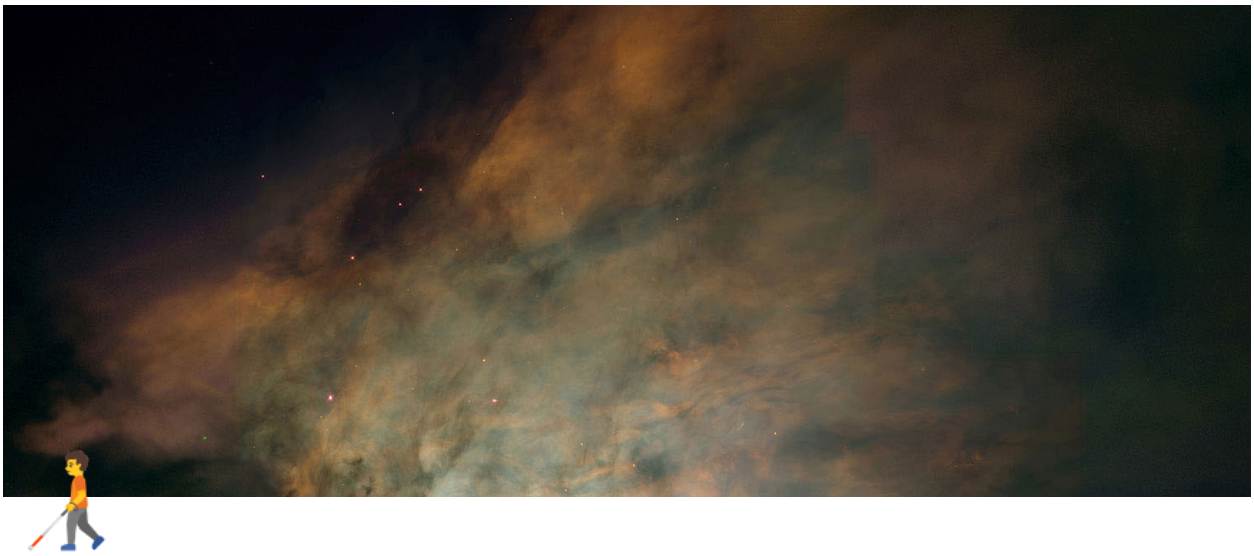

Smart Stick For Blind Arduino project

Project Name

- **Smart Stick For Blind**

Group Members

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Introduction

Introducing the "Smart Blind Stick" - A Revolutionary Solution for the Visually Impaired.

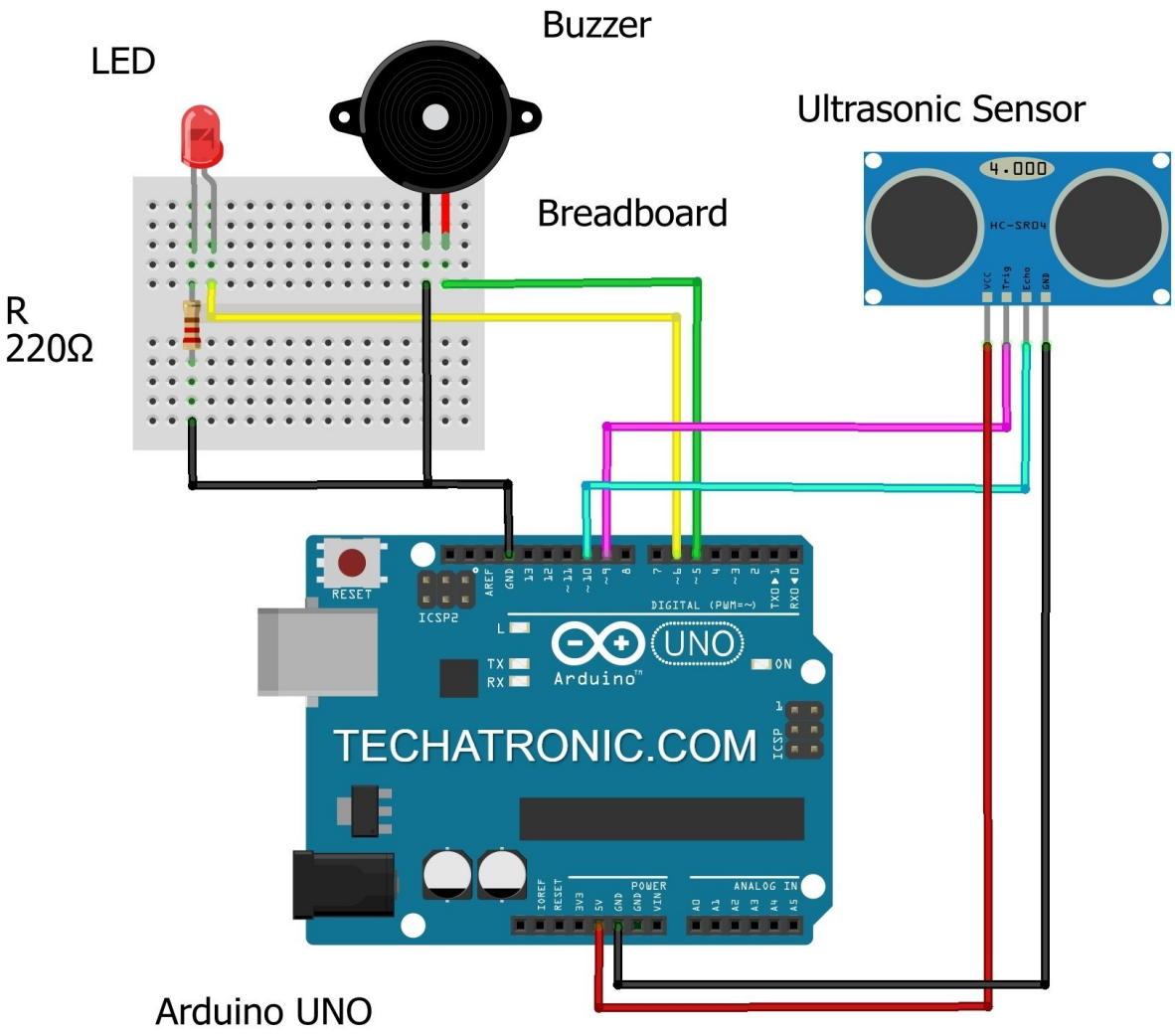
Blind individuals encounter numerous obstacles in their daily lives, and one significant challenge is navigating through busy streets. With vehicles and obstacles posing potential risks, ensuring their safety becomes crucial. The Smart Blind Stick, powered by Arduino and equipped with an ultrasonic sensor, addresses this issue by providing real-time alerts to the user when it detects blockages in their path. This innovative device enhances mobility and minimizes the risk of accidents for visually impaired individuals, offering them greater independence and peace of mind.

The primary uses of an RGB mood lamp include:

- 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.

Components Required

- **Arduino Uno**
- **USB cable for uploading the code**
- **Jumper wires**
- **Breadboard**
- **HC-SR04 ultrasonic sensor**
- **Buzzer**
- **LED with a 220-ohm resistor**
- **DC batteries**



Step by Step Guidance

1. Please make the connections according to the given **Smart blind stick circuit diagram**.
2. Attach the 5-volts and GND pins of the Arduino to the VCC and GND pins of the **ultrasonic sensor**.
3. Connect the TRIG and ECHO pins of the ultrasonic sensor with the digital-9 and digital-10 pins of the Arduino.
4. Join the positive and negative wire of the buzzer with the digital-5 and GND pins of the Arduino.

5. Attach the positive leg of the LED with the digital-6 pin of the Arduino and the negative leg of the LED with the GND pin of the Arduino through a 220-ohm resistor.
6. You can use a breadboard for making common connections. Power the Arduino board using DC batteries.

Code For the Project

```
// defines pins numbers
const int trigPin = 9; // Assigns pin 9 as the trigger pin for the ultrasonic sensor
const int echoPin = 10; // Assigns pin 10 as the echo pin for the ultrasonic sensor
const int buzzer = 11; // Assigns pin 11 as the output pin for the buzzer
const int ledPin = 13; // Assigns pin 13 as the output pin for the LED

// defines variables
long duration; // Variable to store the duration of the sound wave travel time
int distance; // Variable to store the calculated distance from the ultrasonic sensor
int safetyDistance; // Variable to store the safety distance threshold

void setup() {
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  pinMode(buzzer, OUTPUT); // Sets the buzzer pin as an Output
  pinMode(ledPin, OUTPUT); // Sets the LED pin as an Output
  Serial.begin(9600); // Starts the serial communication at a baud rate of 9600
}

void loop() {
  // Clears the trigPin
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);

  // Sets the trigPin on HIGH state for 10 microseconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // Reads the echoPin, returns the sound wave travel time in microseconds
  duration = pulseIn(echoPin, HIGH);

  // Calculating the distance
  distance = duration * 0.034 / 2;

  safetyDistance = distance;
  if (safetyDistance <= 5) {
    digitalWrite(buzzer, HIGH); // Turns on the buzzer if the distance is less than or equal to 5
    digitalWrite(ledPin, HIGH); // Turns on the LED if the distance is less than or equal to 5
  } else {
    digitalWrite(buzzer, LOW); // Turns off the buzzer if the distance is greater than 5
    digitalWrite(ledPin, LOW); // Turns off the LED if the distance is greater than 5
  }

  // Prints the distance on the Serial Monitor
```

```
  Serial.print("Distance: ");
  Serial.println(distance);
}

// this code is commented and prepared by Mohamed Abdirazak Adam and Abdullahi Muse Husseim
```

source

1. https://techatronic.com/smart-blind-stick-using-arduino-and-ultrasonic-sensor/#Connection_Diagram
2. https://www.youtube.com/watch?v=_RpSaj9j-GY&t=1s

Result image