After many years of research and development in the area of computer-assisted
diagnosis and therapy, multimodal medical imaging systems prove the ability to
provide quantitative and qualitative information leading to increase the sensitivity
and specificity of many clinical procedures. Often the aspect of multimodal analysis
is extended to other domains including signals, video recordings, posture informa-
tion, histopathological image quantification, patient tracking, and retrospective and
prospective analyses, all combined with image data or one with another.
Mathematical information analysis, computer applications together with medical
equipment and instruments have become standard tools underpinning the current
rapid progress with developing computational intelligence. However, modern sys-
tems still face challenges in performing hybrid data registration, subsequent analysis,
and visualization to deliver pertinent quantitative information. We are witnessing a
radical change as information technologies have been integrated into systems that
address the core of medicine, including patient care in ambulatory and in-patient
setting, disease prevention, health promotion, rehabilitation, and home care.

The Fifth Conference on Information Technologies in Biomedicine has become a
recognized event that helps to bridge the gap between methodological achievements
in engineering and clinical requirements in medical diagnosis, therapy, and reha-
bilitation. In these proceedings, members of academic societies of technical and
medical background present their research results and clinical implementations.
Many of these areas are recognized as research and development frontiers in
employing new technologies in clinical environment.

Image and signal analysis are traditional parts that deal with the problem of data
processing, recognition, and classification. Novel approaches to the 2D and 3D
image analysis of various pathologically affected anatomical structures, early tumor
detection, and stroke diagnosis are introduced. New research studies developed for
the processing of heart, brain, and gastric as well as acoustic signals are discussed.
Home care, remote rehabilitation assistance, and safety of the elderly require new
areas to be explored in telemedicine, telegeriatrics, and biomechatronics.
Bioinformatics has become a dynamically developed field of computer-assisted
biological data analysis where information techniques are used in the nanoscale. Solutions of complex problems concerning diagnostics and therapy have been developed in the surgical procedures. A modeling and simulation platform presents also preimplementation studies required at the developmental stage of computer-assisted therapy.

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