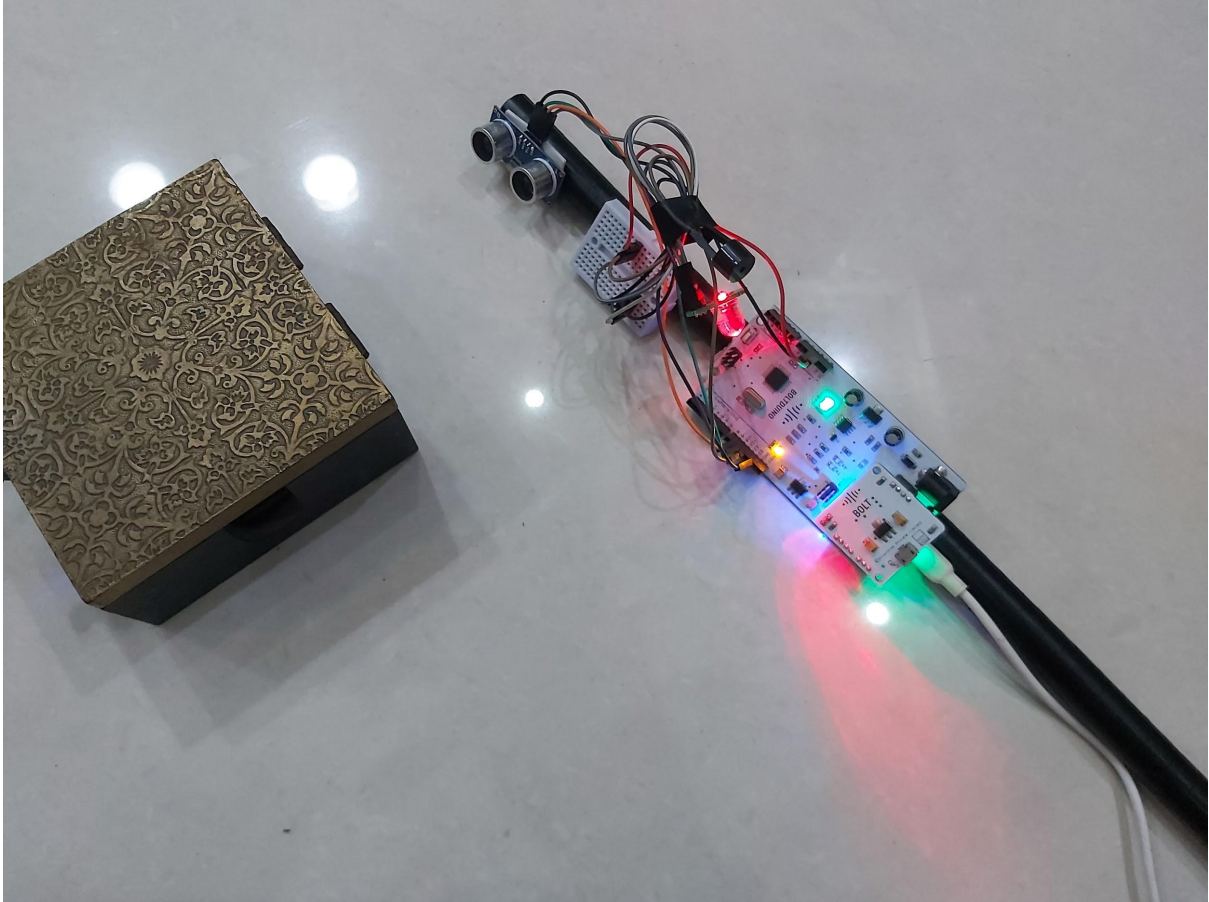


Assistive Stick



Embedded assistive stick for visually impaired people, made up of HC-SR04 ultrasonic sensor and buzzer for its sound signal. Using this smart blind stick, a visually impaired person can walk without anyone's help. The smart blind stick automatically detects the obstacle in front of the person and gives him a response to the person by warning sound.

THINGS USED IN THE PROJECT

HARDWARE

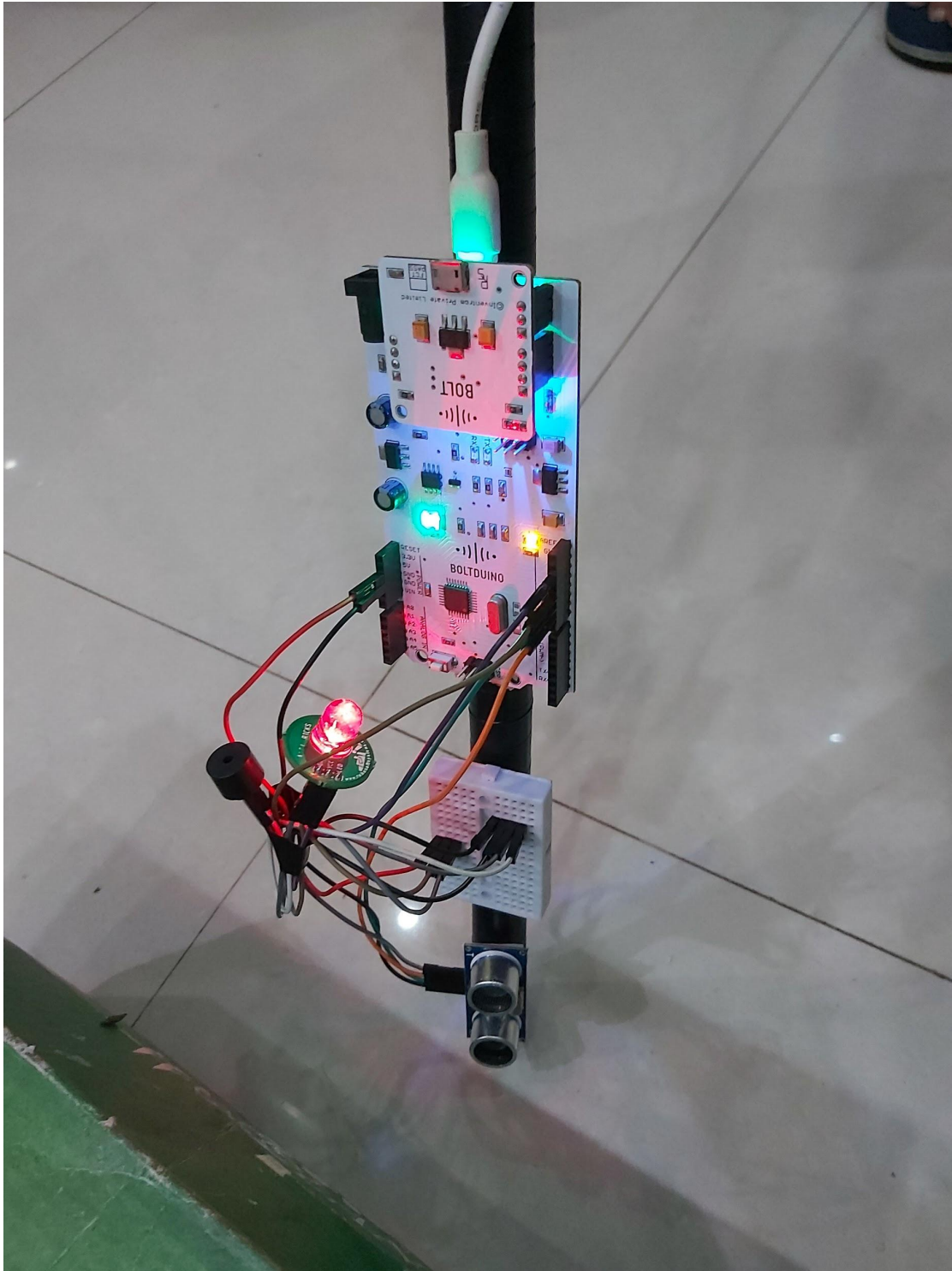
- Boltduino (Arduino)
- ESP8266 Bolt Wifi Module
- HC-SR04 Ultrasonic Sensor x1
- BreadBoard
- Buzzer
- LED module
- Some wires M2M, M2F
- USB cable
- Double sided tape

SOFTWARE/ APP / ONLINE SERVICES

- Arduino IDE

HARDWARE SETUP

- 1) Connect the HC-SR04 Ultrasonic Sensor to the Boltduino(Arduino) via BreadBoard, VCC pin to 5V, Trig to digital pin 9, Echo to digital pin 10, GND to ground pin of Boltduino.
- 2) Connect the LED module to Boltduino, LED pin to pin no. 13, and VCC & GND to 5v and ground pin of Arduino respectively.
- 3) Connect the Buzzer, to pin no. 11. and other to GND pin of Boltduino.
- 4) Stick the sensor, breadboard, arduino to a long stick
- 5) Our assistive stick is ready to code.



SOFTWARE SETUP

- 1) Open Arduino IDE and select Board as Arduino UNO and Port as per your hardware configuration.

SOFTWARE PROGRAMMING / CODE

- 1) Open a new sketch, name it as **Smart_Blind_Stick** and Code as shown below.

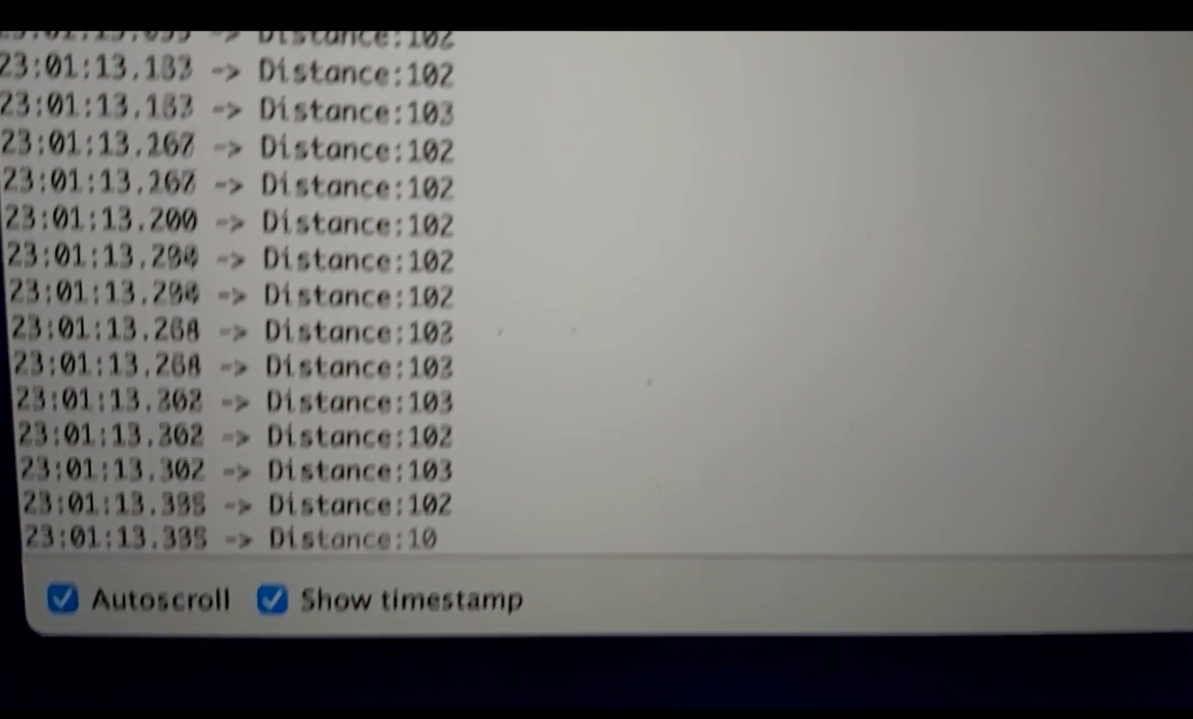
```
const int trigpin=9;
const int echopin=10;
const int buzzer=11;
const int ledpin=13;
long duration;
int distance;
int safetydistance;

void setup() {
  pinMode(trigpin,OUTPUT);
  pinMode(echopin,INPUT);
  pinMode(buzzer,OUTPUT);
  pinMode(ledpin,OUTPUT);
  Serial.begin(9600);
}

void loop() {
  digitalWrite(trigpin,LOW);
  delayMicroseconds(2);
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  distance=duration*0.034/2;
  safetydistance=distance;
  if(safetydistance<=15){
    digitalWrite(buzzer,HIGH);
    digitalWrite(ledpin,HIGH);
  }
  else{
    digitalWrite(buzzer,LOW);
    digitalWrite(ledpin,LOW);
  }
  Serial.print("Distance:");
  Serial.println(distance);
}
```

OUTPUT/ VIDEO

On the serial monitor it will print the distance between the stick and obstacle in front of it.



The screenshot shows a serial monitor window with a dark background and light-colored text. The text displays a series of timestamped distance measurements. The timestamps are in the format HH:MM:SS.mmm, and the distance values are in centimeters. The measurements are as follows:

Timestamp	Distance (cm)
23:01:13.055	102
23:01:13.133	102
23:01:13.183	103
23:01:13.267	102
23:01:13.267	102
23:01:13.200	102
23:01:13.294	102
23:01:13.294	102
23:01:13.268	102
23:01:13.268	102
23:01:13.302	103
23:01:13.302	102
23:01:13.302	103
23:01:13.395	102
23:01:13.395	10

At the bottom of the window, there are two checkboxes: "Autoscroll" and "Show timestamp", both of which are checked.

YT Video Link:

<https://youtu.be/8McUI01o8BQ>