# Echonet Microphone prototype

## BOM-

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| --- | --- |
| **Item** | **Quantity** |
| Raspberry Pi 3b + | 1 |
| USB Mini USB Mic MI-305 | 1 |
| Push button | 1 |
| Jumper cables | 2 |
|  |  |

## Setup

### Required libraries

These libraries will require to be compiled and installed in the project folder

* Portaudio –
  + <https://portaudio.com/docs/v19-doxydocs/index.html>
  + https://github.com/gglockner/portaudio
* ALSA (Advanced Linux Sound Architecture)
  + https://www.alsa-project.org/wiki/Main\_Page
* pyaudio
  + <https://github.com/CristiFati/pyaudio>

### library set up

* log into Pi via SSH or using the Pi GUI
* Open terminal
* Create new folder and navigate into it

mkdir echoMic

cd echoMic

Install ALSA

sudo apt-get install libasound2-dev

Clone the ALSA patched version of portaudio

git clone -b alsapatch https://github.com/gglockner/portaudio

Navigate into the portaudio folder

cd portaudio

Compile portaudio

./configure && make

sudo make instal

sudo ldconfig

cd..

install pyaudio

sudo apt install python3-pyaudio

Provided these step have completed successfully the needed requirements for the microphone are installed

### Microphone setup

Copy the microphone.py and audio setup.py file into the echoMic folder

Next we need to find out the location of the USB microphone ensure this plugged into the Pi

* Run the audiosetup.py
  + There will be quite a lot of output to the console this is mostly functions that are not working or connected for other audio boards and functionality

The out put should look like this

A screen shot of a computer

Description automatically generated

The final item are the audio devices attached to the Pi we need to find the USB microphone

And give the microphone.py the index values 0,1,2,3 ect to the

dev\_index = 1 # device index

The microphone.py should now be ready to run.

### Hardware setup

A single push button controls the start stop system

The pin is connected to GPIO pin 2 for power and GPIO 6 for Ground as follows:



