sensor contributes essential role to determine intelligent braking torque produced by brake actuation assembly. The report provides a brief discus of "Ultrasonic sensing element Distance Controller". there are few advantages in comparison to other automatic braking system. The intended system with ATMEL microcontroller support is discovered to be a lot of small, easy to use and less advanced, which could readily be utilized to accomplish numerous sophisticated tasks. Even though it's made with considerations in mind as far as business is concerned, it will be extended for other purposes such as business applications. due to the possibility of engineering (Atmel microcontroller) employed this "Ultrasonic device Distance Controller" system is completely package controlled with minimum hardware circuit.

#### **REFERENCES :**

- Hemalatha B K, P Pooja, Chaithra M, Mega S, Rakshitha R T Automatic Braking System for Automobiles Using IR Sensor (IJAREIE) International Journal of Advanced Research in Electrical, Electronics. and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization)
- Nishad Vivek Kumbhojkar & Chaitanya Avadhutchintan Kuber Ultrasonic Automatic Braking System for Forward Collision Avoidance with Accelerator Pedal Disengagement Mechanism, International journal & magazine of engineering, technology, management and research registrar of Newspapers of India (RNI) Regd No: APENG/2011/47294.
- G.V. Sairam, B. Suresh, CH. Sai Hemanth and Krishna Sai, "Intelligent mechatronic braking system", International Journal of Emerging Technology and Advanced Engineering, ISSN 22502459, Volume 3, Issue 4, April 13.
- DHANYA K. R. AND JEYANTHI KSR College of Engineering, Tiruchengode AUTOMATIC BRAKING SYSTEM WITH SENSOR FUSION CONCEPT (IIEEES)"Intelligent mechatronic braking system", International Journal of Emerging Technology and Advanced Engineering, ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 4, and April 13.