

Title: An Efficient Long Distance Echo Canceller

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Abstract: This paper describes an implementation of a long distance echo canceller, operating on full-duplex with hands-free and in real-time with a single Digital Signal Processor (DSP). The proposed solution is based on short length adaptive filters centered on the positions of the most significant echoes, which are tracked by time delay estimators, for which we use a new approach. To deal with double talking situations a speech detector is employed. The floating-point DSP TMS320C6713 from Texas Instruments is used with software written in C++, with compiler optimizations for fast execution. The resulting algorithm enables long distance echo cancellation with low computational requirements, suited for embedded systems. It reaches greater echo return loss enhancement and shows faster convergence speed when compared to the conventional approach. The experimental results approach the CCITT G.165 recommendation levels.

Author Keywords: Echo cancellation; Adaptive filtering; Digital signal processing; Digital signal processor

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