
Preface

The IFMBE WG on Health Informatics and eHealth and Lab of Computing Medical Informatics and Biomedical-Imaging Technologies, Aristotle University of Thessaloniki, have organized the ICBHI 2017 in Thessaloniki on November 18–21, 2017.

The ICBHI 2017 conference is the third in a series of scientific events initiated from the IFMBE Working Group on Health Informatics and eHealth bringing together expertise from medical, technological, biodata sciences, regulatory, and public health domains.

The area of biomedical and health informatics is exploding at all scales. The developments in the areas of medical devices (MDD), eHealth, and personalized health (pHealth) as enabler factors for the evolution of precision medicine are quickly developing and demand the development of new scaling tools and integration frameworks and methodologies in the following areas

- Medical devices
- Biomedical environmental and behavioral data acquisition
- Biodata management and analytics
- Advanced mHealth-inspired applications
- User interaction systems and data/information exchange
- Applied connected health and integrated care systems
- Personalized health systems
- Preventive and multimorbid disease management tools
- Patient safety and efficient public health systems
- In silico modeling of pathophysiological mechanisms
- Translational research
- Biomedical informatics
- Biomedical informatics and technology education

It is expected that ICBHI 2017 will catalyze the personal health systems development methodology thus achieving convergence and integration mechanisms of the above-mentioned main scientific areas for the enabling of precision medicine. The need for managing the new findings and capabilities as well as integrating competencies and thematic areas are absolutely necessary for the area of biomedical and health informatics.

Taking into account the current needs in the biomedical and health informatics area, the conference streamlines in two main axes. The first axis includes biosensors, mHealth/uHealth components and systems, biorobotics, electroceuticals and micro-bio-nano-recording, and bioparametric estimation and filtering. The second axis includes machine learning, multi-parametric analytics, bioinformatics, big biodata/biomedical computing, medical decision support, patient safety informatics, interoperability, and security. Approaches that can be used for integrating these two streams linked to precision medicine applications were addressed.

The conference featured a scientific challenge which revolved around the recent high interest in the coordinated care theme. The interest is highly related to the increase in aged population and the high numbers of multimorbid patients. It focused on cardiorespiratory

problems related with multimorbid COPD patients. The goals of the challenge focused on detection of wheezes and crackles in respiratory sounds. The scientific challenge rules followed the Physionet challenge rules (<http://bhichallenge.med.auth.gr/>).

This proceedings volume covers all presentations at the ICBHI 2017. All submissions have been carefully and critically reviewed by at least two independent experts from other than the authors' home countries and additionally by at least one member of the Scientific Program Committee. The editors are indebted to the acknowledged and highly experienced reviewers for having essentially contributed to the quality of the conference and the book at hand. Both the ICBHI 2017 Conference and the publication of the proceedings by Springer would not have been possible without the support and sponsor of the IFMBE and the WG on Health Informatics and eHealth. The editors are also grateful to the dedicated efforts of the Local Organizing Committee members and their supporters for carefully and smoothly preparing and operating the conference. They especially thank all the team members from AUTH Lab of Computing Medical Informatics and Biomedical-Imaging Technologies for their dedication to the event.

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Precision Medicine Powered by pHealth and Connected Health

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