

Automatic pneumatic Bumper and Braking

¹Shivam K. Kapadi, ²Darshan C. Mulye, ³Ganesh J. Kothule, ⁴Pramod P. Mozar, ⁵Prof. S. P. Kadu

Department Of Mechanical Engineering, JSPM Narhe Technical Campus, Pune.

Abstract- *The aim of this project is to style and develop impact system primarily based intelligent electronically controlled automotive bumper activation and automatic braking system is termed AUTOMATIC gas BUMPER AND BREAK feat BEFORE COLLISION. This project consists of IR transmitter and Receiver circuit, management Unit, gas bumper system and gas braking system. The IR detector senses the obstacle. There's any obstacle nearer to the vehicle (within 3-4 feet), the management signal is given to the bumper activation system and conjointly gas braking system at the same time. The gas bumper and braking system is employed to product the person and vehicle. This bumper and braking activation system is barely activated the vehicle speed higher than 30-40 metric linear unit per hour. This vehicle speed is detected by the proximity detector and this signal is given to the management unit and gas bumper and braking activation system.*

Keywords- IR transmitter, IR sensor, bumper, and proximity sensor

1. INTRODUCTION

We have pleasure in introducing our project "AUTOMATIC gas BUMPER AND BREAK feat BEFORE COLLISION". That is totally equipped by IR sensors circuit and gas bumper and braking activation circuit? It's the project that has been totally equipped and designed for motorcar vehicles. The technology of mechanics plays a significant role within the field of automation and trendy machine retailers and house robots. The aim is to style and develop an impact system supported intelligent electronically controlled automotive bumper activation system is termed "automatic gas bumper and break feat before collision". The project consists of IR transmitter and Receiver circuit, management Unit, gas bumper system. The IR detector senses the obstacle. There's any obstacle nearer to the vehicle (within 1feet), the management signal is given to the bumper and break activation system. This bumper activation system is activated once the vehicle speeds higher than 40-50 metric linear unit per hour. The speed is detected by the proximity detector and this signal is transfer to the management unit and gas bumper activation system.

OBJECTIVE

There are many causes of accidents. Some of them are

- Ignoring traffic rules
- Drunken driving
- Dream driving
- Mechanical failures in the vehicle
- Mistakes of the drivers

All told these cases the essential reason cited is failure to use the brakes at the proper time. all told the higher than cases if the brakes square measure applied at the proper time, the accidents may be prevented. In standard vehicles there square measure totally different mechanism operated for braking system like hydraulic, pneumatic, air, mechanical, etc. however of these braking mechanisms receive the signal or input power directly from the driving force. Thus, braking of vehicles is completely manual operated. Once the driving force fails to watch the obstacle or any vehicle before of his driving vehicle, he might fail to present correct input to braking system and proper operating doesn't occur, resulting in accident. Conjointly the driving force might not able to pay the total attention throughout night travel therefore there square measure several probabilities to accidents. There's no provision to attenuate the injury of vehicles. Currently, bumpers utilized in vehicles square measure of rigid sorts. These bumpers have specific capability and once the vary of the accidental force is extremely high then the bumpers fail and these forces square measure transferred to the passengers. So, this designed system solely fairly reduces the injury of auto and/or passengers. To beat with all of those challenges, we've got designed of Braking System with gas Bumper. Thence the most objective to style a automatic system having gas bumper.

2. PROPOSED SYSTEM

The Warning systems square measure integrated with safety systems that warn the user regarding the potential threat. The warning system detects the potential threat level and decides whether or not a warning ought to be issued to the user through audile and/or visual signals. Several accidents may be avoided if correct braking is applied in right time. The assesses the potential threat level and decides whether or not a warning ought to be issued to the driving force. within the project, the proximity sensors (Sharp IR sensors utilized in the project) detects the space of close obstacles from vehicle, and provides signal to the comparator circuit (LM 358) which supplies output to the junction transistor circuit. If the obstacle detected by the proximity sensors is among the limit, the braking of the system takes place with the assistance of gas brakes. Thus, the probabilities of attainable collision of auto square measure greatly reduced.

2.1 introductions to safety system

The aim is to design and develop a control system based on pneumatic breaking system of an intelligent electronically controlled automotive braking system. for comparison of

iterative technologies / techniques. The final phase of the new modern vehicle shall include:

- Development of improved ABS control systems
- Development and assessment of an electro-hydraulic- BBW (EH-BBW) system
- Individual wheel braking combined with traction control
- Assessing sensor failure and fault tolerant control system design
- Preliminary studies into an electrically actuated system
- Re-engineering using simplified models.

2.2 PNEUMATICS

The word ‘pneuma’ comes from Greek and means breather wind, for automation. Pneumatic systems operate on a supply of compressed air which must be made available in sufficient quantity and at a pressure to suit the capacity of the system. When the pneumatic system is being adopted for the first time, however it will indeed be necessary to deal with the question of compressed air supply.

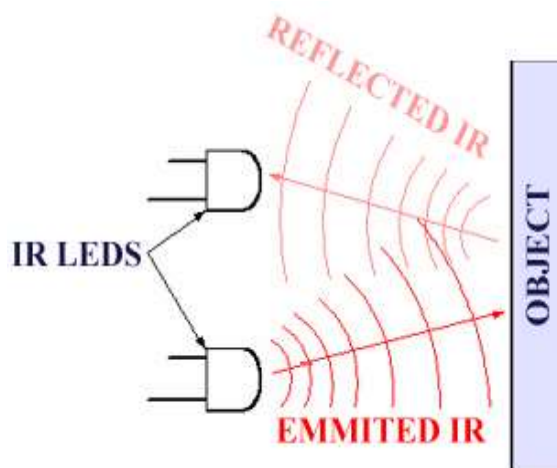


3.3. IR SENSOR

A sensor is a transducer used to make a measurement of a physical variable.

Types of sensor: Passive sensors detect the reflected or emitted electro-magnetic radiation from natural sources, while active sensors detect reflected responses from objects which are irradiated from artificially generated energy sources, such as radar.

The most popular sensors used in remote sensing are the camera, solid state scanner, such as the CCD (charge coupled device) images, the multi-spectral scanner and in the future the passive synthetic aperture radar. Laser sensors have recently begun to be used more frequently for monitoring air pollution by laser spectrometers and for measurement of distance by laser altimeters.



COMPONENTS AND DESCRIPTION

1. SELECTION OF PNEUMATICS: Mechanization is broadly defined as the replacement of manual effort by mechanical power. Pneumatics is an attractive medium for low cost mechanization particularly for sequential or repetitive operations. may be economic and can be advantageously applied to other forms of power).The main advantages of an all-pneumatic system are usually economy and simplicity, the latter reducing maintenance to a low level. It can also have outstanding advantages in terms of safety.

2. PNEUMATIC COMPONENTS AND ITS DESCRIPTION

The pneumatic bearing press consists of the following components to fulfill the requirements of complete operation of the machine.

1. Pneumatic single acting cylinder,
2. Solenoid valve
3. Flow control valve
4. IR sensor
5. Unit Wheel and brake arrangement
6. PU connector,
7. Reducer,
8. Hose
9. Collar
10. Stand
11. Single phase induction motor.

3. PNEUMATIC SINGLE ACTING CYLINDER:

Pneumatic cylinder consist of

- A) PISTON B) CYLINDER

The cylinder is a Single acting cylinder one, which means that the air pressure operates forward and spring returns backward. The air from the compressor is passed through the regulator which controls the pressure to required amount by adjusting its knob. A pressure gauge is attached to the regulator for showing the line pressure. Then the compressed air is passed through the single acting 3/2 solenoid valve for supplying the air to one side of the cylinder.

4. SOLENOID VALVE

These are also used to operate a mechanical operation which in turn operates the valve mechanism. **BRAKES:** Brake is a mechanical device which inhibits motion, slowing or stopping a motion object or preventing its motion. Brake is generally applied to rotating axles or wheels, but may also take other form such as the surface of a moving fluid.

IR SENSOR UNIT: The IR transmitter and IR receiver circuit is used to sense the obstacle.

NORMAL CONDITION: The IR transmitter sensor is transmitting the infrared rays with the help of 555 IC timer circuit.

OBSTACLE CONDITION: At Obstacle conditions the IR transmitter and IR receiver, the resistance across the Transmitter and receiver is high due to the non-conductivity of the IR waves.

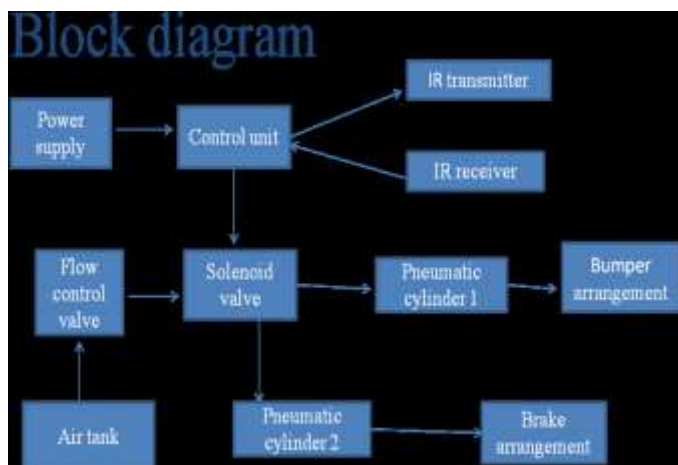


Fig1: Block Diagram Our Project

ADVANTAGES

1. It able to Increase the sureness in braking system.
2. Braking system able to give fast response.
3. System able to increase the pre-crash safety.
4. System able to provide more safety to the passengers.
5. System plays an important role to save human
6. Life in road accidents.

LIMITATIONS

1. System has few limitations in densely traffic road.
2. System has no provision to prevent and cure the accidents from rear side of vehicle.
3. Hard and thick materials cannot be riveted.
4. Due to the linkages there will be frictional losses.
5. Maintenance will be more due to the number of moving parts.

6. Stroke length is fixed.

APPLICATIONS

1. This system may be applicable in all types of light vehicles like cars, Rickshaws, Tempos.
2. This system also successfully installed in the heavy vehicles like buses, trucks, trailers, etc.

3. CONCLISION

We have completed the rendered module and extraction module in which the image, text file and small audio file are successfully hide into image also retrieves the original file without changing the size of file and resolution. We have also provided the option to the hides the large files into multiple images using the fragmentation and provide the map for user. The current Project implementation, LSB extraction and the Rendering image module of text file, image file and audio file are completed.

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