EDITORIAL

Dear reader,

In front of you is the new issue of the journal AUTOMATIKA. It contains papers covering some recent advances in Biomedical Engineering. We have prepared this special issue on the occasion of the 50th anniversary of the International Federation for Medical and Biological Engineering (IFMBE). IFMBE is an umbrella organization of national and transnational organizations having interests in biomedical engineering. Along with the paper ***Biomedical Engineering: Past, Present, Future****, which we have prepared as Guest editors, you can read one review paper and five original scientific papers.*

In the first paper, ***Advantages and Disadvantages of Different Concepts of Electroporation Pulse Generation****, Matej Reberšek and Damijan Miklavčič present an overview of different concepts for the design of electroporators – generators of high voltage pulses that are used for the introduction of small and large molecules into the cell, cell fusion, insertion of proteins into cell membrane, electroporation of organelles, tissue ablation etc. The second paper,* ***Robot Control Using Anticipatory Brain Potentials*** *is authored by Adrijan Božinovski et al. In this paper a possibility of robot control by using anticipatory brain potentials is given, along with an experimental illustration in which two robotic arms, driven by a brain expectancy potential oscillation, cooperatively solve the problem of Towers of Hanoi. In the third paper,* ***Somatosensory Vibratory Evoked Potentials: Stimulation Parameters,*** *Magdalena Krbot et al., in an experimental study, define stimulation parameters of the evoked potentials method with a vibratory stimulation technique which could establish reliable and repeatable results applicable in a clinical usage. The fourth paper is* ***Comparison of Electrical Equivalent Circuits of Human Tooth Used for Measuring the Root Canal Length*** *in which Tihomir Marjanović et al. describe a method for the estimation of equivalent electric circuit parameters of a tooth from impedance measurements by using a complex nonlinear least square method, and introduce objective criteria for the comparison of different equivalent electric circuits. In the fifth paper,* ***Progress with a Multiscale Systems Engineering Approach to Cardiac Development,*** *Ronald Summers et al. present progress made in combining ontology-based information models and explain the importance of the role of multiscale systems engineering for obtaining new insights into normal cardiac development and conditions that give rise to congenital heart diseases. In the sixth paper,* ***ECG based prediction of Atrial Fibrillation using Support Vector Classifier,*** *Siniša Sovilj et al. describe a prediction model deploying a Support Vector Machine (SVM) classifier which uses features extracted from the 48-hour II lead ECG recording aiming to identify patients at high risk of developing atrial fibrillation after coronary artery bypass grafting.*

We would like to take this opportunity to thank all authors for their contributions. We thank all reviewers for their time, effort and expertise for reviewing the papers. Finally, we would like to express our gratitude to Prof. Ivan Petrović, the Editor-in-Chief of AUTOMATIKA, for giving us the opportunity and honour to serve as the guest editors of this issue.

We dedicate this special issue to the memory of Professor Ante Šantić (1928-2008), our teacher and mentor, who was an internationally recognized scientist in the field of biomedical electronics and the founder of this discipline in Croatia.

Guest Editors: Prof. Ratko Magjarević, PhD
Assist. Prof. Igor Lacković, PhD