Abstract

The theory and design of signal adapted filter banks in the coding gain objective as well as the multiresolution objective are of great interest in many signal processing applications. The role of the generalized triangular decomposition (GTD) filter banks in optimizing perfect reconstruction filter banks has been proposed recently by Ching-Chih Weng et al. They have proposed the GTD filter bank as a subband coder for optimizing the theoretical coding gain. In this paper, we show that the design of the GTD filter bank via the singular value decomposition (SVD) will be reduced to the principal component filter bank (PCFB) and it gives optimal performance in the multiresolution objective. The FIR approximation of the optimal GTD filter banks is also discussed in this paper. This is done by using the iterative greedy algorithm.

References

- S. Akkarakaran and P. P. Vaidyanathan, "Filterbank optimization with convex
FIR Approximation of GTD Filter Banks and their Multiresolution Optimality


Index Terms

Computer Science

Signal Processing

Keywords
Generalized triangular decomposition principal component filter banks iterative greedy algorithm

subband coder

multiresolution objective

singular value decomposition.