CC PUB #230

January 1998

Non-Stationary Signal Processing Using Time-Frequency Filter Banks

Amir Francos and Moshe Porat

Department of Electrical Engineering
Technion - Israel Institute of Technology
Haifa 32000, Israel

Abstract

We present a new approach to the design of Time-Frequency (TF) filter banks for non-stationary noisy signals. The input multicomponent signal is represented by the Minimum Cross-Entropy TF distribution and the system is based on an array of time-varying filters. Each filter processes one component of the signal according to its specific TF support. The output of the proposed TF filtering algorithm is a set of the signal components. To demonstrate the algorithm performance, simulation results are given. Since the suggested method is equivalent to two-dimensional matched filtering, an algorithm for non-stationary signal classification is also presented.