FABRICATION OF INTELLIGENT BRAKING SYSTEM

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Abstract: In present days, to reduce the risk of accidents, Vehicles are often equipped with active safety systems. Accidents are most commonly occurring in urban environments. Antilock Braking Systems (ABS), Traction Control and Stability Control are the most popular systems, which consist of different types of sensors. These sensors help to constantly monitor the condition of the vehicle. In this paper, for controlling the speed of a vehicle the used of ultrasonic sensors in safety systems is proposed. An intelligent mechatronic system consists of an ultrasonic wave emitter which is fixed on the front section of a car emitting ultrasonic provided on the front portion of a bike and car producing and emitting ultrasonic waves towards a front direction, a predetermined distance. For receiving ultrasonic wave signal an ultrasonic receiver is also fixed on the front section of car and bike. The reflected wave (detected pulse) help to identify the distance between the obstacle and the vehicle. Based on the detected pulse information a microcontroller controls the speed of the vehicle and push the brake pedal and apply the brake to the car or bike for further safety.

I. Introduction

Driving could be an obligatory activity for many individuals. people use cars to maneuver from one place to another. the number of vehicles is increasing day by day. Nowadays, the numbers of an accident are therefore high and falteringly. Serious injury and death accidents occur usually and cause worst injury. These accidents are largely caused by to delay of the driving force to hit the brake. This project is meant to develop a new system that can solve this drawback wherever drivers may not brake manually however the vehicles can stop automatically due to obstacles. The most target for this project is bike and cars can run automatic braking due to obstacles, when the sensor senses the obstacles. The braking circuit perform is to brake the automobile car automatically after a received signal from the sensor. The using ultrasonic sensor, primary objective of this is often to develop a safety car braking system and to design a vehicle with less human attention to the driving.

Need for this system

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radiolocation and a forward-sensing wide-angle camera to continuously monitor the realm ahead of the vehicle. CWAB-PD system is an efficient methodology to avoid accidents. Keller [2] given a completely unique active pedestrian safety system that combines sensing, deciding, scenario analysis, and vehicle control. Detection performance is expounded to the number of matches between the bottom truth and system-detected object locations. There are the subsequent two important aspects: 1) sensitivity and 2) preciseness. Sensitivity relates to the share of true solutions that were found by the system (i.e., detection percentage), whereas preciseness relates to the percentage of system solutions that were correct. A sensitivity and preciseness of 100 percent are ideal: the system finds all real solutions. Lokey [3] investigated an automatic safety brake for rotary blade instrumentality during which a capacitance proximity detector utilizes. the sensitivity of the detector could also be adjusted to suit the capacitance impact of the individual user of the instrumentality. the first object of the invention is to produce an automatic brake for the rotary blade of rotary blade instrumentality motivated by an approach of the human body to the blade. Leiber [4] invested a hydraulic brake booster for a vehicular brake system, which is actuated by means of a brake pedal. An improved hydraulic brakes booster together with a booster cylinder and a dual-circuit main cylinder are connected along. Romero [5] invested a craft automatic braking system that takes under consideration airplane landing characteristics as well as touchdown rebound performance and nose high set down attitude. This invention relates to craft automatic braking systems and a lot of signs to signal process of the nose wheel and nose gear data signal processor of the nose wheel and nose gear data signals in a craft automatic braking system to enhance system performance with reference to craft rebound conditions and nose high attitude conditions throughout landing of the craft. Hauser [6] invention relates to craft automatic braking systems and a lot of significantly to signal process of nose wheel and nose gear info signal process of nose wheel and nose gear data signals in a craft automatic braking system to enhance system performance with respect to craft rebound conditions and nose high perspective conditions throughout landing of the craft. Steiner [7] developed electronic control unit with generates an output once the speed or the speed of modification of the force with that the motive force actuates the pedal exceeds a threshold worth. an antilock brake (ABS) is coupled to and acts on the individual brake circuits by feedback. The brake systems have recess and outlet valves associated on an individual basis with the wheel brakes and are electrically manageable. Feedback pumps are on an individual basis related to the brake circuits, these pumps being drivable electrically and having a high output pressure level. the brakes provided in sure embodiments is very advantageous for driving-dynamic braking pressure regulation, and also for automatic control of full brake application operation of the brakes, since, additionally to monitoring the pedal position by suggests that of a pedal position sensing element, it permits extra determination of the brake-actuating behavior of the driver. Miyazawa [8] developed a braking circuit breaking management unit receives an effect detection Signal that's outputted from outside once an effect like a crash of a motorized vehicle has detected, with generates and applies a circuit breaking control Signal supported the impact detection Signal. A circuit breaking unit forcibly interrupts an influence provide a path and Stops the provision of power to a load. A hydraulic automotive vehicle brake with brake slip control and automatic brake management for traction control and/or driving dynamics control includes a braking pressure generator that is hydraulically connectable to a minimum of the one-wheel brake. a minimum of one pump that is connected with its Suction aspect to a pressure fluid accumulator and with its pressure side to a pressure fluid conduit. the current invention by Hinz [9] relates to a

hydraulic automotive vehicle brake with brake slip control and automatic brake management for active brake operations like traction control and driving dynamics control. Mai [10] developed a method and arrangement for emergency braking of a vehicle includes with a detection system on the vehicle that detects obstacles placed in or about to the direction of motion of the vehicle and generates corresponding information, sensors on parameters of condition of the vehicle, and an evaluating unit that determines. A primary Step during this direction was the adoption of antilock braking Systems (ABS) and ant-slip regulation (ASR) to enhance longitudinal vehicle Stability in dynamically critical situations, i.e. in braking and accelerating processes.

2. Manufacture of Intelligent Braking System

2.1 Instruments used

The devices used are Hall sensor, ultrasonic distance sensor, microcontroller kit, braking motor and bike wheel. The ultrasonic sensor is a transducer that varies it is output voltage in response to changes in magnetic field density. Sensors are used for proximity switch, speed detection, positioning, and current sensing applications. In its simplest form, the sensor operates as an analog transducer, directly returning a voltage. With a known magnetic field, its distance from the device plate may be determined. exploitation teams of sensors, the relative position of the magnet can be deduced. two Magnets were fixed on the spokes of the vehicle. Sensors can sense any objective and obstacles. The device is attached to the inner side of the mudguard. when the wheel completes one rotation, a pulse will be coming out from the sensor. This pulse is given as input to the microcontroller.

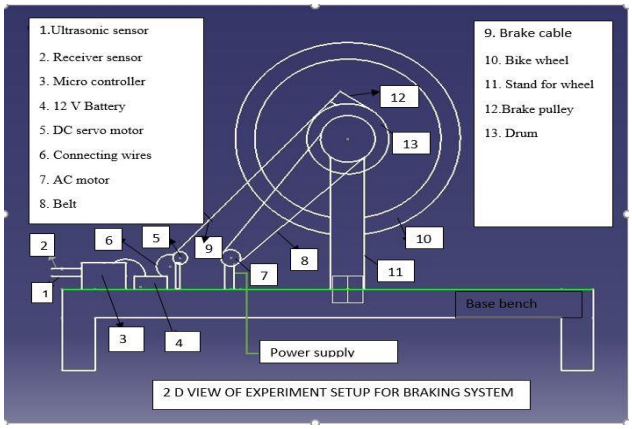

Fig 1. 2D view of intelligent braking system

Working principle: ultrasonic waves of 40 kHz frequency are sent from the transmitter of the sensor. The ultrasonic waves have the property that they're not affected by environmental changes. This ultrasonic wave is reflected back from the obstacle. A supersonic receiver present in the same detector receives these waves after reflection. This distance is showed in a liquid crystal display and simultaneously an equivalent analog output signal is given out from the device. The time difference between transmission and receiving is calculated and the distance is calculable by program present in the ASIC (Application such Integrated Chip) present in the detector. Location this detector is fitted before the vehicle. This detector gets switch on once the vehicle is started and also the detector offers out the analog output continuously depending on the position of the obstacle. Used are sensors of range 32 m, Resolution12 inches, Signal Output 0-5 V dc, Excitation Voltage12-24Vdc, servo motor connected to microcontroller kit

connected to servo motor is shown in fig 1.2 The whole control of the system was in the hands of ATMEGA8-16PI microcontroller. A microcontroller is a computer-on-a-chip. It is a type of microprocessor accenting self-direction and cost-effectiveness, in contrast to a general-purpose microprocessor (the kind utilized in a PC). The on-chip flash allows the program memory to be reprogrammed in the system or by a conventional nonvolatile able memory computer programmer. Interfacings of the ports of the microcontroller two were used as input ports one for an ultrasonic device and other for proximity device. the opposite port was used as an output port to give a signal to the braking system. Braking motor in our project just applies the brakes. because the project was wiped out two-wheeler (TVS 50), cable brakes the rotation of the motor just pulls out the cables by which the vehicle comes to a halt. The intensity of braking is high because the motor used has terribly high torsion. Why motor the straightforward thanks to applying the brake is to drag the cables. The Hobson's alternative is an electrical servo motor. The motor rotation causes the braking. The motor elite had terribly high initial torsion, therefore, the application of the brakes is going to be very sudden and also the vehicle involves a halt in real time.12V DC and 100 Ampere, 2motors are used in these experiments. 2d view of intelligent braking system shown in Fig 1.

2.2 Assembly of intelligent braking system.

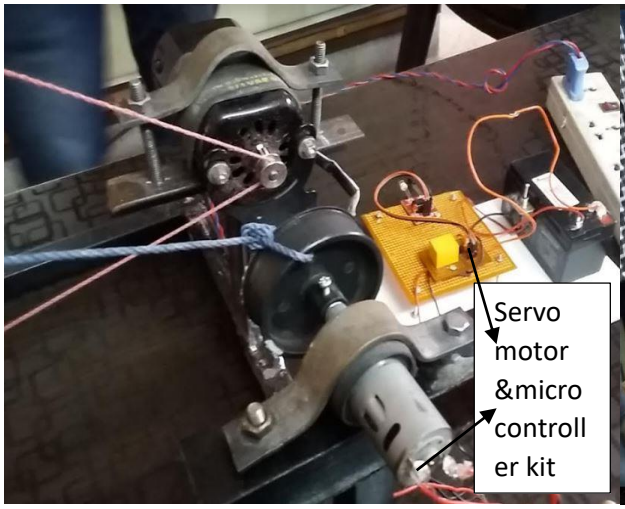

Fig 1.2 Servo motor connected to Microcontroller kit

Fig 1.3 Assembly view Intelligent Braking System

In present intelligent braking system, sensors have taken the sense any obstacle the input signals are given to the microcontroller attached in turn gives signals to a servo motor. The microcontroller is a main part of the braking system. This control all devices as shown in Fig 2. The brake cable is connected with one end attached to the servo motor and another end attached to brake pulley and pulley is connected to inside the drum. If the servo motor runs in an anti-clockwise direction to the bike wheel. If a sensor detects any obstacles, the motor automatically runs, and gradually decreases the vehicle speed and brings it to rest. Assembly of the intelligent braking system is shown in Fig 3.

4. CONCLUSION

The Intelligent Braking system, if implemented can avert lots of accidents and may save invaluable human lives and property. Implementation of such a complicated system is created mandatory like wearing seat belts so accidents may be averted to some extent. Our Intelligent braking system is providing a glimpse into the future of automotive safety, and the way much more advanced these individual systems is for avoiding accidents and protecting vehicle occupants when they are integrated into one system. the future of automotive safety is more than simply developing new technology; it's shifting the approach to safety. fabrication of intelligent braking system approach represents a significant shift from the traditional approach to safety, however, it's fundamental to achieving the substantial benefits.

5. REFERENCES

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