Arnon Cohen Biomedical Signal Processing

Presents the account of the use of mechanical ventilation in critically ill patients. This title features coverage that addresses important scientific, clinical, and technical aspects of the field as well as chapters that encompass the full scope of mechanical ventilation, including the physical basis of mechanical ventilation.
"IEEE Catalog Number: 04CH37558"--T.p. verso.
Time and frequency domains analysis.
Biomedical Signal ProcessingBiomedical Signal ProcessingVolume 2: Compression and Automatic RecognitionCRC Press
In recent years there has been rapid progress in the development of signal processing in general, and more specifically in the application of signal processing and pattern analysis to biological signals. Techniques, such as parametric and nonparametric spectral estimation, higher order spectral estimation, time-frequency methods, wavelet transform, and identifi cation of nonlinear systems using chaos theory, have been successfully used to elucidate basic mechanisms of physiological and mental processes. Similarly, biological signals recorded during daily medical practice for clinical diagnostic procedures, such as electroen cephalograms (EEG), evoked potentials (EP), electromyograms (EMG) and electrocardio grams (ECG), have greatly benefitted from advances in signal processing. In order to update researchers, graduate students, and clinicians, on the latest developments in the field, an International Symposium on Processing and Pattern Analysis of Biological Signals was held at the Technion-Israel Institute of Technology, during March 1995. This book contains 27 papers delivered during the symposium. The book follows the five sessions of the symposium. The first section, Processing and Pattern Analysis of Normal and Pathological EEG, accounts for some of the latest developments in the area of EEG processing, namely: time varying parametric modeling; non-linear dynamic modeling of the EEG using chaos theory; Markov analysis; delay estimation using adaptive least-squares filtering; and applications to the analysis of epileptic EEG, EEG recorded from psychiatric patients, and sleep EEG.
These proceedings document the 20th Annual International Conference of the IEEE/EMB Society held in Amsterdam in 1998. Covering the entire field of biomedical including the latest development in instrumentation, neourotechnology, rehabilitation engineering, imaging signal & image processing, cardiac system, neuromuscular system, sensory systems, physiological system modeling, measurement techniques, clinical engineering & tissue engineering. Partial Contents: Cardiovascular Systems; Medical Imaging; Clinical Engineering; Medical Informatics; Signal Processing; Neuromuscular Systems; Biomechanics; Physiological Systems; Modeling & Identification; Instrumentation
Personal health and well-being was and is important for all individuals. This includes the way people are living, what they do to stay healthy as well as a profound, well-informed diagnosis and appropriate treatment in case of disease. To achieve these goals, modern medicine is provided with a large variety of tools to assess a patient's health state and collect the information required for a proper diagnosis and treatment, which is tailored to the patient's needs. Many of these available tools use signals either generated by the human body, for example, electroencephalogram (EEG) and electrocardiogram (ECG), or by interacting with the human body while traversing it like

microwaves or reflected visible light that is recorded by a video camera. The biosignals recorded by the available and newly developed methods have to be processed to extract the information about the patient's condition and, analyzed tissue and cells. This book presents a small selection of the recent developments in the field of biosignal processing. The covered diagnostic tools and methods include the assessment of respiratory state through gait analysis, the contactless monitoring of cardiovascular and respiratory parameters using microwaves, a non-linear approach to extract the fetal ECG from non-invasive abdominal recordings, identification of epileptic networks from pre-surgical neurophysiological recordings and an improved method to obtain and validate the copy number alterations parameter, which are considered an important marker in cancer classification.

First multi-year cumulation covers six years: 1965-70.

Over the last century, medicine has come out of the "black bag" and emerged as one of the most dynamic and advanced fields of development in science and technology. Today, biomedical engineering plays a critical role in patient diagnosis, care, and rehabilitation. More than ever, biomedical engineers face the challenge of making sure that medical d

The presentation of the material in the book follows the flow of events of the general signal processing system. After the signal has been acquired, some manipulations are applied in order to enhance the relevant information present in the signal. Simple, Optimal, and adaptive filtering are examples of such manipulations. The detection of wavelets is of importance in biomedical signals; they can be detected from the enhanced signal by several methods. The signal very often contains redundancies. When effective storing, transmission, or automatic classification are required, these redundancies have to be extracted. The signal is then subjected to data reduction algorithms that allow the effective representation in terms of features. Methods for data reduction and features extraction are discussed. Finally, the topic of automatic classification is dealt with, in both the decision theoretic and the syntactic approaches.

Category Biomedical Engineering Subcategory Contact Editor: Stern

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