iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** III **Month of publication:** March 2018

DOI: http://doi.org/10.22214/ijraset.2018.3075

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue III, March 2018- Available at www.ijraset.com

Side Sweep Accidents and Jamming Control Methods for Vehicles

Dr. R. Naveen[1], S. A. Sivakumar[2], D. Loganathan[3], V. Anushya[4], V. Devi[5], Glady A Joy Vivilia[6], R. Madhupriya[7]
[1]*Associate Professor,* [2,3]*Assistant Professor,* [4,5,6,7] *UG Scholar, ECE, Info Institute of Engineering, Coimbatore, Tamilnadu.*

Abstract: ***The basic idea of the project is to improve the safety measurements of the vehicle by using the advanced systems available in the field of electronics. There are four situations to be considered, namely vehicle breakdown, Head on collision of the vehicle, Collision avoidance at blind curves and cross roads, locating the vehicles status and to be raise alarms. Techniques in each process/step are reviewed and analyzed individually. In such a way that the underlying problem prevents the vehicle from being collision. This paper is structured based on a vehicle collision and detecting the breakdown of the vehicle.***

Keywords: Collision avoiding system, calculating distance, sensors, RPM speed, arduino board, breakdown detection.

I. INTRODUCTION

Accidents on highways are one of the major sources of loss of life in modern society. Significantly more lives have been lost in highway accidents than in terrorism or wars. Part of the reason for this is that any technology that makes driving safer, faster or cheaper would have a significant human and commercial impact[8]. Whereas, in recent years, significant research focus (and press coverage) has been dedicated to self-driving vehicles, there is no imminent transition to fully self-driving infrastructure. What we are going to see is a mix of vehicles with various sensing, actuation and communication technologies, and various degrees of automation based on these[3].It is quite possible that this technology mixtures will make driving in the following decades even more unpredictable and cognitively challenging than in the current situation, where uncertainty arises only from the driver's behavior. In order to define a standardized set of rules, it is vital to collect a large number of statistics. In the real world, this is a very tedious task to accomplish. The accident might also be due to wrong prediction that the driver might have seen the blocking vehicle. The lane changing vehicle might have communicated its intention to change lanes, either with the turning lanes or vehicle to vehicle (V2V) communication [2], but this signal had not been seen or received by the blocking vehicle. Hence we are finding the Technological solutions such as sensor improvements and V2V communication can improve several steps of this process [3]. Our objective in this paper is to present the hardware that takes into account all the factors of the lane change scenario and sudden breakdown in the vehicle [1]. Detection of vehicle is done by ultrasonic sensors[5]. Decided output path directions are estimated through compass accelerometer [7].In such a way that side sweeping and breakdown alerting systems are processed. here we are using Arduino board to interconnect all the components[4].

II.EXISTING METHOD WORKINGMETHODOLOGY

A. Intelligent Collision Avoidance and Safety Warning system For Car driving

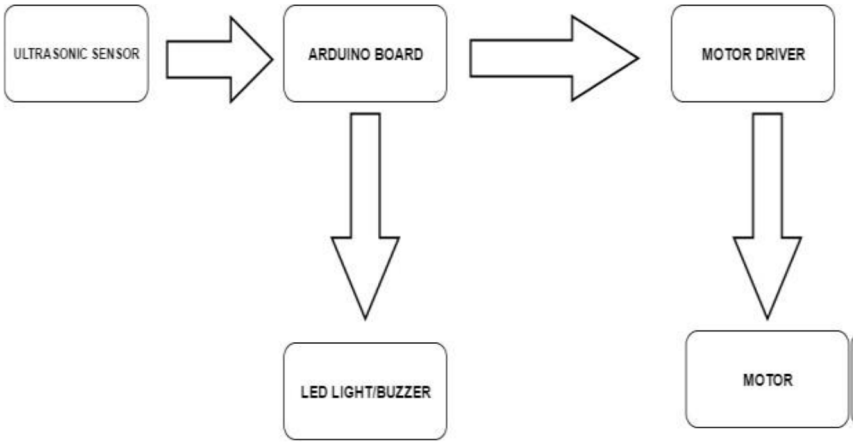


Fig.1 Intelligent Collision Avoidance and Safety and safety warning system

1) Processing Steps

a) The ultrasonic sensor sensed the sound waves in front of the vehicle to detect the presence of vehicle distance.

b) Once the presence of the vehicle is detected an alarm is given to the driver to apply break using buzzer.

c) If break is not applied an alarm of indication is given by buzzer frequency, so that the driver apply break immediately.

d) If the vehicle distance is less than 5cm from the vehicle detected, it is prevented from occurring accident and then the motor stops automatically.

B. Raspberry Pi Based Vehicle Collision Avoidance System

This system detects the obstacle in front of the vehicle, alarms the system and moves away. Camera is used forthe purpose of detecting moving or stationary objects. The ultrasonic sensor is enclosed with this system to compute the distance of real-time moving and the stationary object. This sensor measures the accurate distance from the obstacle and transmits the measured data to the system. The main work contributes the detection of obstacles ahead of the vehicle. The alarm is given to the system in the vehicle regarding the obstacle in front so that the system helps in collision avoidance. In this work, the distance between the vehicle and obstacle is measured by the ultrasonic sensor and object detection is done by the camera. By fusing both these sensor values the obstacle is detected and the distance is also accurately measured. The ultrasonic sensor and the camera, both are interfaced with the raspberry pi board and processed through the Open-CV software.

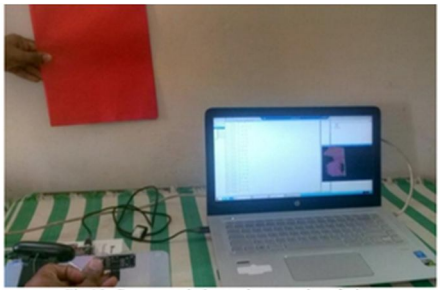


Fig.2 system output

C. On-Vehicle Breakdown-Warning Report System

In this paper, arise of breakdown system is detected. A judgment of the breakdown condition is based on a signal in an electronic control system installed on a control apparatus. A control apparatus is applied for an engine ignition system, a charging system, an engine fuel system ,a engine cooling system, a power transmission system and an oil lubricating system of an automobile or a diagnosis display system and a diagnostic data. It is sent to an information terminal device of a diagnosis and maintenance agency or a service company having a diagnosis and maintenance agency as contents information by using an on-vehicle mobile communication apparatus. An action for an emergency measures and a maintenance schedule is asked.

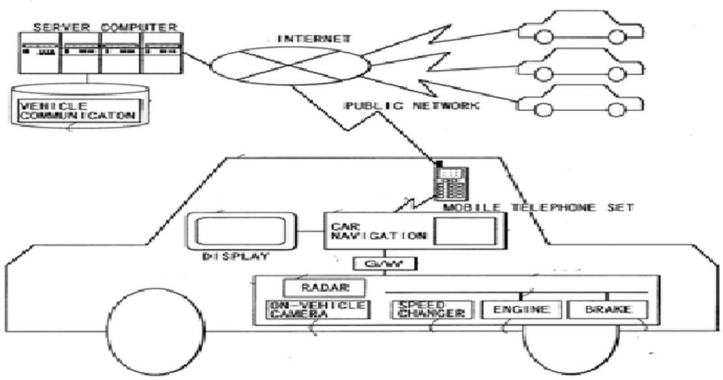


Fig Vehicle breakdown warning reporting system

Fig.3. breakdown warning report

II. PROPOSED SYSTEM WORKINGMETHODOLOGY

In this system, side sweeping and breakdown detection and alerting are done through the sensor such as IR sensor and ultrasonic sensor. To reduce the accidents, vehicle distance and breakdown signals are estimated by checking the conditions of rpm and neutral, if it satisfies then there is a possibility of breakdown condition. Presence of vehicle status is detected. That data is transmitted through the ad-hoc technology. In this system, data is being processed by arduino board. Ad-hoc technology made a communication between vehicle to vehicle wirelessly, which is characterized more through sense and measure.

A. The working of the Proposed Technique is Illustrated As Follows

1) Distance between two vehicles and presence of third vehicle status are detected.
2) IR sensor detects the speed of the vehicle and neutral`s on & off status are adjusted manually.
3) A compass acceleration is used to find the directions and poles of vehicle status.
4) All the components are interconnected with arduino board.
5) These data's are processed & send the information by automatically
6) These data's will be transmitted to another vehicle through ad-hoc technology using RF transceiver for the given arduino board which is programmed to send the data to the driver.

There are two modules are employed in a single system. Module1 is for side sweeping. There it checks the presence of second vehicle behind the first vehicle. If present, it sends the information to the driver to overtake. Module 2 is for breakdown alerting system. For checking the breakdown condition, considering rpm and neutral status. If it satisfies that condition, it will send the information as breakdown for the upcoming vehicle. Its is applicable for two way communication by using compass accelerometer.

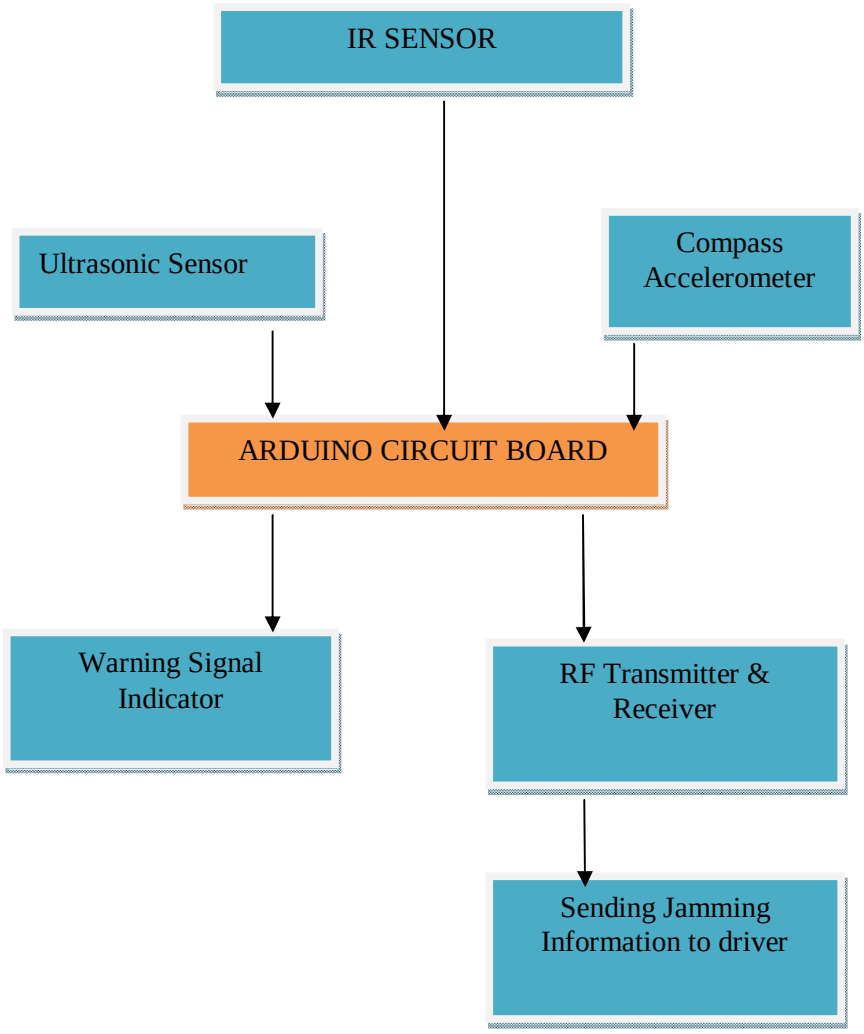


Fig.4. Block diagram of proposed method

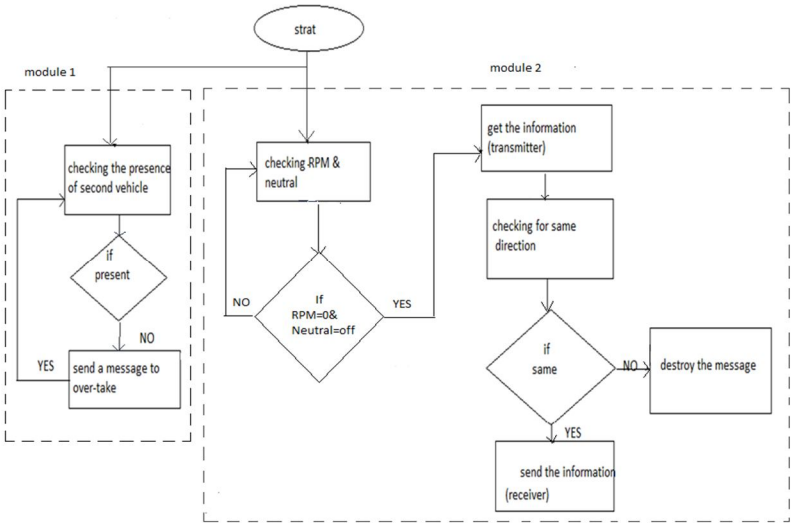


Fig.5.flow of operation

IV.MATERIALS&METHODS

A. Nano Arduino

Nano Arduino is a open source electronics and breadboard friendly board based on the microcontroller ATmega328P.A microcontroller includes processor, memory, and peripherals. It is a type of microcontroller components that are used in the electronics , computers and another devices. The microcontroller is programmed using the Arduino programming language.

ATmega328p consist of 3 ports such as port B, port C, port D.It has 14(of which 6 provide PWM output) Digital I/O pins,8 analog input pin.ATmega328 has 32kb of FLASHmemory,2kb of SRAM, 1kb of EEPROM.FLASH and EEPROM are non-volatile. SRAM is volatile.

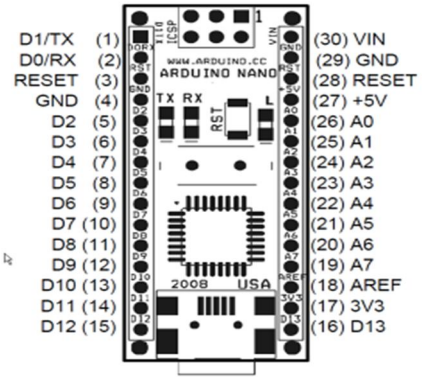


Fig.6. nano arduino

B. Ultrasonic Sensor

Ultrasonic sensor plays an important role in the development of many applications. An ultrasonic sensor measures the distance between the vehicles by using sound waves.It can measures distance from 2cm-4m.

In this ultrasonic sensor is used to know the exact condition of vehicle.They are commonly used in.

Fig.7.Ultrasonic sensor

C. Ir Proximity Sensor

In this system IR proximity sensors are used to detect the presence of nearby vehicles in the case of breakdown.It is one of the common application in real time such as TV remote and Night vison cameras.

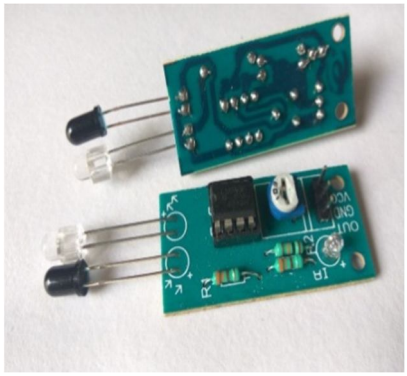


Fig.8.IR proximity sensor

The use of IR sensor which transmits and receives the signals which can be processed to conclude if an obstacle is present In Front of the vehicle.

D. Rf Transceiver

In this system, transmit data between the RF Trasmitter-Receiver modules using two nano arduino boards. RF module is used to transmit or receive the radio signals between the vehicles. The driver will get the information from the Transmitter and it will send to the receiver.

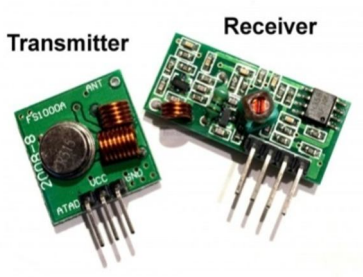


Fig.9.RFmodule

The RF module is an embedded system to communicate with another device wirelessly.Basically,these modules based on 433MHz RF TX and RX modules.

E. Accelerometer

In this system accelermeter is used to find the direction and motion of a vehicles.The accelerometer is used in many applications such as watches,machines, measuring and controlling devices and etc.The accelerometer tilts according to X,Y and Z direction.Vehicle movement can be controlled in forward ,reverse,left and right direction along with obstacle detection using ultrasonic sensor.

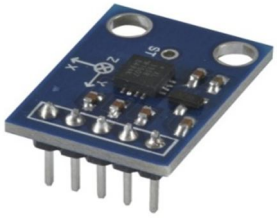


Fig.10. Accelerometer

F. Dc Motor

In this system DC motor is used to find the rotation and speed of the vehicle.The motor is rotated at RPM speed can be detected by using sensor.

Fig .11. Dc motor

For altering about breakdown we are using DC motor to find the RPM, switches for indicating the vehicle status either it is in neutral or not.LCD display is used to display the information about the vehicles. The DC motors are widely used in machines, elevators, electronic trains and etc.

V. HARDWARE OPERATION & RESULTS

The inputs signals are transmitted by the RF transceiver connect along with this arduino circuit which is used to get the information on arduino board. Arduino board collects all the information from the sensors including outputs. It sends the output to the receiver by checking the corresponding conditions. Outputs from the arduino board get displayed in LCD display. It directly sends the information to driver.

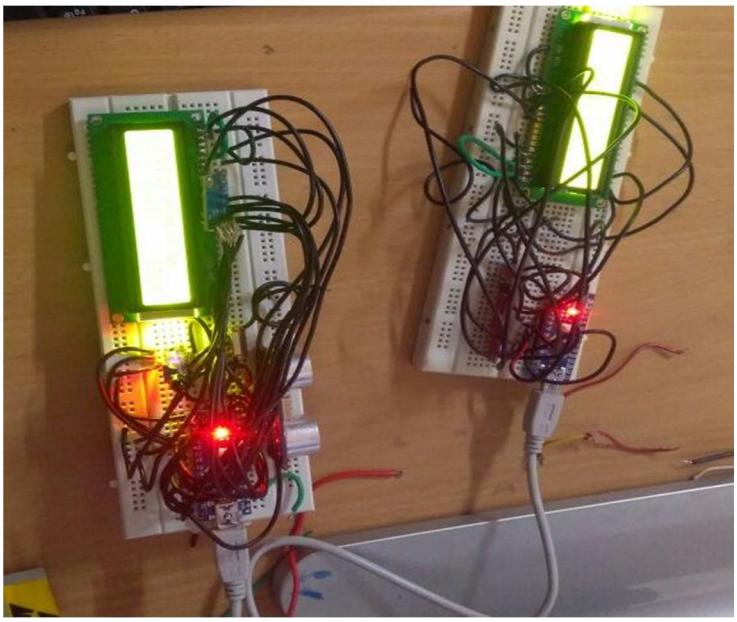


Fig.12. Hardware setup of the proposed method

VI.CONCLUSIONS

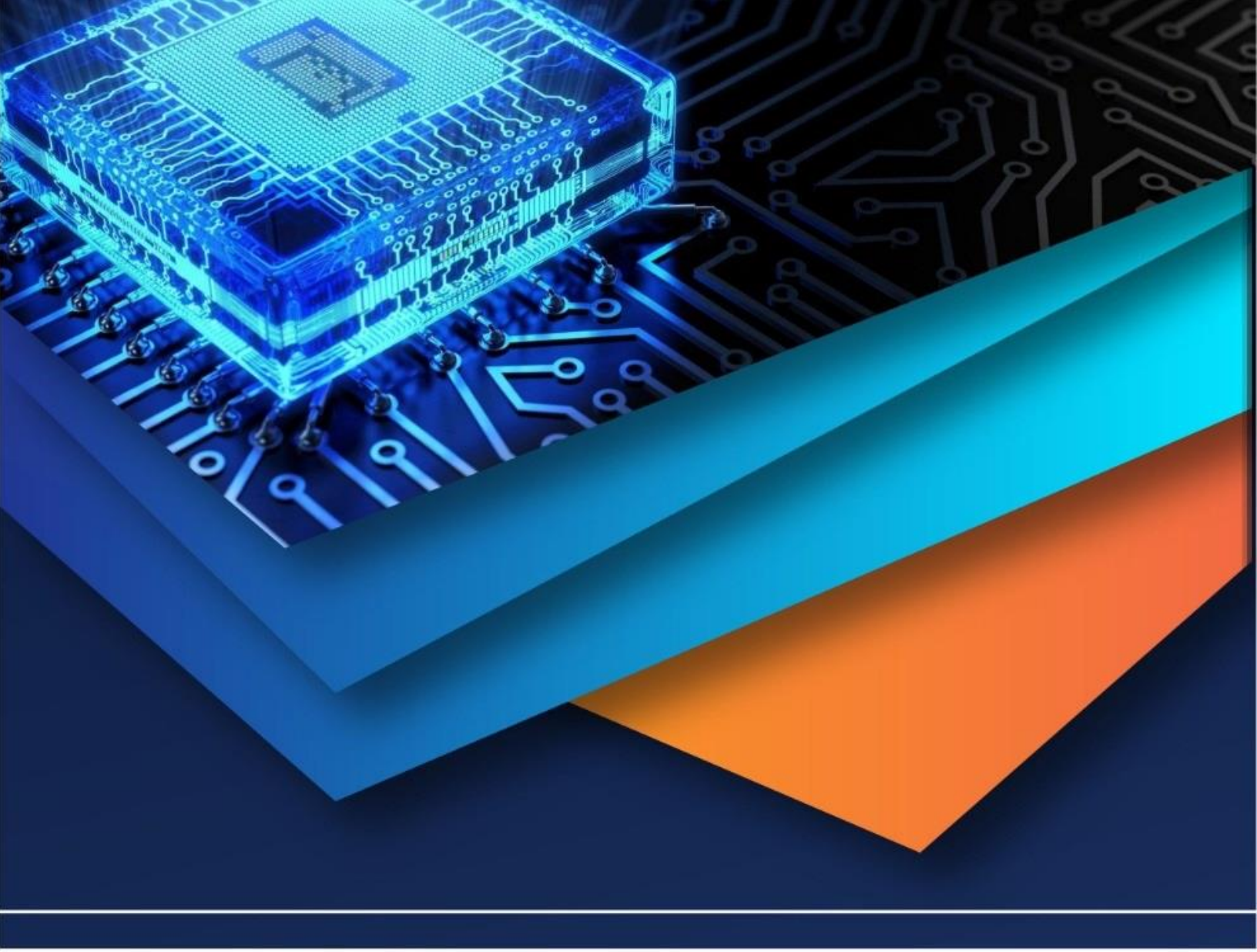
In this paper, we presented a model for collision avoiding system and breakdown detection system. These interactive models get constructed on each vehicle system to eliminate the possibilities of major accidents. These results open up the possibility of several directions of future work on providing more detailed models that take into account.

VII. ACKNOWLEDGMENT

We extend our thanks to the management of Info Institute of Engineering, Coimbatore for providing the research lab for the work.

REFERENCES

[1] Masahiko saito, nakamura, manaka, nakahara. On vehicle breakown warning report system. Crowell & moring LLP intellectual property group,washington,DC 20044-4300. 18 April 2002.
[2] Suresh kumar.R, kingston stanley.P, sanjeev gandhi.A, Raspberry pi based vehicle collision avoidance system. ICIEEIMT 1
[3] Vikas nyamathi, tridha chauduri, kayalvizhi jayavel,SRM University, kattankulathur, Chennai. Intelligent Collision Avoidance and Safety Warning system For Car driving. ICICCS 2017.
[4] Nano arduino, http://www.arduino.com ,retrieved November 1,201
[5] Ultrasonic sensors, http://sensorwiki.org , retrieved November 2,20
[6] How will future car technology keep you safe, http://www.dba.com.au . Retrieved December 3,2018.
[7] Compass accelerometer, http://www.compassaccelerometer.com January 18,2018.
[8] Cause of car accidents https://m.huffpost.com retrieved February 2,2018.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY