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# Information Technologies in Biomedicine

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# Preface

Practicing medicine has always been an art. However, never before has such a diverse team of specialists, including traditional physicians, technicians and nurses, been cooperating during routine diagnostic and therapeutic processes. Most recently, this team has acquired additional allies – scientists and engineers, responsible for the development and maintenance of various supporting medical systems, materials and devices. Consequently, there has been a major development in medical applications of various technologies to the benefit of patients and physicians. The quality of healthcare improves, the diagnosis is faster and the therapy more effective.

The Information Technologies in Biomedicine Conference deals with various domains where computer-aided design, processing or assistance help to improve diagnostics and patient monitoring. The first part of this volume addresses different image and signal processing applications. This domain is especially important during early diagnosis and later in monitoring treatment, where fast and reliable computer-assisted systems evaluate the medical data. Novel approaches to 3D and 2D imaging in early tumor detection, liver segmentation, stroke diagnosis etc. are then presented. Medical signal (i.e., EEG and ECG) analysis is supported by computerized methods. In addition, human–computer interaction and biometric approaches represent a modern area of biocybernetics with new solutions.

The next part deals with therapy and rehabilitation. The topics cover a broad spectrum of human kinematics modelling. Development and evaluation of contemporary biomaterials technologies are also introduced.

A separate section is dedicated to bioinformatics, where information techniques are used in nano-scale. Gene expression, DNA signal distribution and genome assemblers are discussed.

Finally, telemedicine applications are presented. Novel home monitoring and assisted living systems are introduced.

The topics presented at the Information Technologies in Biomedicine conference reflect a small but representative part of contemporary worldwide research.

We would like to express our gratitude to the scientific committee as well as the authors who have contributed their original research studies.

June 2012

Ewa Piętka  
Jacek Kawa

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