

# VEHICLE OVER SPEED DETECTION

**AIM OF THE PROJECT** : The main aim of this project is to detect the vehicles which go overspeed which causes accidents.

## **MOTIVATION** :

These days accidents are increasing day by day which takes away the lives many people. This is because of violating traffic rules. Even if one person is following rules and going in a right way, it also depends on the other person also. There are many causes of accidents. We are supposed to work on detecting over speed going vehicles such that we can collect their data through their vehicle number plate and take actions against them practically by imposing penalty etc... Because of this at least few people may change and the awareness will be created among people that we need to pay for it if we go in speed more than limit. This can actually cannot prevent accidents, but it can reduces the number of accidents and there will be a change. Saving even a single life also matters for their family, hence it is worthy.

## **APPARATUS** :

### 1. Arduino UNO

- It is a microcontroller.

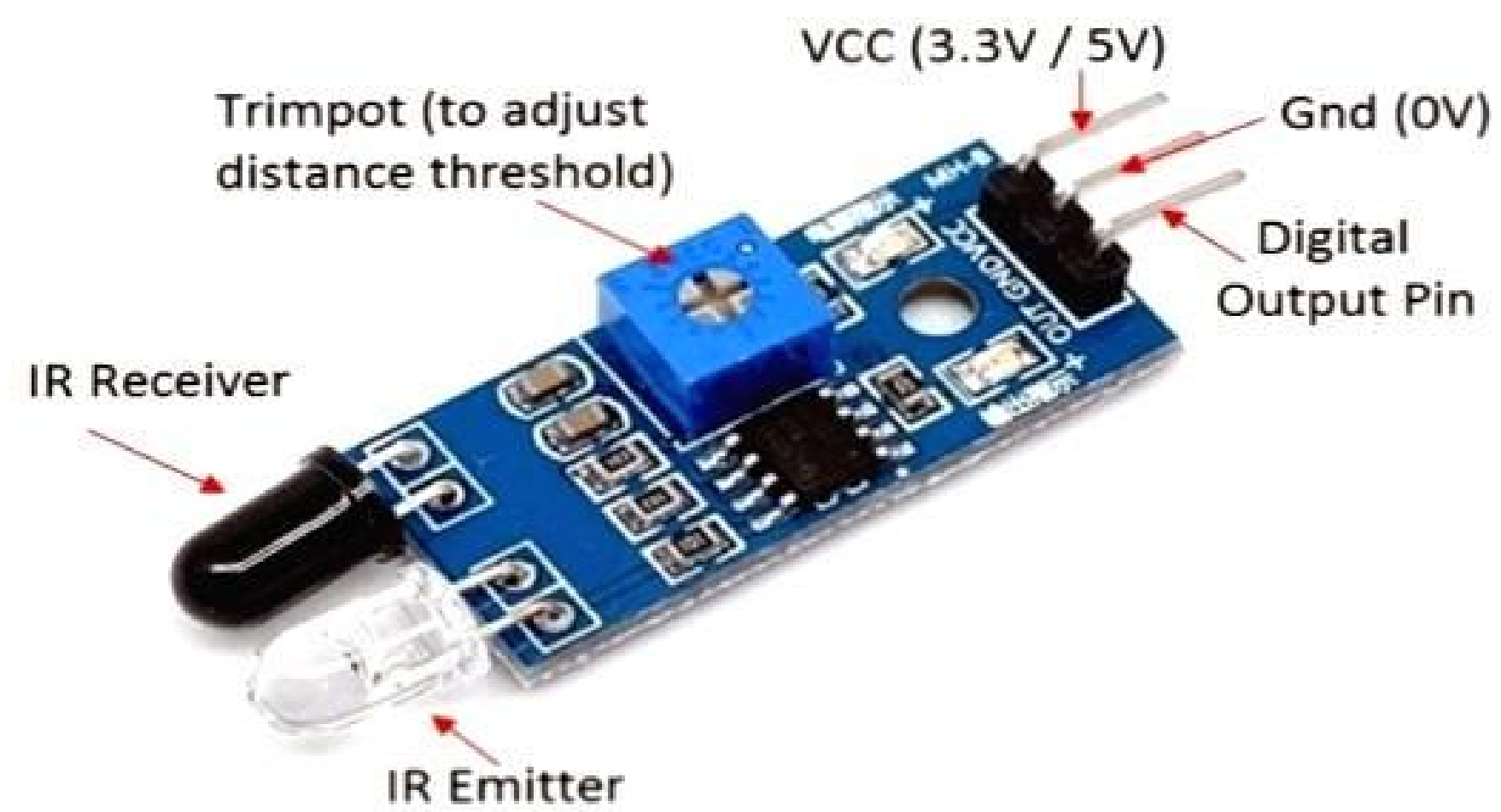


- Operating Voltage: 5V
- Input Voltage: 7-12V
- Input Voltage(limits): 6-20V
- Digital I/O pins : 14
- Analog input pins: 6
- Flash memory: 32KB

### 2. IR SENSORS:

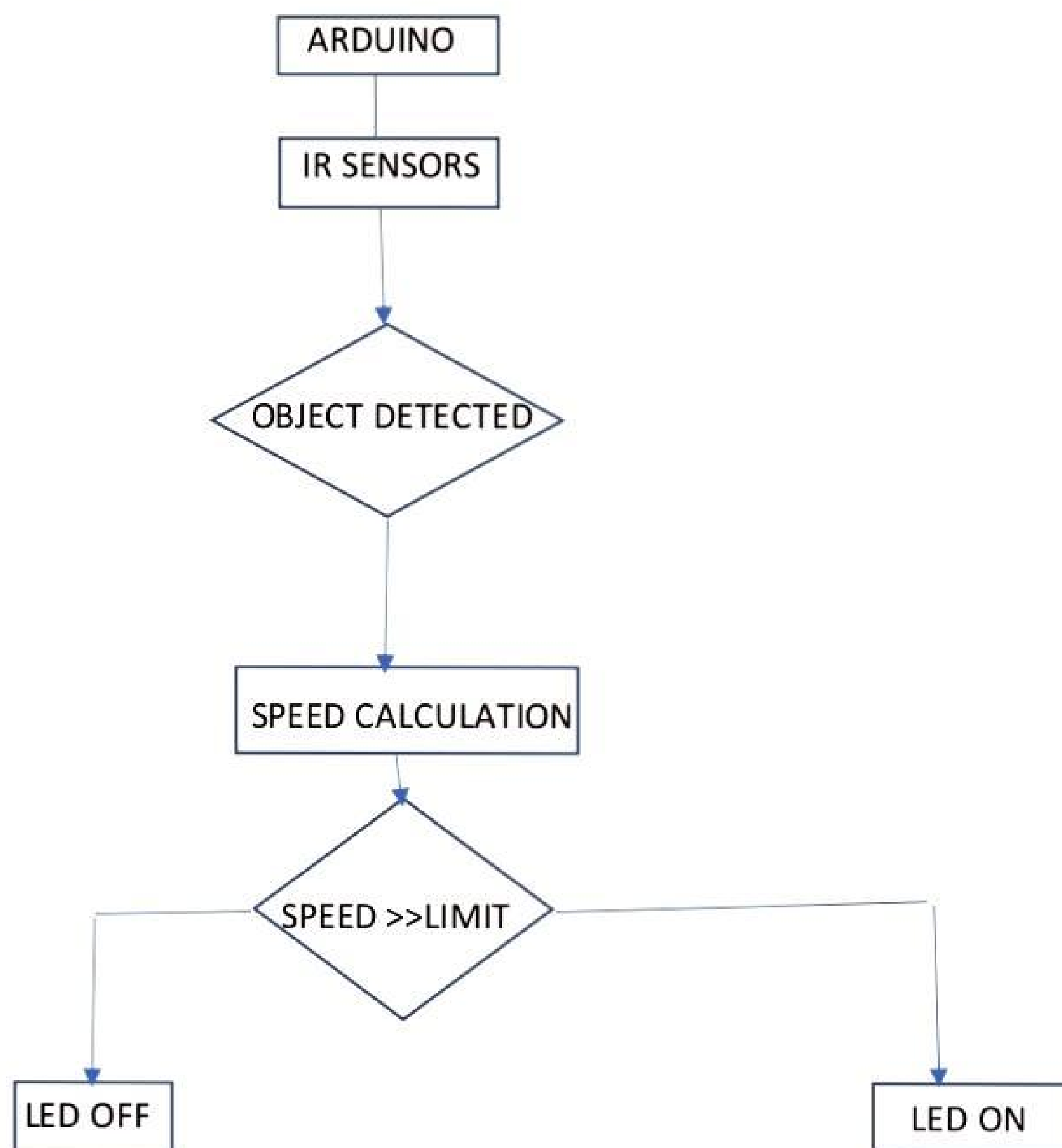
- There are 3 pins vcc, gnd and output pin.
- 2 LED'S which acts as ir receiver and emitter.

- Distance range for object detection: 2 cm to 30 cm
- Operating voltage: 3.3V to 5V.

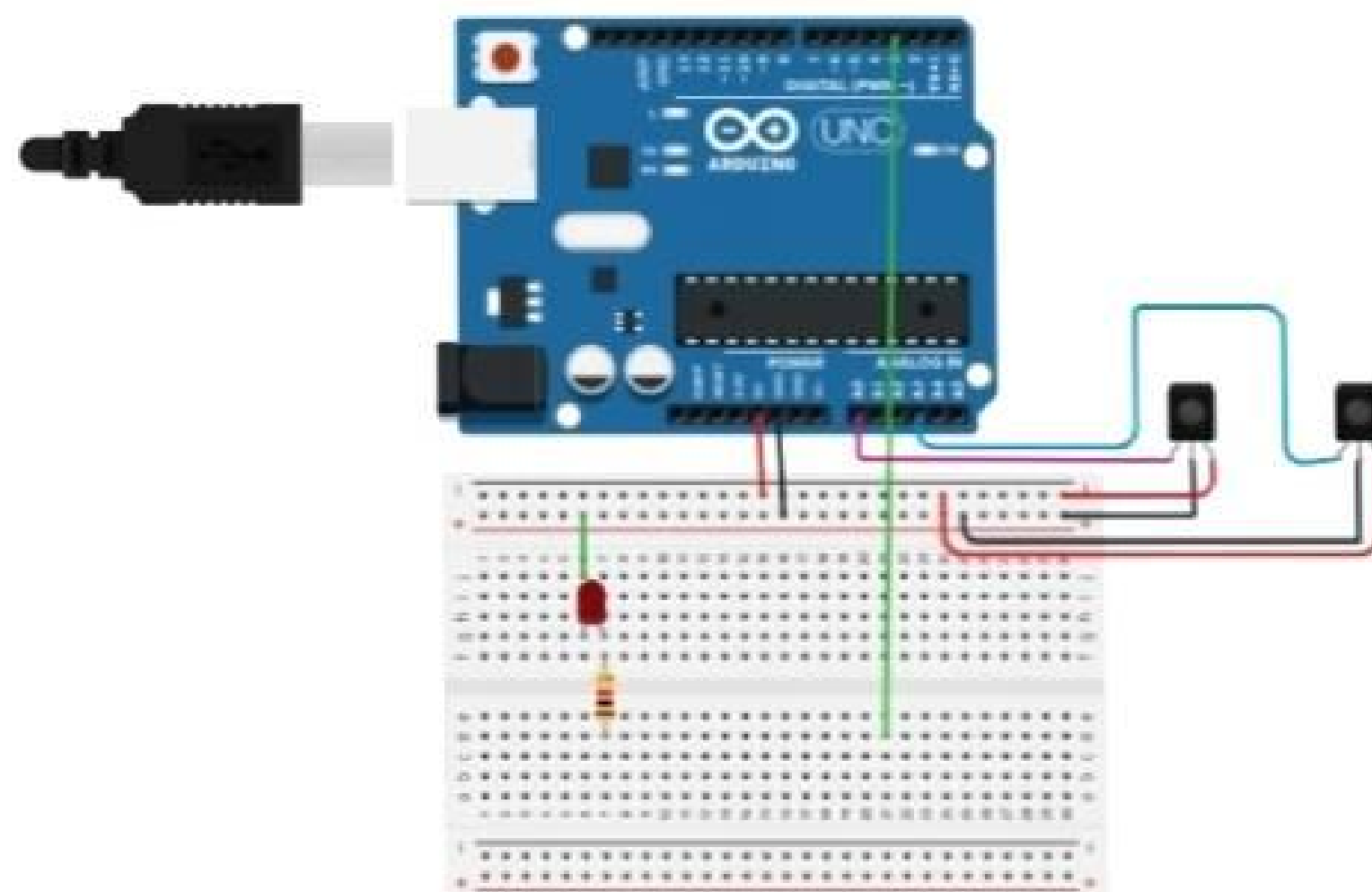


3. Breadboard
4. Connecting Wires
5. LED

**BLOCK DIAGRAM :**



### CIRCUIT DIAGRAM :



### PROCEDURE:

1. We have collected all the components needed i.e IR Sensors, Arduino Board and Led's.
2. We interfaced ir sensors with Arduino with a distance range of 4cm.
3. IR sensor has 2 led's which emits and and whenever there is a object it reflects back and hence receiver receives stronger signal.
4. After detecting object, the time is read in which object passes through the 1<sup>st</sup> sensor and 2<sup>nd</sup> sensor. Time difference is taken.
5. As this is of smaller range, we have taken a speed constant of 8 and through speed constant and time difference velocity calculations are done.
6. If the velocity is greater than the specified limit led will be on else it is off.

### OVERALL RESULTS:

When there is a moving Object it is being detected by IR sensor in a specified range and if it is going high speed LED is turning ON.

### FUTURE SCOPE:

When a vehicle is detected because of its high speed, the number plate of vehicle should be scanned and with that we can send message to the registered mobile number and also can impose penalty through linked bank account so that they won't repeat it again.

### TEAM DETAILS: CLASS: ECE-03

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### CODE:

```
int sen1=A0;
int sen2=A3;
int ledPin=3;

float velocity;
float velocity_real;
float timeFirst;
float timeScnd;
float diff;
float speedConst=8; //in cm.
long duration1;
long duration2;
void setup(){
  Serial.begin(9600);
  pinMode(sen1, INPUT);
  pinMode(sen2, INPUT);
}
void loop(){

  if (analogRead(sen1)<500 && analogRead(sen2)>500)
  {
    timeFirst = millis();
    //digitalWrite(ledPin, LOW);
    delay(30);
  }

  if (analogRead(sen2)>500 && analogRead(sen1)<500)
  {
    timeScnd = millis();
    diff = timeScnd - timeFirst;
    velocity = speedConst / diff;
    velocity_real = (velocity*360)/100;
    //milliseconds to hours and centimetres to kilometers.
    Serial.print("\n the velocity is : ");
    Serial.println(velocity_real);
    Serial.print(" km/hr. ");
    delay(500);
    // digitalWrite(ledPin, LOW);
    //delay(500);
  }
  if (velocity_real>0.9){
    digitalWrite(ledPin, HIGH);
  }
  else{
    digitalWrite(ledPin, LOW);
  }
}
```