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Bio-Informatic Systems, Processing and Applications

Editors:

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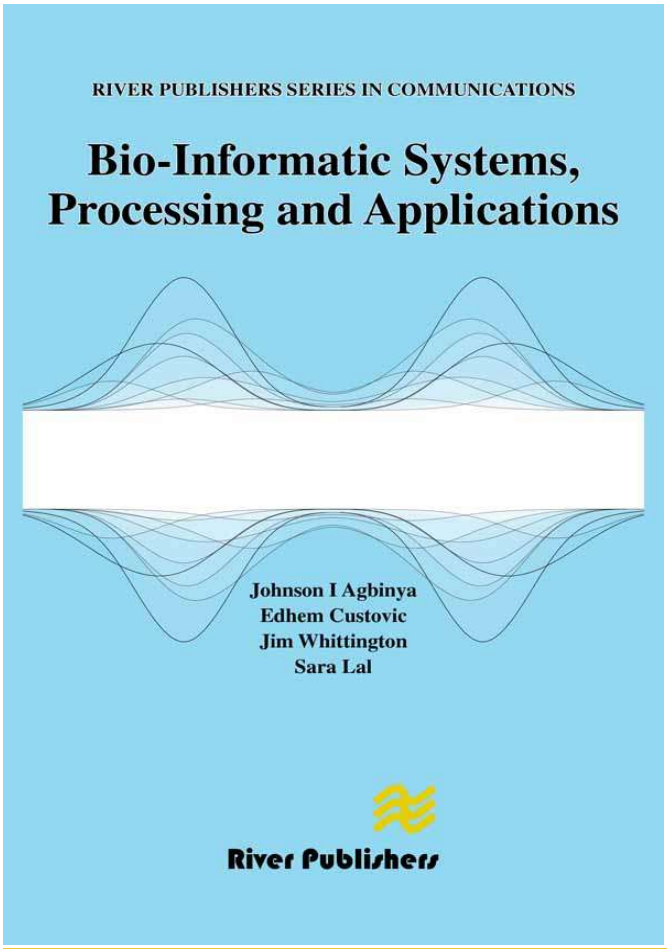
The combination of bio-telemetry, sensor networks, communication networks and computing has opened up new areas in the medical field and provided the means for improved health care delivery. Over the past decade therefore reliance on information technology has become very prominent as doing so makes it a lot easier for health practitioners to offer much more efficient health services. This book is a compendium of emerging smart techniques using artificial intelligence for diagnosis, bio-informatics data analysis and biomedical systems. It details innovative applications of neural networks, computer vision, panoramic image processing, electroencephalography, electromyography and specialized information delivery based on smart sensors and communication to support the deaf, control of prosthetic limb, fall detection, cancer detection and fatigue detection. These tools and methods are presented for application in secure transportation, home-based health care and in medical establishments. The state-of-the art coverage provide also practical foundations for further research in biomedical informatics and engineering.

Technical topics discussed in the book include:

- Active detection of driver drowsiness;
- Myoelectric Control of Limb Prostheses;
- Electromyography;
- Electroencephalography;
- Bio-Signal Telemetry Sensor Networks;
- Computer Vision in health care delivery;
- Applications of wireless communication devices in health care delivery

Contents: Preface; 1. Neural Networks Based System for Cancer Diagnosis Support; 2. Myoelectric Control of Upper-Limb Prostheses and the Effects of Fatigue; 3. Using Game Consoles for Human Medical Data Collection: in-field applications; 4. An Approach to Fall Detection using Gaussian Distribution of Clustered Knowledge; 5. ZigBee Sensor Network Propagation Analysis for Health-care Application; 6. Dimensionality Reduction in Surface Electromyographic Signals for Pattern Recognition; 7. Assessing a potential electroencephalography based algorithm during a monotonous train driving task in train drivers; 8. Detecting Driver Drowsiness with Examples using EEG and Body Movement; 9. Cortical Width Measurement Based On Panoramic Radiographs Using Computer-Aided System; 10. Development of a Computer Vision Application for Surgical Skill Training and Assessment; 11. Information Delivery System for Deaf People at a Larger Disaster; Author Index; Keyword



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bio-informatics, biomedical data processing, bio-monitoring and telemetry, EEG, electromyography, driver fatigue, computer vision, myoelectric control, sensor networks

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