

Structural Subband Decomposition of Sequences and its Applications in Signal Processing

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ABSTRACT

The authors present a tutorial paper in which they review the concept of structural subband decomposition of sequences, a generalisation of polyphase decomposition. The idea of using a very simple analysis-synthesis structure allows computational efficiency. It is applicable both for signals and for systems, which may thus be designed and realised advantageously. The use of such decomposition is shown, in terms of theory and applications, for transform-based spectral analysis. FIR filter design and implementation, and adaptive filtering. Advantages are demonstrated for cases of narrow-band signals and systems.