FPGA based Audio Mapping

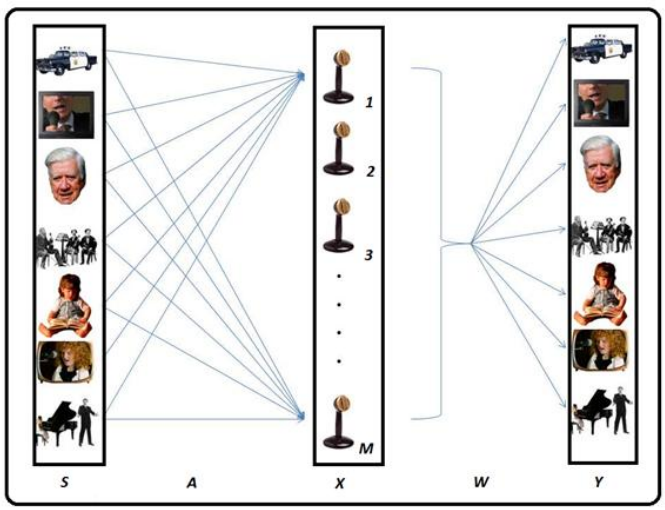
Overview:

If we consider the situation of attending a party, our ears capture numerous sounds: a friend's voice, the voices of others, background music, ringing telephones, and many others. If one concentrates, one can hear what a person is saying and you will filter any other sound. One can also change his/her focus of attention. For example, one may pay attention to your friend's speech first and shift focus to the music if it is playing a song you like. If we were to record these sources by placing microphones in many places inside the room, the playback would be jumbled mix of sounds. One might be able to pick out a few words here and there, but there is no way one would be able to hear the conversation details. We are going to achieve this audio mapping using FPGA based circuit.

Features:

- Play with the filtered audio.
- Playback or broadcast the filtered audio.
- NOISE reduction.
- Checking properties of particular signal.

Implementation: We are going to attach microphones to take input audio signal from the external source to the FPGA board. FPGA board will simultaneously process the audio signal and separate it. We can store that mapped audio and play with it. Blind source separation (BSS) defined as the method that separate or estimate the original sources without having any prior knowledge of the original sources.



Timeline:

First 10 days	**Learning HDL and MATLAB.**
Day 11 - Day 20	Theory of Signal Processing.
Day 21 - Day 30	Collaborating FPGA and signals. Implementing Algorithm and Completing basic circuitry.
Day 31- Day 40	Testing, Debugging and Finalising.

Hardware Required:

- FPGA board.
- Microphones.
- Speakers.

Refernces :

- scholar.uwindsor.ca/cgi/viewcontent.cgi?article=1144&context=etd

Roles of individual: Combined Effort.

Contact Details :

Pratik Bhangale : 126/3, M.No. 8960742030
Ganesh Seelam : 127/3, M.No. 7755057757
Sri krishna : 324/3 , M.No. 7755057706
Mounica : A102/GHT, M.No. 7755048173