Abstract

It is so difficult to get a pure single acoustic signal, where acoustic signals often suffer from noise and interferences. Also in some cases there are several sources of acoustic signals in the zone, one of them is desirable and the others are required to be cancelled. The Microphone Array Beamforming System (MABFS) is one of the best solutions for the purpose of extracting one signal from several signals by directing the main lobe of the microphone array towards the desired signal and placing the other signals in the nulls of this array. In this paper three types of MABFS were implemented based on TMS320C6713 DSP KIT, these systems are uniform phase and amplitude MABFS using two microphone, uniform phase and amplitude MABFS using four microphones, and non-uniform phase and amplitude MABFS using four microphones. All the implemented systems were tested with sine wave signals and then with recorded speech signals, the results of these systems were compared with each other and with the MATLAB SIMULINK results that worked in past.

Index Terms

Computer Science  Information Sciences

Keywords

Noise and interference cancellation, uniform and non-uniform amplitude and phase, adaptive Filtering, beamforming, Microphone array, acoustic digital signal processing, TMS320C6713 KDS KIT.