



# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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## Car Collision Prevention and Detection System

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**ABSTRACT:** The problem of auto accident associate element } of an endless list of disasters that might occur anyplace anytime. Statistically, they're thought-about the second leading cause of death. To beat such issues, several vehicle makers and automobile device firms have tried to develop speed control systems to keep up a vehicle safe distance. The quantity of accidents in India is highest within the world. The particular variety of accident variety is also more than documented. One person dies in each four min. In India these days safety on roads has become a heavy issue moreover as everywhere within the world. At some places accidents occur like crossings, diversions on highways. The accidents on highways is prevented by understanding the mental state of driver. A sensible system for accident interference is a perfect construct for smart roads. It's a project with innovative ideas for safety on roads and highways. Here we area unit using arduino uno, arduino mega, and raspberry pi as a controller. During this project there are a unit 3 units like stable unit(over speed detection), raspberry pi robot, and arduino robot.

**KEYWORDS:** Raspberry pi; Arduino; ultrasonic sensor; RF module; Dc motor, accident switch.

### I. INTRODUCTION

The automotive industry around the world has shown a tremendous enhancement in its production over the recent years. Millions of vehicles are being produced annually. But along with these, the accident rates are also getting significantly increased. As a result, even the optimistic nature of people has become worried while going outside. United States Department of Transportation data for 2005 from the Fatality Analysis, Reporting System show that for passenger cars, 18.62 fatal crashes occur per 100,000 registered vehicles. In 2009, 33,808 people died in vehicle traffic crashes only in USA. Most of the accidents occur due to human negligence, such as reckless driving, lack of good infrastructure, etc. An immediate rescue process after an accident can be considered as a tightrope walk between life and death. Any fractional time delay of arriving medical help can cost the life of the victims. A study by Virtanen et al. shows that 4.6% of the fatalities in accidents could have been prevented only in Finland if the emergency services could be provided at the place of the accident at the proper time. As such, efficient automatic accident detection with an automatic notification to the emergency service with the accident location is a prime need to save the precious human life. Now-a-days, it became very difficult to know that an accident has occurred and to locate the position where it has happened.



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## II. LITERATURE SURVEY

In past, the following works were carried out by some people.

1. **Gurjashan Singh Pannu, Mohammad Dawud and Pritha Gupta, “Design and Implementation of Autonomous Car using Raspberry Pi”- (2015),**

In this paper focus is on building a monocular vision autonomous car prototype using Raspberry Pi as a processing chip. An HD camera along with an ultrasonic sensor is used to provide necessary data from the real world to the car. The car is capable of reaching the given destination safely and intelligently thus avoiding the risk of human errors. Many existing algorithms like lane detection, obstacle detection are combined together to provide the necessary control to the car.

2. **Sumit Garethiya<sup>1</sup>, Lohit Ujjainiya and Vaidehi Dudhwadkar, “Predictive vehicle collision avoidance system using Raspberry – Pi”- (2015)**

In this paper, an effective method is proposed for the collision avoidance system of a vehicle to detect the obstacle present in front and blind spot of the vehicle. The driver is made alert via a buzzer and LED indication as the distance between vehicle and obstacle reduces and is displayed on display board. The ultrasonic sensor detects the state of the object whether it is in motion or static with respect to the vehicle. This system is useful for detecting vehicle, motorcycle, bicycle and pedestrians that pass by the lateral side of vehicle.

3. **V.Sagar Reddy , Dr.L.Padma Sree , and V. Naveen Kumar, “Design and Development of accelerometer based System for driver safety” – (2014)**

This paper presents a new design of commodity hardware with cheap and it consumes very less power designed oriented product for getting information from accident location of driver drowsiness and indicating be alert to the driver in the prevention of accident. This system is designed by using Raspberry Pi (ARM11) for fast accessing to control and accelerometer for event detection. Is there any event is occurs the message sent to the authorized person so they can take immediate action to save the lives and reduce the damages.

4. **M.H Mohamad, Mohd Amin Bin Hasanuddin, Mohd Hafizzie Bin Ramli, “Vehicle Accident Prevention System Embedded with Alcohol Detector” – (2013)**

An efficient system of vehicle accident prevention system embedded by alcohol detector has been proposed. This system capable to alert the driver about the level of drunkenness by indicates the condition on LCD display. It also produce an alarm from buzzer to make the driver aware their own condition and to vigilant other people in surrounding area. The most safety element provided by this system is the driver in high level of drunkenness is not allowed to drive a car as the ignition system will be deactivated.

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## III.METHODOLOGY

### A. BLOCK DIAGRAM

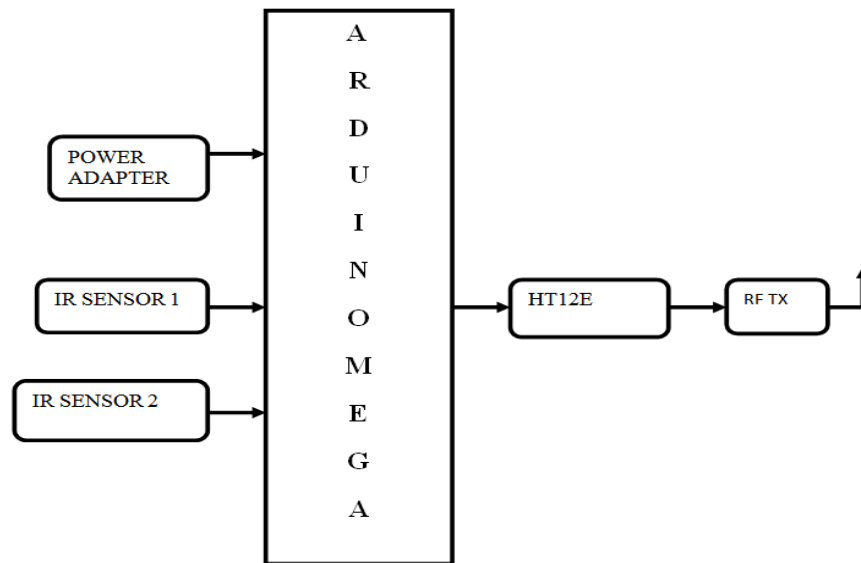


Fig. stable unit(overspeed detection system)

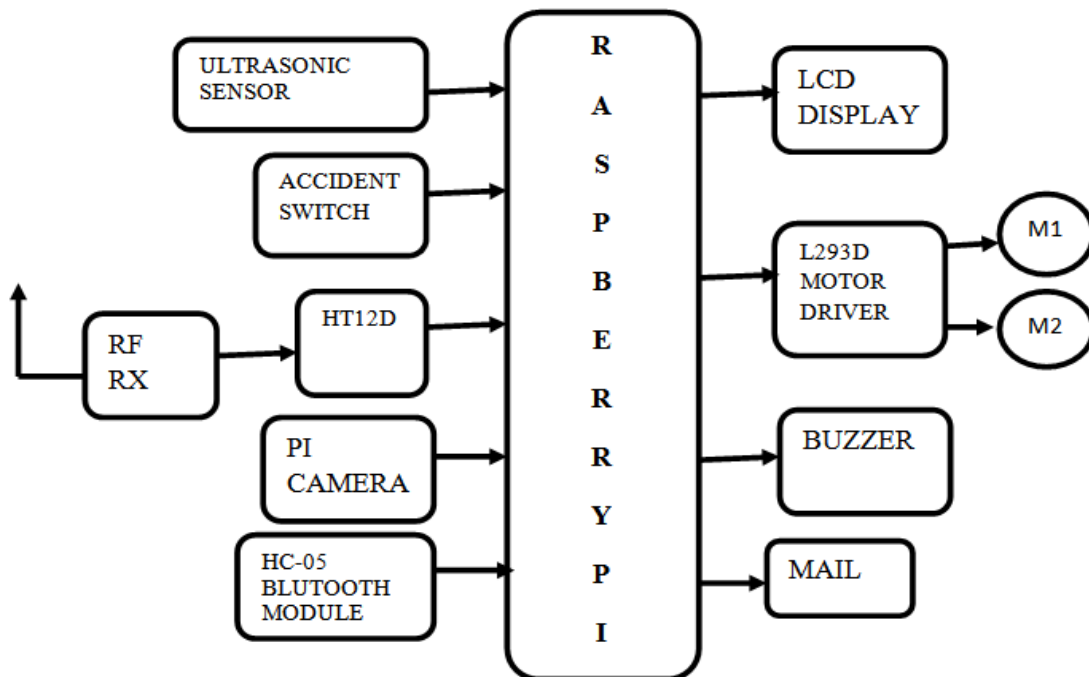


Fig. Raspberry Pi Robot

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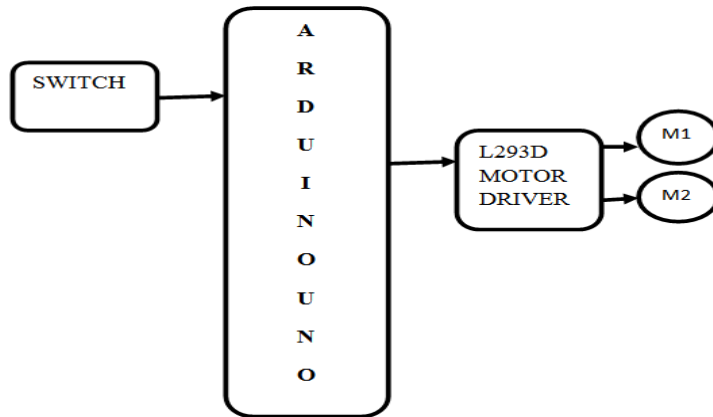
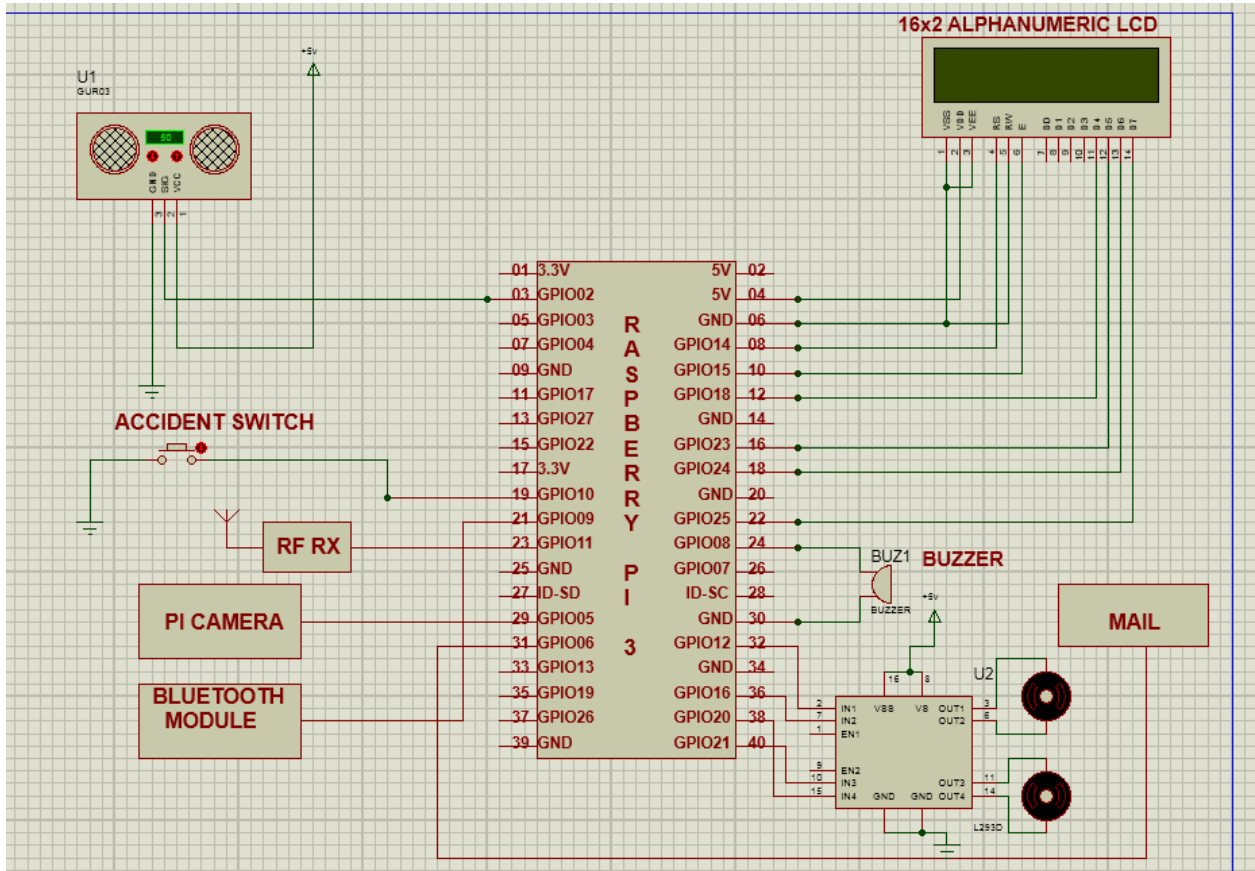


Fig.Moving Robot.

## B. Circuit Diagram

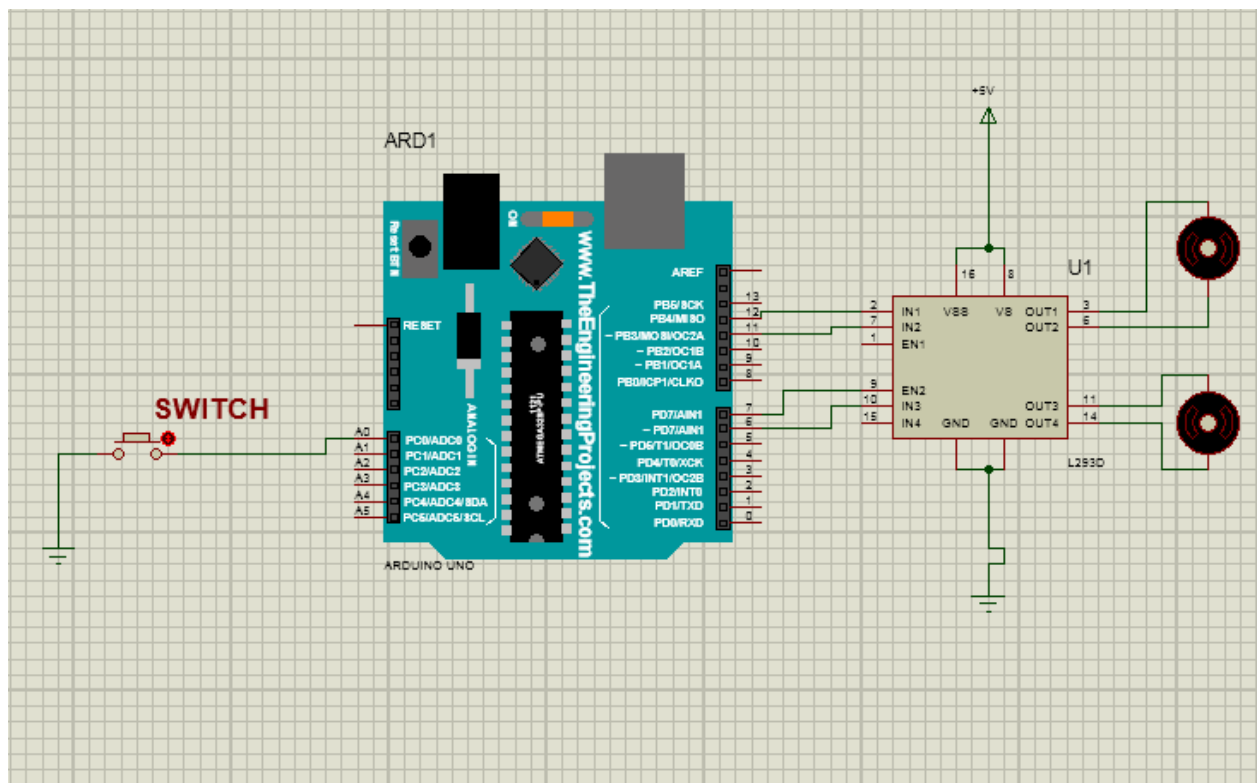
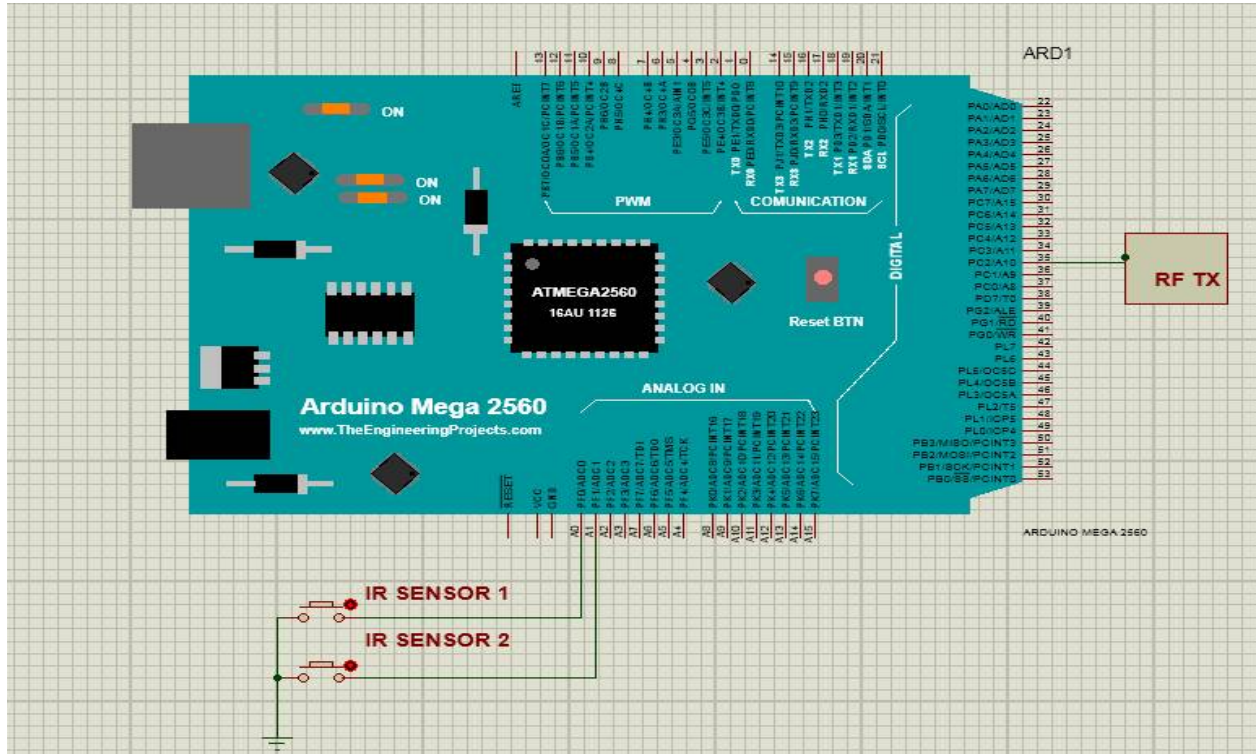


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## IV. PROPOSED SYSTEM

- Here we are using arduino uno, arduino mega, and raspberry pi as a controller.
- In this project there are three units like stable unit(overspeed detection), raspberry pi robot, and arduino robot.
- Here we are detecting overspeed of vehicle using IR sensor used to sense the speed of vehicle. If speed is greater than threshold speed. Then data will be sending through RF module all information will be displayed on LCD.
- Robot 3 is used which is continuous move in forward direction.
- Here RPI robot controlling using Bluetooth module. Pi camera used to capture image and send mail when any accident occurs. And also the buzzer will beep.
- Ultrasonic sensor used to sense the distance between two vehicles. It will sense distance between moving robot and RPI Robot. If less distance occurs that time here our RPI robot will change its position like robot will move either left or right direction. And go without damaging any vehicle.

## V. ALGORITHM

Step 1:- Start.

Step 2:- Power up hardware.

Step 3:- Here we are using sensorlike ultrasonicsensor, accident switch, ir sensor, pi camera, dc motor.

Step 4:- In stable unit(overspeed detection system);

Step 5:- IR sensor used to detect vehicle.

Step 6:- Then time taken by the vehicle to travel from one set point to the other is calculated by controller.

Which is arduino mega

Step 7:- If overspeed detected then send data through RF to receiver.

Step 8:- In rpi robot controlling of robot using Bluetooth module.

Step 9:- Ultrasonic sensor used to detect distance between two vehicles.

Step 10:- If distance is less between rpi robot and moving robot then rpi robot will change its position like robot will move either left or right direction.

Step 11:- Suppose accident occur then pi camera capture image and send mail.

Step 12:- All sensors measured value will be displayed on LCD.

Step 13:- If accident happens then buzzer will on.

Step 14:- Here we are used 45 rpm geared dc motor.

Step 15:- Stop.

## VI. CONCLUSION

Behind the planning of this technique, our main aim is to boost the technique of interference of accidents and also reducing the hazard from accidents like damage of auto, injury of humans, etc. This project work has provided North American nation a superb chance and experience, to use our restricted data. We've got gained sensible data regarding, planning, purchasing, aggregation and machining whereas doing this project work. in conclusion remarks of our project work, we've got developed an "ACCIDENT prevention SYSTEM"

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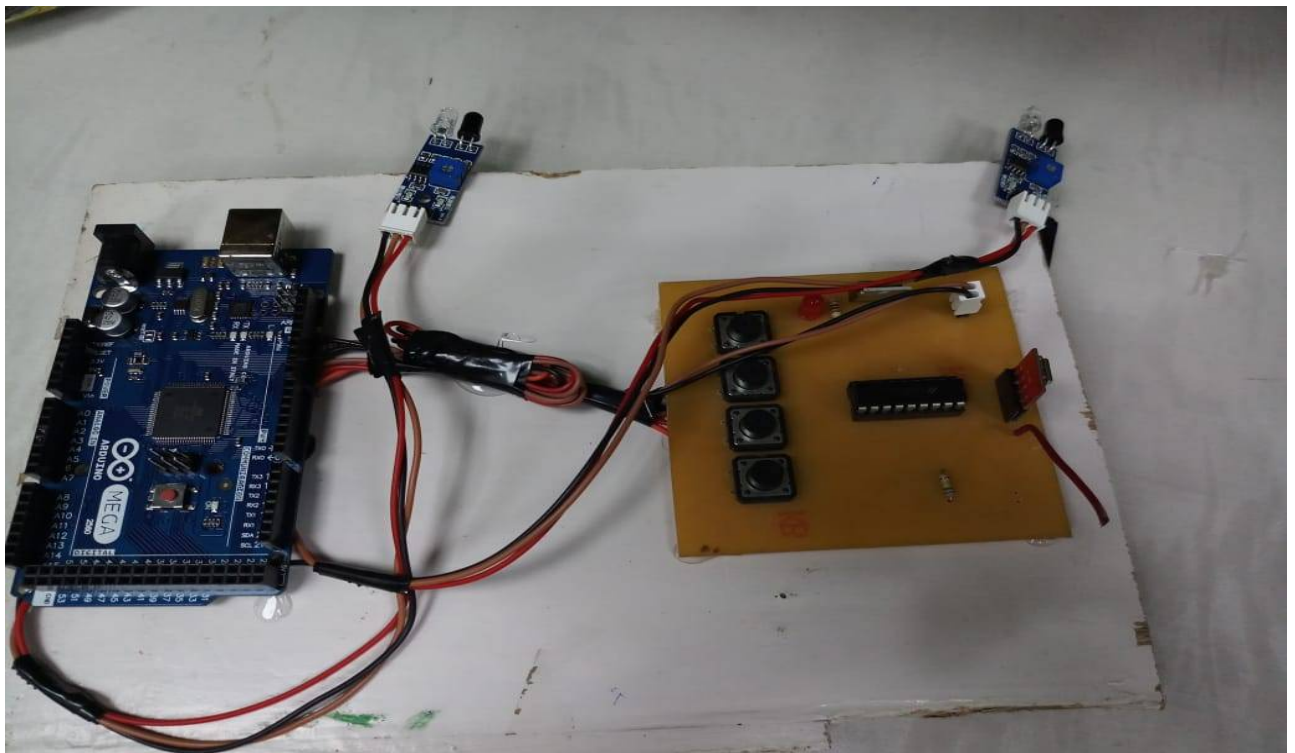
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## VII. RESULTS



*Fig. RPI ROBOT*



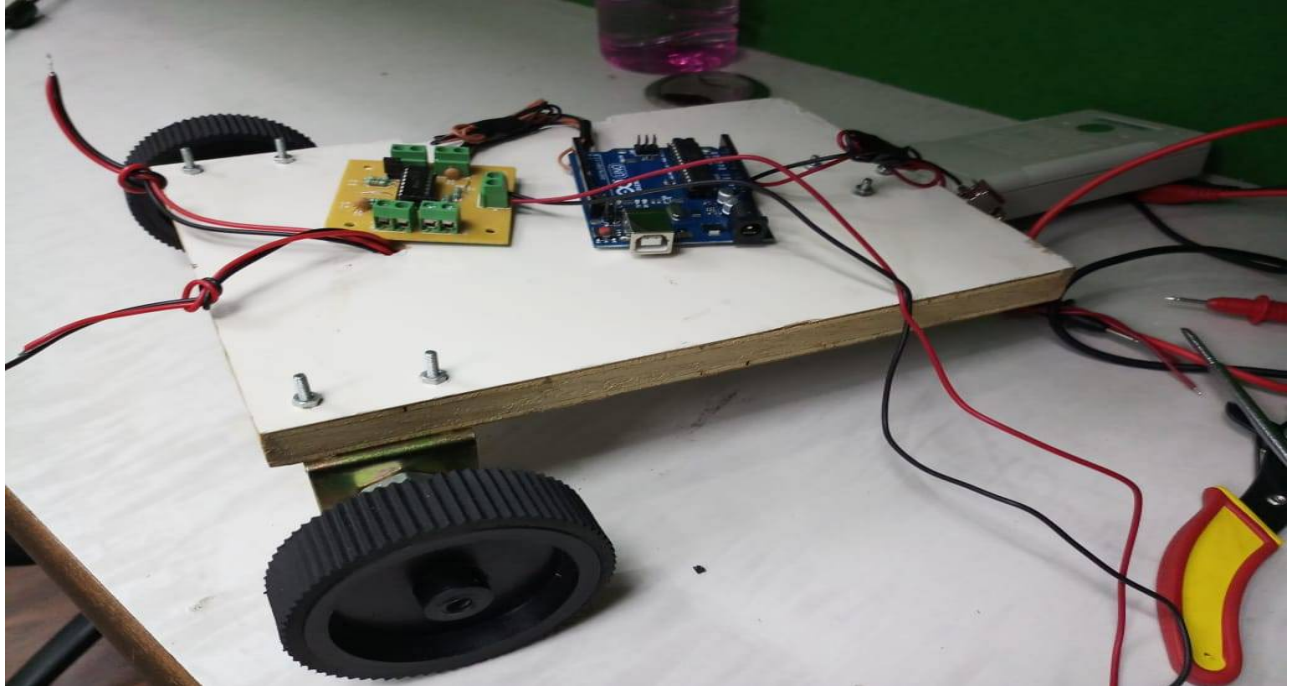
*FIG. STABLE UNIT(OVERSPPEED DETECTION SYSTEM)*

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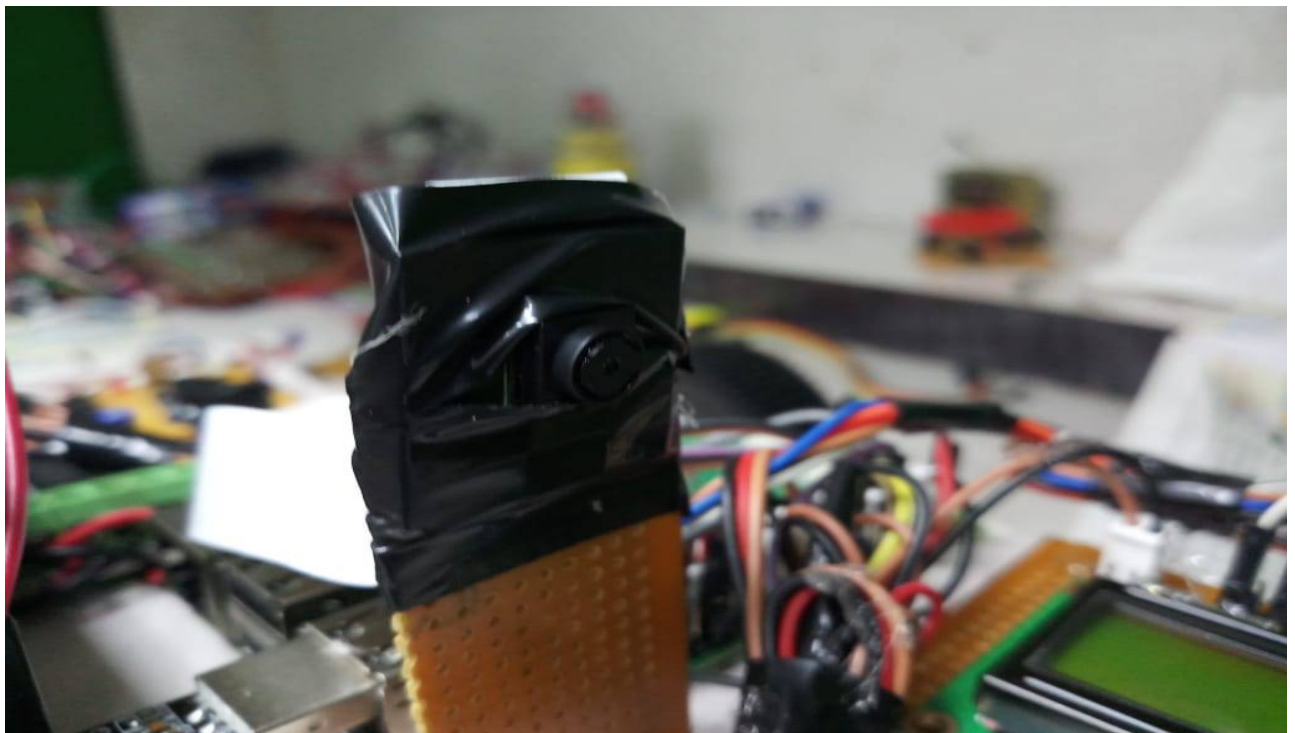
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*FIG. MOVING ROBOT*



*FIG. PI CAMERA*





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