DSP Application Assignment

(Group#32)

Team
Meghanad Shingate(09307608)
Samir Shelke(10307918)
Vinay Narayane(10307040)

Topic:Removing vocals from music tracks

Abstract

Most of the times commercial music is identified by singer's voice, like old songs of Mohammed Rafi and Lata Mngeshkar, who has distinguished extraordinary voice. But now a days most of the songs are identified by their distinguished instrumental music or great background music, like different 'Bands' e.g. Linkin Park. So goal of this application assignment is to remove the vocals from the songs(music tracks) in order to appreciate the underlying instrumental background.

This removal of vocals have many applications, like making ring-tone of mobile. Also removal of vocals makes production of remixes easier. Most of the time people, and I personally, like to hear tracks without singers voice.

In this project we are going to use different techniques for vocal removal. It includes filtering frequency range of human voice(i.e. Bandpass filtering), cancellation of common frequencies between stereo channels(i.e. Stereo cancellation) and finally masking time frequency spectrogram (i.e audio blind source separation[1]).This technique consists of "extracting from an input audio signal, a set of audio signals, whose mix is perceived similarly to the original audio signal". In our case, we focused on extracting the vocals track from the mix consisting of the rest of the instruments. In this process to obtain the spectrogram of signals, we are going to take Short Time Fourier Transform (STFT) of signal.

We are going to add more techniques on the way as we proceed. We are going to use FreeMat for implementation in Linux which is free-ware.

Reference:

[1] MarC Vinyes, Jordi Bonada, Alex Loscos. *"Demixing Commercial Music Productions via Human-Assisted Time-Frequency Masking"* Presented at the Audio Engineering Society, Paris, France, 2006.

[2] Casey, M.A., Westner, A., *"Separation of Mixed Audio Sources by Independent Subspace Analysis,"* International Computer Music Conference (ICMC), 2000.

*(*Actually we are looking for other references too, these are what I found useful.)*