

AIR MIDI

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Abstract

My project idea is to make a musical instrument that can play a sound by tapping in the air over a sensor. This can be used for musicians to create music because a midi signal will be sent to the computer so they can record and edit the sound through their music editing software.

Introduction

This is a musical instrument that can be played by touching the air which can be used for musicians to create new and creative melodies.

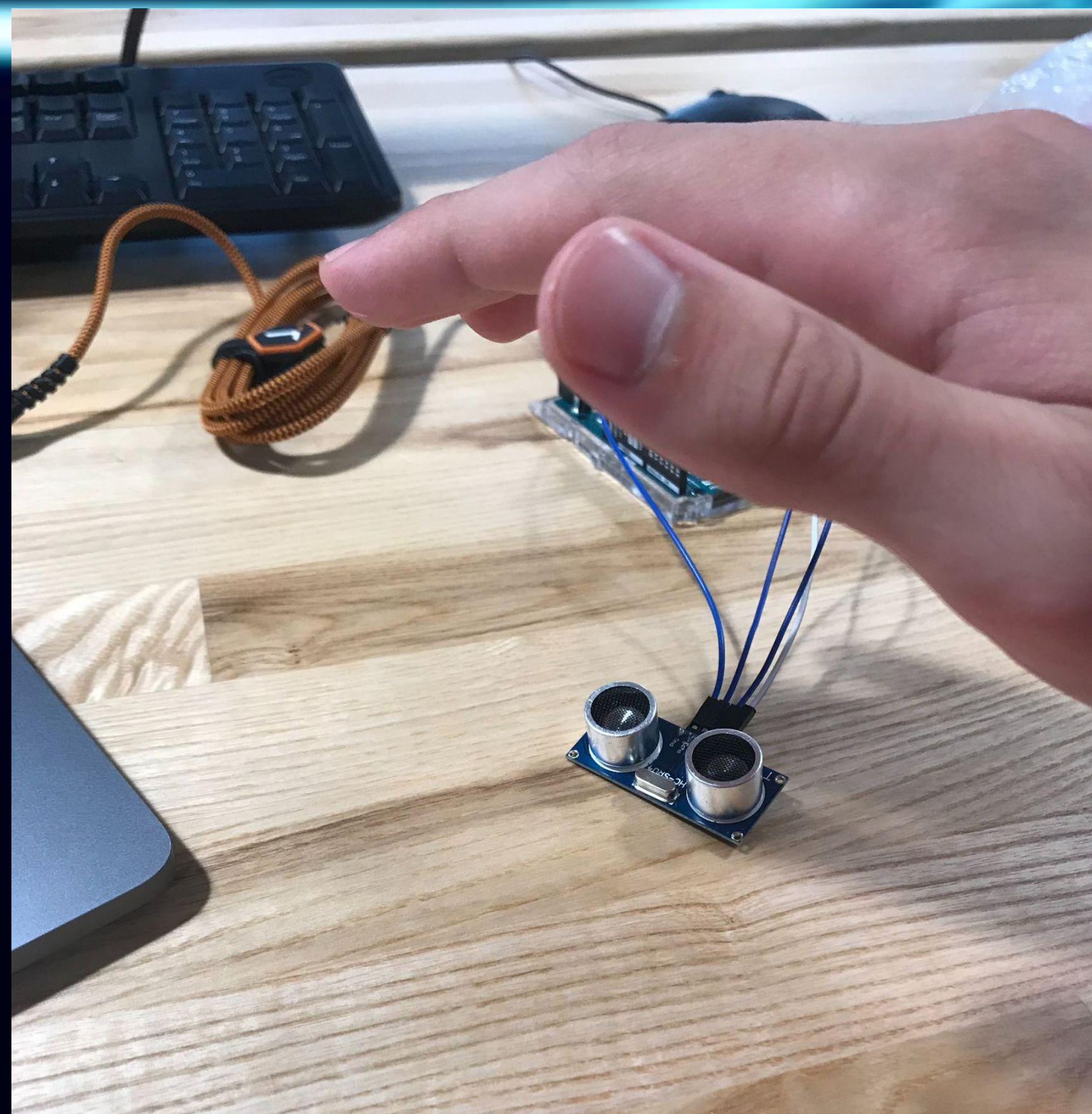
Methods and Materials

The materials used are an ultrasonic sensor and an Arduino.

The way it works is the ultrasonic sensor sends an audio wave at a frequency that cannot be heard. When you place your hand over it, I can calculate the distance from my hand to the sensor by knowing how long it takes for sound to travel. After this, I can send the note to my computer as a midi signal if it is a certain distance away.

Results

The results of this project show that an ultrasonic sensor can be used to make music. This is because when you play it, a note can be sent to a music editing software. The data sent can be recorded and altered which can be useful for producers to create new melodies.



```
pinMode(trigPin3, OUTPUT);
pinMode(echoPin3, INPUT);

delay(5000);
}

void loop() {
  // put your main code here, to run repeatedly:
  for (int i = 0; i < 3; i++) {
    getDistance(i);
    if (distance <= 50) {
      if (distance >= 1 && distance <= 10 && distance >= sensorPosition-2 && on==1) {
        sensor = i;
        if (on == 1) {
          sensorPosition = distance;
        }
        on = 0;
        playNote(pitch[sensor]);
      }
    }
    getDistance(sensor);
  }
  if (distance > sensorPosition+5 || distance < sensorPosition-5) {
    noteOff(0, pitch[sensor], 127);
    MidiUSB.Flush();
    on = 1;
  }
}

int getDistance(int x) {
  digitalWrite(arrTrig[x], LOW);
  delayMicroseconds(2);
```



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