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Preface

Continuous growth of the amount of medical information and the variety of multimodal content necessitates the demand for a fast and reliable technology able to process data and deliver results in a user-friendly manner at the time and place the information is needed. The requirements can be met through the cooperation of three specific partners. Patient needs are recognized by experienced physicians who collaborate with scientists and engineers and define the goal of the research that should satisfy the functional requirements of authorized medical staff as well as the overall healthcare system for the benefit of the patients. Many of these areas are recognized as research and development frontiers in employing new technology in a clinical environment. Technological assistance can be found in prevention, diagnosis, treatment, and rehabilitation. Homecare support in any type of disability may improve the standard of living and make it safer and more comfortable.

We give back to the readers the conference proceedings, which include papers written by members of academic society and vendors who develop products applied in biocybernetics. The volume is divided into eight parts.

The first two parts contain papers that present image processing approaches and their implementation in computer-aided surgery. The analysis is carried out in 2- or 3-dimensional space depending on further clinical implementation. Part 3 addresses a precisely defined implementation of data analysis in computer-assisted diagnosis. Part 4 undertakes mostly cardiac problems and presents new approaches to ECG analysis with local and remote access to the results. Part 5 discusses processing methods applied to microscopic images of tissue samples taken during the biopsy procedure as well as tools for genotyping. The analysis of complex anatomical structures and biomedical processes often requires various experimental setups to investigate the sensitivity of these structures to various external or internal conditions. Modeling and simulation of these processes are introduced in Part 6.

Two special sessions are given at the meeting. Unstructured data analysis on sources including written text as well as speech signals is becoming more and more popular. The text analysis detects the content similarity of medical records, and the speech signal processing recognizes the speaker emotions. These issues are presented in Part 7. Recognition of disability, objective measurement of disability level

in all age groups including children and the elderly, and assistance during medical procedures are introduced in Part 8.

I would like to express my gratitude to the authors who have submitted their original research papers as well as all the reviewers for their valuable comments. Your effort has contributed to the high quality of the proceedings that we pass on to our readers.

Ewa Pietka

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