



# International Journal of Innovative Research in Computer and Communication Engineering

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## A Review on Speed Breaker and Pit Detection in the Roads Using Arduino Uno and Sensors

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**ABSTRACT:** The system is a total security protection and fleet management solution. By using camera technology to protect and monitor our car, truck and any other moveable object virtually anywhere. This Paper presents an automatic vehicle accident detection system using to intimate the pits and speed breaker and all damages in road before we reach that place then prevent the accident whenever any vehicle or object collides with the vehicle. The system can be mounted with the control system of the automobile. This system also provides an accident prevention using sensors which upon detection of any obstacle can alert the driver of the vehicle prevent the accident. The proposed design demonstrates the feasibility of real time video stream of vehicles and enhanced customizability, global accessibility and economic feasibility in contrast with existing designs.

**KEYWORDS:** Speed Breaker Detection; Pit Detection; Machine Learning; Open CV; Accident Prevention

### I. INTRODUCTION

Indian roads contains any unnoticeable speed breakers on many places without proper indicating paints painted, people are riding fast and not noticing the speed breakers causes many accidents, more than millions of life were lost because of speed breakers without indicating lines and unmaintained roads, this accidents prevention can be done using the proposed system to indicate the speed breakers earlier and alerting the driving person. The detection system uses the raspberry pi and arduino boards for embedding the sensors with the computer coding. The coding section uses the python openCV library to detect the speed breakers, machine learning is used for detecting pits and speed breakers. The main purpose of this system is of making the pre indicating view of the speed breakers on the vehicle display using the data sets and training the device, this model helps to reduce the accidents by alerting the driving person. When the accident occurs the alert message is sent automatically to the rescue team and to the police station. The message is sent through the GSM module. The accident can be detected precisely with the help of accelerometer and ultrasonic sensor. The angle of the rollover of the automobile can also be known by accelerometer. This application provides the optimum solution to poor emergency facilities provided to the roads accidents in the most feasible way.

### II. RELATED WORK

Sayan Tapadar, Arnab Kumar Saha, Dr. Himadri Nath Saha, Shinjini Ray, Robin Karlose:-“Accident and Alcohol Detection in Bluetooth enabled Smart Helmets for Motor bikes in that paper which is published in IEEE 8th Annual Computing and Communication Workshop and Conference (CCWC), 2018. The prototype developed yielded Satisfactory results. The accuracy and precision are high, which shows that our proposed mechanism is accurate in detecting an accident and high alcohol consumption. The comparison of the parameters for accident detection, with and without the use of the alarm, shows how important the use of an alarm is, to report false accident detection [5]. Dangeti Anu Preetham, Mukundala Sai Rohit, Arun. G. Ghontale and M. Jasmine Pemeena Priyadarsini:-, published in the Conference In this paper, we have designed a Smart Helmet for the safety of bikeriders which includes an alcohol sensor to ensure the person driving the bike is sober and a rider authentication using face recognition to control theft [6]. Shoeb Ahmed Shabbeer and Merin Meleet:-”Smart Helmet for Accident Detection and Notification” published in the Conference named 2<sup>nd</sup> International Conference on Computational Systems and IT for Sustainable Solution (CSITSS). This paper helps in utilizing the Internet of Things (IoT) concept to find out accident in two wheelers using

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microcontroller and Accelerometer and intimate the authorities as well as the emergency contact of the rider. Also, plot the accidents occurring in the city for further analysis [7]. Durga K Prasad Gudavalli, Bh Sudha Rani and C. Vidyasagar: published in the conference IEEE International Conference on Intelligent Techniques in Control, Optimization and Signal Processing (INCOS), 2017. This paper represents to provide safety and security system for bike riders we came up with a solution which is a Helmet Operated Smart E-Bike. It is having two operating modes which are Security Lock System (SLS) and Safety Engine System (SES), the first operating mode (SLS) having one RFID reader and two RFID tags. When a particular unique identity tag matches to the RFID reader value the handle lock mechanism will be operated like ON&OFF key [9]. Cox's Bazar: "Smart Intelligent Electric Vehicle". International Conference on Electrical, Computer and Communication Engineering (ECCE), 2017. This paper represents some modification and Low cost efficient autonomous control system program which will make an electric vehicle smart and flexible to use. In our technique car we have used four-wheel drive system and double axle rotation which ensures a quick U-turn and Short space rotation [10].

### III. ARCHITECTURAL DIAGRAM

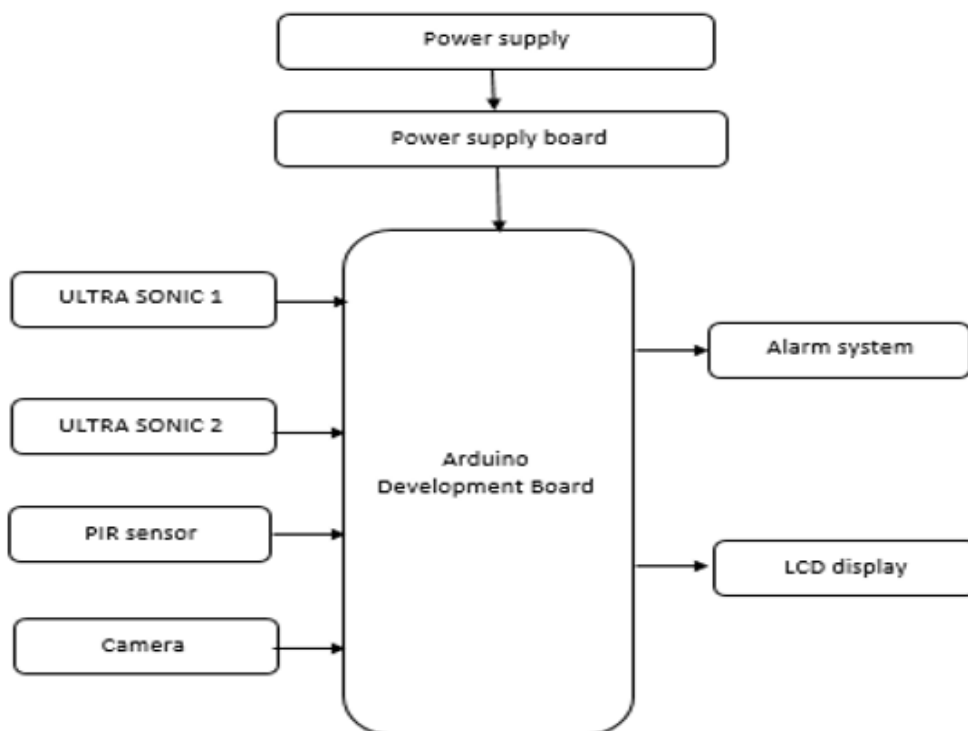


Fig:1 Architectural Diagram of the speed breaker and pit detection

### IV. METHODOLOGY

#### CAR PREPARATION MODULE USING ARDUINO UNO

Initially by using the arduino uno which is a board on top of which the entire function will be made to be worked. It lay as a coordinating part of the car. A motor driver named L293D which looks like an H-bridge. In this two motors named DC motors(150rpm) has been used to control the heels in the front and back respectively. The

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coding for the front wheel and the back wheel has been added to the arduino Uno. Thus the wheels can be made to move. HC-05 is a Bluetooth module which is used to receive signal using which the car can be controlled. Two tyres are used for the movement of the car.

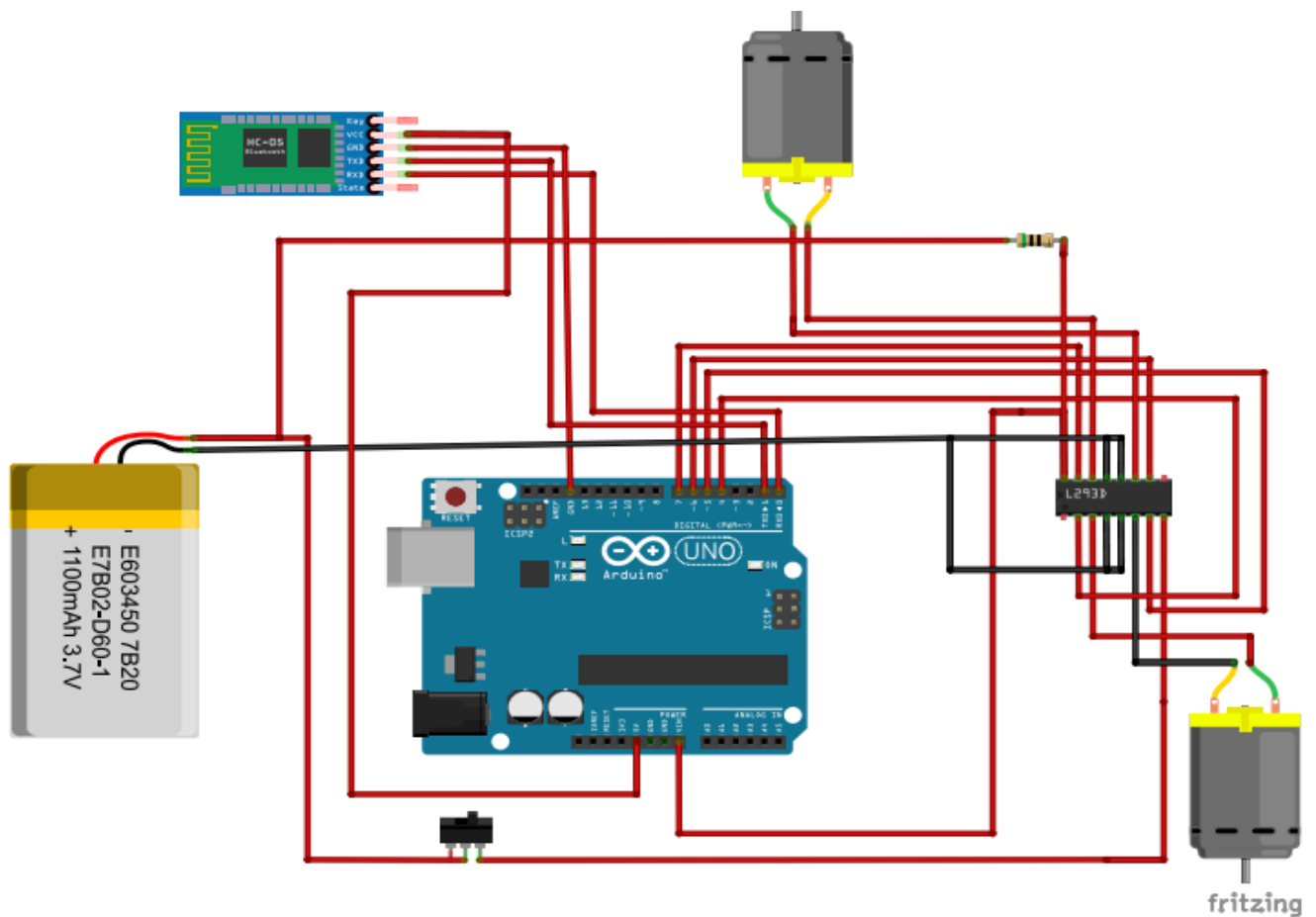


Fig 1: Block diagram of car preparation

9v and 12v battery are used to get power supply. Jumper wires has been used to connect each and every part over the system. Perforated board is used to connect the Bluetooth module. The main control is present in the DC motor only. Even 4 motors can be used but using 2 motors will be more convenient enough and it lay as an efficient method to control 4 wheels and it is a cost efficient method. Now the entire car can be controlled and this seems to be a remote car like structure which will be controlled by a Bluetooth device. After this completion of car preparation, sensors are to be added which is used to detect humans and pits.

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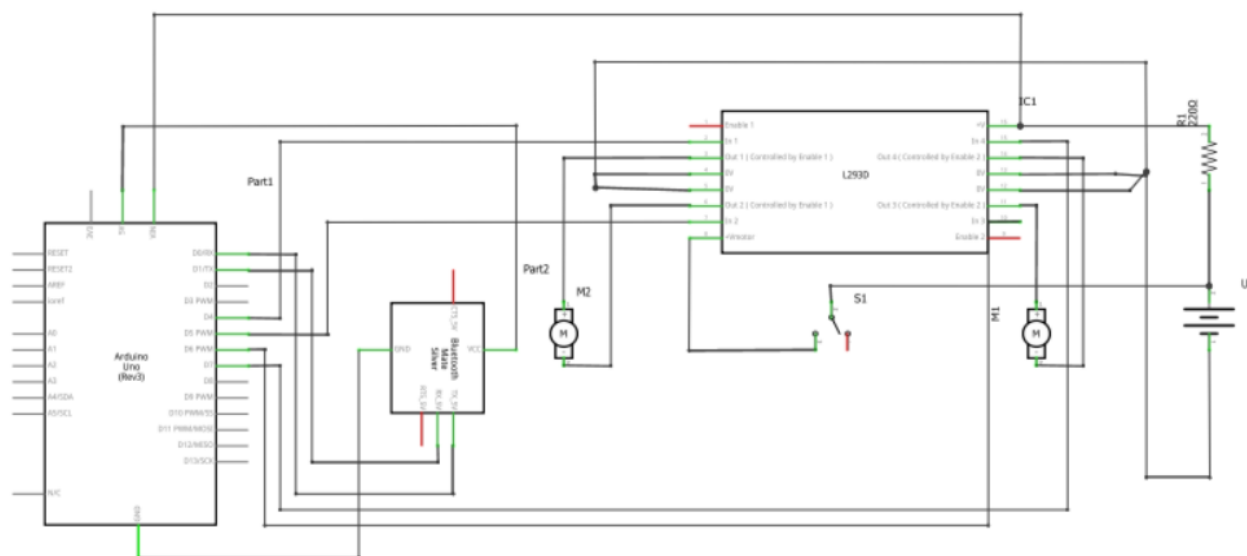


Fig 2: Circuit diagram of car preparation

## DETECTION OF PIT AND SPEED BREAKER

An Ultrasonic sensor uses a single ultrasonic element for both emission and reception. In a reflective model ultrasonic sensor, a single oscillator emits and receives ultrasonic waves alternately. This enables miniaturization of the sensor head. This sensor is used which detects the humans as well as pits present. An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor. This IR sensor is used to detect objects at a particular angle.

## V. CONCLUSION AND FUTURE WORK

The automatic alarm device present in the system for vehicle accidents has been implemented using AtMega162 microcontroller. This device is an exclusive system which can detect accidents in very less time and sends the basic information to first aid centre within a few seconds covering geographical coordinates (i.e.) the latitude and longitude, the time in which a vehicle accident has occurred. The switch is provided for extra security which provides the driver a chance to cut off emergency help systems in case the system triggers a false alarm or if the accident is not very severe and quick help is not required. Further we can identify the exact object or obstacle that is being present and it can be detected so that the cause of the accident or destruction can be identified and this work can be done with the help of machine learning.

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