

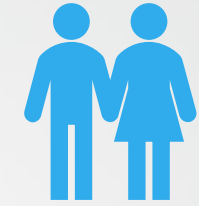
# GUIDE FOR BLIND



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Smart Blind Stick Using Arduino and Ultrasonic Sensor

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# INTRODUCTION:

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## AIM:

To create sensor-based stick for real-time blind navigation and obstacle detection.

- The study focuses on utilizing an ultrasonic sensor with a maximum range of 2 meters to detect obstacles and changes in terrain, such as holes or stairs, aiming to aid blind individuals in navigating their surroundings more effectively.
- This ultrasonic blind stick have a several feature that surely can help this blind people to navigate routes and detect an obstacle that surely can make their life routines easier.
- The user just need to use the blind the normal blind stick , the different is , blind people can detect a hole or stair more faster and easily.

# OUR AGENDA IS...



This project intends to make ease for the optically defected people as a guide.

- ☐ To make them feel confident enough to do their works on their own.
- ☐ To help them to be aware of their surroundings as equally as a normal person.
- ☐ To make them feel safe and secure to move around while walking

**Keywords:** Arduino uno, Ultrasonic sensors, RF transmitter and receiver

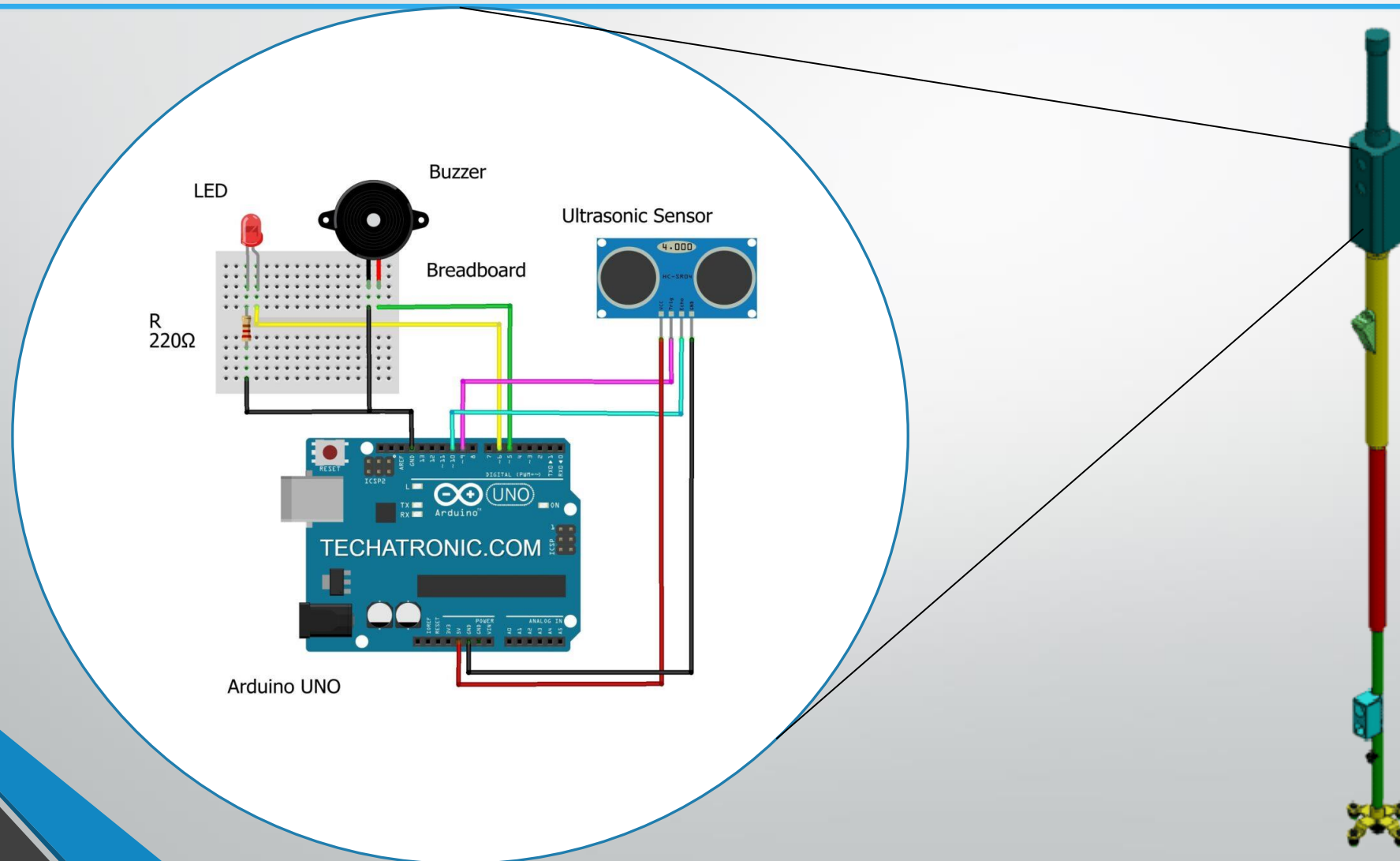
## HOW DOES IT WORK...?

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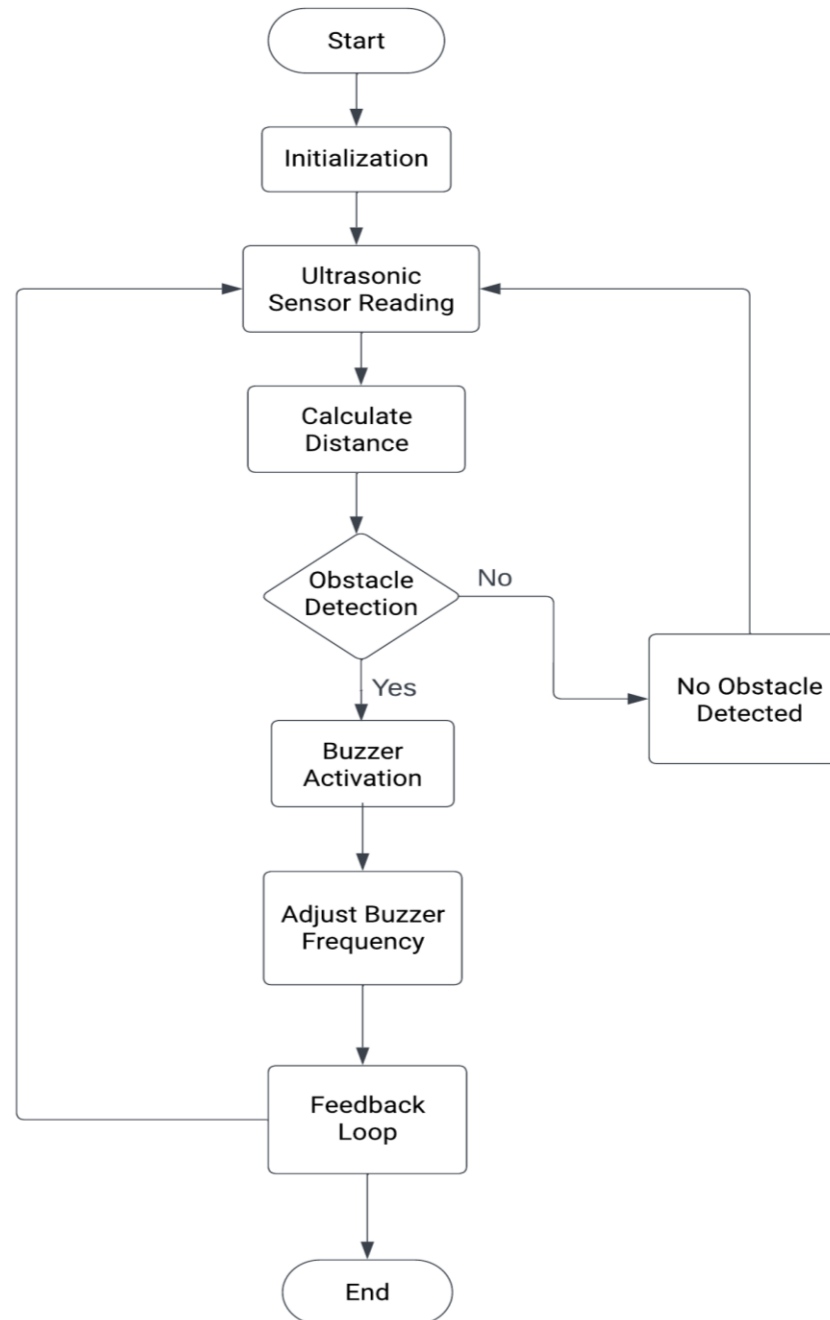


- The **Smart Blind Stick** scans the path in front of it with the help of an HC SR04 Ultrasonic sensor.
- Whenever the sensor detects any object in its path the buzzer starts beeping and also at the same time the LED turns on.
- The blind person can hear the beeping of the buzzer and manage to change the way. In this way, the person can easily find his way without getting injured.
- This smart stick works in the same way as the Ultrasonic range finder did. You can also see the real-time values of the distance in cm on the Arduino serial monitor.

# CIRCUIT DIAGRAM



## FLOW CHART:





## WORKING MODEL

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- ❑ Project Objective: Aid visually impaired individuals in walking comfortably while receiving obstacle warnings through a frequency-changing buzzer signal.
- ❑ Warning System: Buzzer frequency increases as objects get closer, providing proximity feedback.
- ❑ Key Component: Utilize the Ultrasonic Sensor HC-SR04.
- ❑ Sensor Function: Emit high-frequency sound pulse, calculate echo time, and interpret the reflected signal for distance measurement.
- ❑ - Calibration: Calibrate sensor based on the speed of sound (341 meters per second) to determine distance from time-delay calculations.

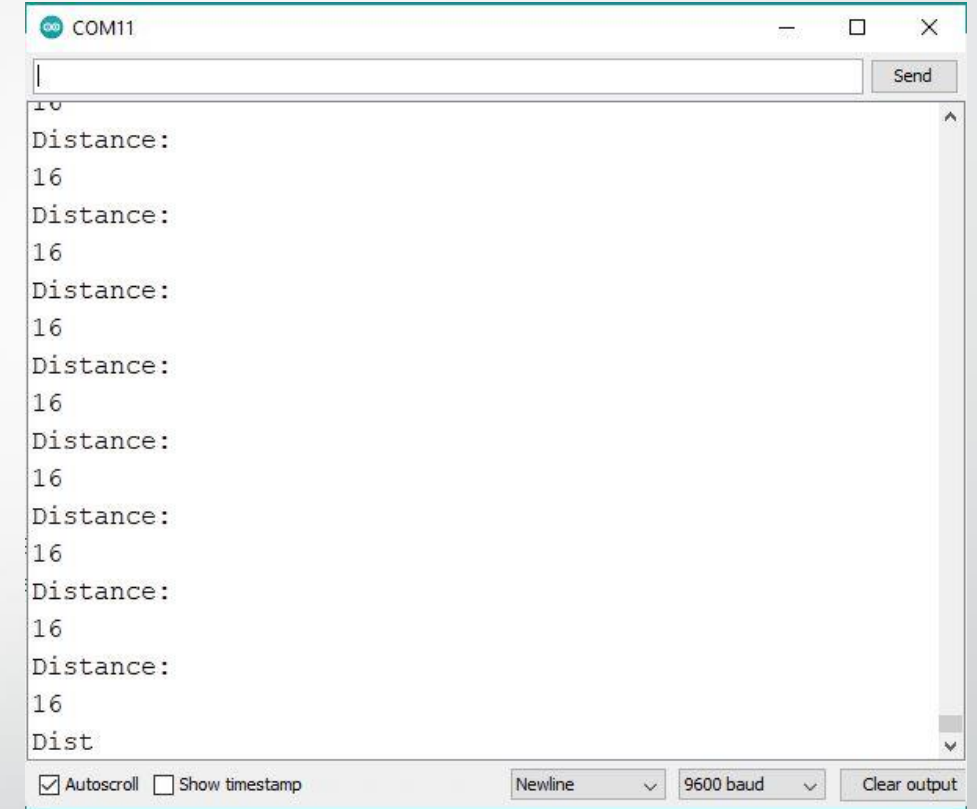


# MODULE IMPLEMENTATION

## Code:

```
const int trigPin = 9;
const int echoPin = 10;
long duration;
int distanceCm, distanceInch;
void setup()
{
  Serial.begin(9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(6, OUTPUT); // Connect LED Pin D6
  pinMode(5, OUTPUT); // Connect Buzzer Pin D5
}
void loop()
{
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distanceCm = duration * 0.034 / 2;
  distanceInch = duration * 0.0133 / 2;
  Serial.println("Distance: ");
  Serial.println(distanceCm);
  delay(100);
  // See the Ultrasonic Sensor Value in Serial Monitor
  if(distanceCm < 25) // You can Change the value
  {
    digitalWrite(5, HIGH); // Buzzer ON
    digitalWrite(6, HIGH); // LED ON
  }
  else
  {
    digitalWrite(5, LOW); // Buzzer OFF
    digitalWrite(6, LOW); // LED OFF
  }
}
```

## OUTPUT:



```
COM11
Distance:
16
Distance:
16
Distance:
16
Distance:
16
Distance:
16
Distance:
16
Distance:
16
Dist
```



## FUTURE IMPLEMENTATION

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- In future, we will be modifying the proposed model in better way.  
Initiating with the addition of Bluetooth module for proper on and off functioning.
- Integration of GPS module for detecting location of user, in case of an emergency.
- GPS module will be integrated in combination of Bluetooth Module of Arduino UNO connecting it to the mobile phone for better and smooth location detection.
- Besides, soil moisture detector can be implemented for detecting the amount of moisture in the soil, providing the safer access of the path to the user.
- We can detect pit holes Infront of blind person

## REFERENCES

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42.SmartBlindStickUsingUltrasonicSensormodified.pdf



THANK YOU