

# OSCILLOSCOPE USING ICOBARD

Sandeep Khyalia   Dinesh Kumar Sonkar

March 8, 2019

# Objective

- Converting analog data values to discrete levels using icoboard,
- applying a discrete filter on the sampled data
- recreating the sound file again and checking the differences occurring in normal sound file vs filtered sound file

# Approach

Using analog to digital conversion(USING ADC code ),We started the project by trying to read the analog voltage of slide pot using the slide pot

# Reading the Audio

To read the audio, we converted the mp3 file into wav file using wavesurfer. Play the audio file and read it using audio jack connected to microcontroller. Store the values we get in a text file or any other format.

**' We fed the readings using an audio jack The readings captured on the serial monitor are stored in a text file for further processing**  
We then applied low and high pass filters to this data in python and plotted them using numpy and matplotlib libraries in python

We are doing processing through low pass,high pass Band pass Filters:  
Low pass filter range upto 2 kHz.  
Bandpass filter range 4 - 6 kHz.  
High pass filter range 8 - 10 kHz

# Hardware Required

‘ Audio Jack,Laptop ,  
Coolterm (Serial Monitor) ,  
Wavesurfer (Playing sound Files) Audacity

# Result

We playback the Original and Filtered data by using pyAudio library of python and analyzed how the generated sound will change when we apply appropriate filter to it (our aim here to remove the electrical household noises which generally have frequency around 50Hz)

we can sample an analog file and do audio processing.