LOW−POWER IMPLEMENTATON OF A SUBBAND FAST AFFINE PROJECTION ALGORITHM FOR ACOUSTIC ECHO CANCELLATION (ThuAmPO2)

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Abstract :

Recent results have demonstrated the performance benefits of using Fast Affine Projection (FAP) algorithms for echo cancellation in oversampled filterbanks. Low−power, low resource implementations of these algorithms are useful for solving acoustic echo problems in size and resource constrained applications such as portable wireless headsets and portable or low−power hands−free phones. This paper describes a novel real−time subband implementation of the Gauss−Seidel Fast Affine Projection (GSFAP) algorithm. The algorithm uses online regularization to eliminate the need for voice activity detectors and greatly simplifies the calibration and deployment of the system. The algorithm is deployed on a DSP system with three processing units, including a filterbank co−processor customized for subband adaptive filtering. The resulting system consumes less than 7 mW while providing up to 30 dB of echo return loss enhancement in a typical hands−free speakerphone application.

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