Development of Low Cost Filter Banks for Audio Applications

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Abstract

An approach for low cost uniform and octave filter banks for Audio applications is proposed. The analysis stages of these filterbanks are based on IIR allpass second order sections with modified response. The modification is performed by forcing phase non-linearity at the analysis stage to be out of region of interest. By oversampling, the non-linear segments near the band edges are removed through subsequent synthesis filtering. Compared to existing literature designs, the new approach offers a substantial lowering in computational power, and a lower input/output delay. The simulation and testing of this technique was performed using MATLAB software package.

Keywords: Hearing Aids, Filterbanks, IIR filters, polyphase.