

Online Mini Project Expo

“Microcontroller and Embedded Systems”

Project Title: **Blind Stick**

Team Details: N Harsha Vardhan – 1AT19CS071

V Nagaraj – 1AT19CS123

T Naresh – 1AT19CS116

N Anil Kumar – 1AT19CS072

Contents

1. Introduction
2. Implementation
 1. Hardware specification
 2. Software specification
3. Circuit Diagram / Block Diagram
4. Code
5. Conclusion
6. Future Enhancements
7. Acknowledgement

Introduction

- Ever heard of Hugh Herr? He is a famous American rock climber who has shattered the limitations of his disabilities; he is a strong believer that technology could help disabled persons to live a normal life. In one of his TED talk Herr said *“Humans are not disabled. A person can never be broken. Our built environment, our technologies, is broken and disabled. We the people need not accept our limitations, but can transfer disability through technological Innovation”*. These were not just words but he lived his life to them, today he uses Prosthetic legs and claims to live to normal life. So yes, technology can indeed neutralize human disability.
- Over 2.2 billion people are blind or visually impaired, and the numbers are rising.
- Blind people can't walk without a cane.
- with this in mind let us use some simple development boards and sensors to build an ultrasonic blind walking stick using Arduino that could perform more than just a stick for visually impaired persons.

Blind People



Blind people can't walk without a cane.

Implementation

- ***Components Used:***
- Arduino Uno Rev3 (MicroController)
- UltraSonic Sensor
- Buzzer
- Led
- 9v Battery

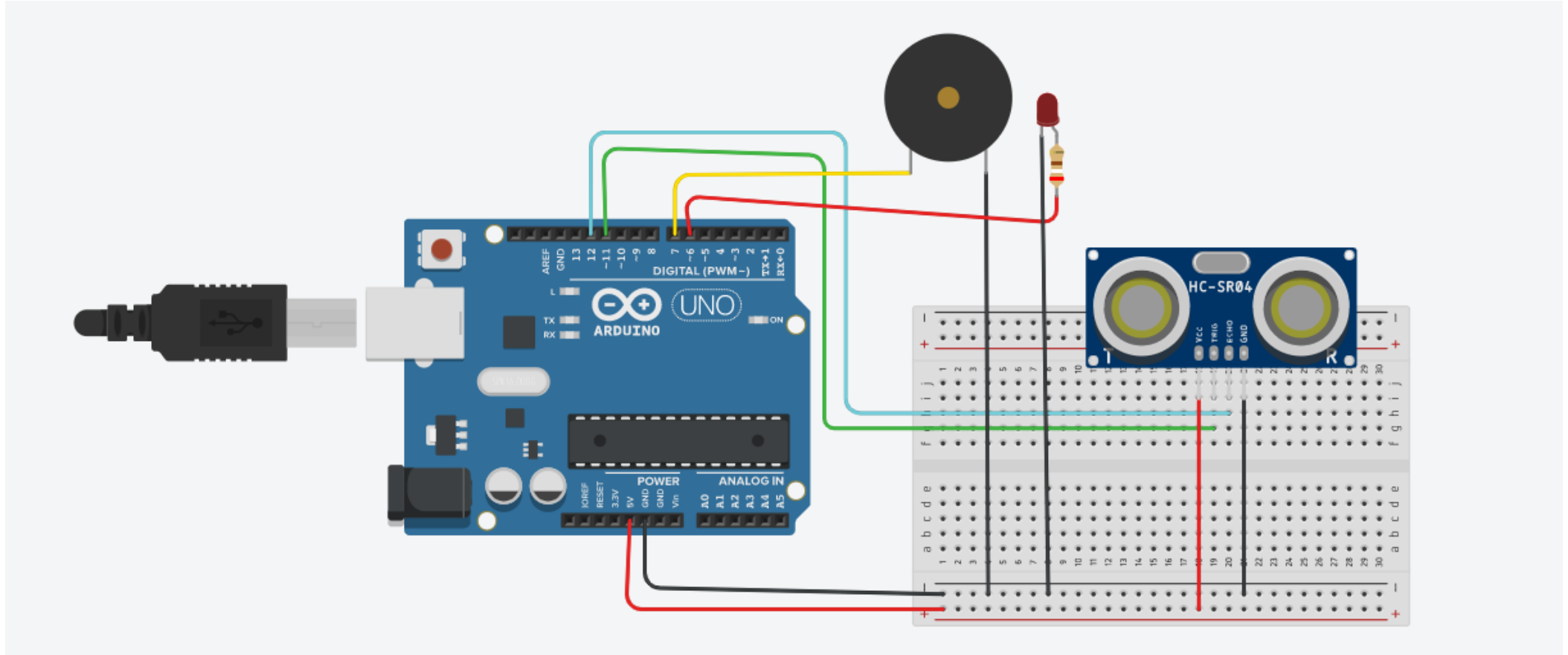
HardWare Specification

- **Arduino** is used to, code the sensor and calculating distance of an Obstacle.
- **Ultrasonic sensors** work by **sending out a sound wave at a frequency above the range of human hearing**. ... It sends an ultrasonic pulse out at 40kHz which travels through the air and if there is an obstacle or object, it will bounce back to the sensor
- It Consists Four Pins **1.Vcc**(power),**2.Gnd**(ground),**3.Trigger**(sends sound wave),**4.Echo** (when waves are bounce back then it will recieves sound waves).
- **Buzzer** is used to sound , when there is an Obstacle infront
- **LED** is used to blink.
- **9v battery** is used to supply the power to Arduino.

Software Specifiatiion

- We Can use Laptop/Mobile to code Arduino

Circuit/Block diagram



Code

- `const int trig = 11;` `// initializing TriggerPin to pinNo 11`
- `const int echo = 12;` `// intitliazing EchoPin to pinNo 12`
- `int buzzer = 7;` `// intitliazing Buzzer to pinNo 7`
- `int led = 6;` `//intitliazing LedPin to pinNo 6`
- `long duration;`
- `int distance;`
- `void setup()`
- `{`
- `pinMode(trig,OUTPUT);` `//Setting up Trigger pinMode as OUTPUT and EchoPin as INPUT`
- `pinMode(echo,INPUT);`

Code

- `pinMode(buzzer,OUTPUT);`
- `Serial.begin(9600);`
- `}`
- `void loop()`
- `{`
-
- `digitalWrite(trig,LOW);`
- `delayMicroseconds(2);`
-
- `digitalWrite(trig,HIGH);`
- `delayMicroseconds(10);`
-
- `digitalWrite(trig,LOW);`
-
-
- `duration = pulseIn(echo,HIGH);`
- `distance = duration*0.034/2;`

// Finding Duration and Calculating
The distance Which uses to **SWITCHON**
The buzzer on Particular distance

Code

- `if (distance <= 20)`
- `{`
- `digitalWrite(buzzer,HIGH);`
- `digitalWrite(led,HIGH);`
- `delay(1000);`
- `digitalWrite(led,LOW);`
- `delay(100);`
- `}`
-
- `else`
- `{`
- `digitalWrite(buzzer,LOW);`
- `digitalWrite(led,LOW);`
- `}`
-
- `Serial.print("distance:");`
- `Serial.println(distance);`
- `}`

```
/*IF {  
    distance(cm)is less Than  
    20 cm thenThe buzzer will  
    SWITCHON and LED blinks  
    }
```

```
Else  
{ Buzzer and Led will off } */
```

```
//Finally It Prints  
"Distance" in SerialMonitor
```

Conclusion

- This system offers a low-cost, reliable, portable, low-power consumption and with obvious short response time. Though the system is hard-wired with sensors and other components, it's light in weight.

Future enhancements

- Further aspects of this system can be improved via wireless connectivity between the system components, thus, increasing the range of the ultrasonic sensor.

Acknowledgement

- This research was supported by [Atria Institute Of Technoloy \(AIT\)](#) and [Hemalatha Mam](#), to contribute to solving some of the problems of society.