Introducing Wavelets and Time–Frequency Analysis

Wavelet-Related Technologies in Biomedical Signal Processing

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The wavelet transform has emerged over recent years as a powerful time–frequency analysis and signal-coding tool suitable for use in the manipulation of complex nonstationary signals, and it has been in the forefront of many recent developments in biomedical and biological signal processing.

This special issue focuses on a selection of articles that use important wavelet-related technologies to solve problems in the proposed field of biomedical signal processing. We present an introductory overview article on the topic plus four other articles selected after a critical three-step peer-reviewed procedure, ensuring the dissemination of top-quality research. A considerable number of new ideas and applications were addressed in these articles that span a diverse set of methods and applications.

In the overview article titled ''Time–Frequency Analysis of Biosignals,'' we discuss the important aspects of both continuous and discrete wavelet transforms and their possible applications in biomedical signal processing.

''Predictability Analysis of Voice Signals'' by Scalassara et al. is the second article of this issue, wherein time–frequency analysis is applied to the detection and classification of voice samples taken from speakers with some pathology in the larynx and associated organs.

In the next article of this issue titled ''Pressure-Detection Algorithms,'' Perfetto et al. implement an algorithm to detect crucial points in signals originated from blood-pressure measurements.

In ''Microcalcification Border Characterization,'' Dócusse et al. address the interesting aspects of wavelet functions that permit the detection of microcalcification signs during mammographic clinical examinations.

In the last article, ''Normal Versus Pathological Voice Signals,'' Fonseca and Pereira show the applicability of discrete wavelet transform, used in conjunction with machine-learning algorithm, in the detection of Reinke's edema and nodules in the vocal folds.

Last, we would like to thank the editor-in-chief, Dr. Mike Neuman, for his valuable help and guidance throughout the process of preparing this special issue. We are also grateful to the anonymous reviewers who spent considerable time selecting and improving the articles.

Digital Object Identifier 10.1109/MEMB.2009.934243

We hope you appreciate reading the articles.

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