

# Device for DEAF & Hearing-Impaired People

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## ABSTRACT

A portable system for deaf and hearing-impaired people has been developed based on the sensor standards and other related technologies to minimize their communication difficulties with the ordinary society. A sensor is a device that produce an output signal for the purpose of sensing of a physical environment. The intent of this research paper to developed micro vibration sensor for DEAF people when they cross the road and highway. While crossing the road usually they people unable to hear the horn honk by the driver. This study meant to help these people to prevent from any causality occur on road. Here we mainly focus to develop a micro vibration sensor which help the DEAF people with the highly power saving.

**Keywords:** - Sound sensor, micro vibrating motor, Arduino Uno, Red LED.

## I. INTRODUCTION

In the World, people are desired receive equal status without any discrimination. In the world ordinary people, all deaf and hearing impaired persons also need to communicate with other people and they also have right to be treated equally. Many people today use new technologies to make their lives easier. Disabled people are not an exception to this reality. In the World 5% population, nearly 360 million people, have the problem of hearing loss. Many of them are living in developing and low income countries and they have not the knowledge about their special needs and requirements. In our society some deaf or hearing impaired people find difficulties to communicate with ordinary people and do not aware sounds from their surrounding especially when they are travelling.

This portable device help deaf or hearing impaired people to communicate with ordinary people in our society.

Proposed system has micro vibration motor which is used to produce the vibration through the sound receiver sensor.

## II. PROBLEM DEFINATION

Hearing loss is the loss of the ability to hear sounds. Hearing loss comes under, difficulty in hearing clearly, hearing very little sound, difficulty in understanding in the midst of noise. Deaf or hearing impaired people generally use sign language to communicate with each other. Whenever people find this type of problem they are depressed and frustrated. Nowadays many services running into the voice platform which are not accessed by deaf and hearing impaired people. This is a communication barriers between deaf persons and society. This research paper address the communication problem of deaf and hearing impaired people. DEAF and hearing impaired people always tried to hide their problem but mostly they are not able do it.

## III. OUR APPROACH

There are many similar approaches taken to address the above mentioned issues using new technologies and methodologies. In the recent years, there has been many research works on the hand sign recognition. The technology of gesture recognition that help to hearing impaired people to communicate to others. To resolve above-discussed problem we came up with the solution of a portable tool where it integrates many features for deaf and hearing impaired people to make their communication with the normal society.

Our system consist of two application:

1. Micro vibrating motor
2. Sound receiver sensor

The device have Micro vibrating motor which convert the signals and produced the vibration. It is an important tool to generating the vibration.

The sound receiver sensor convert the sound which sounding the DEAF and hearing loss people into the signals and transfer to the micro vibrating motor. So it is much important.

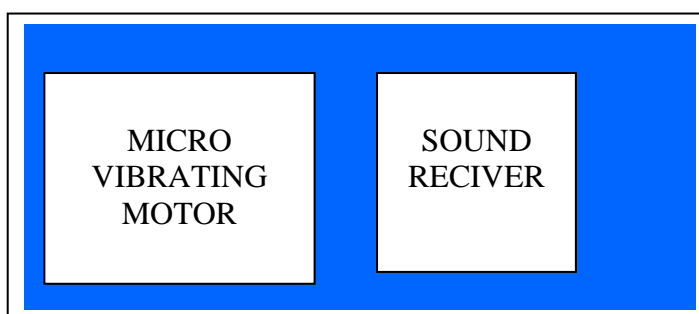


Fig3.1: Architecture of Portable System

#### IV. DESIGN OF THE SYSTEM

This research paper is developed by keeping deaf people in mind.

As we know that any sound is composed of a frequency range. Our device is also works on it. When driver blow the horn so the sound produced is of a particular frequency range i.e. (300Hz - 700Hz). The device then detect the frequency and gives a signal to Arduino. After that it identify the sound and it will react through the micro motor of vibration. It vibrate the whole device, and the vibration is enough that can be sensed by the skin of DEAF people.

To design this portable system we required Arduino Uno, Arduino software and C++ language.

This research paper focused mainly following components:

A. Micro vibrating motor

B. Sound receiver sensor

##### A. Micro vibrating motor

Micro vibrating motor is a device which produce the vibration when it get the signal from the sound sensor.

##### B. Sound receiver sensor

Sound receiver sensor convert the sound into the form of signal which surrounding the deaf or hearing impaired people.

#### V. EVALUTION

We tested this portable device in our school lab. we tested this device by various frequency from the distance of 10m,8m,6m,4m,2m. When the micro vibrating motor get the signal from sound sensor receiver then it vibrate and DEAF people fell the vibration.

```

File Edit Sketch Tools Help
#include <FreqMeasure.h>
void setup() {
  Serial.begin(9600);
  FreqMeasure.begin(); //Measures on pin 8 by default
  pinMode(8, OUTPUT);
}

double sum=0;
int count=0;
bool state = false;
float frequency;
int continuity =0;

void loop() {
  if (FreqMeasure.available()) {
    // average several reading together.
    sum = sum + FreqMeasure.read(); //sum =122
    count = count + 1;
    if (count > 100) {
      frequency = FreqMeasure.countToFrequency(sum / count);
      Serial.println(frequency);
      sum = 0;
      count = 0;

      if (frequency>340 && frequency<640)
      { continuity++; Serial.print("Continuity -- "); Serial.println(continuity); frequency=0; }

      if (continuity >=1 && state==false)
      { state = true;
        continuity=0;
        Serial.println("Light Turned ON"); delay(1000);
        digitalWrite(8, state);
        state = !state;
      }
    }
  }
}
    
```

DISTANCE	TESTED FREQUENCY	RESULT
10M	800 Hz	✓
8M	810 Hz	✓
6M	820 Hz	✓
4M	700 Hz	✓
1M	750 Hz	✓

Fig 2.1 results of the proposed system

#### VI. FUTURE WORK

There are many communication barriers between the deaf and hearing impaired people in our society. Therefore we developed this portable device to resolve the problem of deaf and hearing impaired people.

In future the size of the device can be reduce and without micro vibrating motor it can use by the DEAF and hearing impaired people.

#### VII. REFERANCES

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#### GUIDE



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VICE PRINCIPAL

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