

Special Session

Code: 5u7jm

Title

Computational and Medical Cybernetics

Proposer / Main Organizer

Organizers: Prof. Dr. Imre Rudas, Prof. Dr. Levente Kovács, Dr. György Eigner

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Imre J. Rudas graduated in Budapest in 1971 in Mechanical Engineering, received the Master Degree in Mathematics from the Eötvös Loránd University, the Ph.D. in Robotics from the Hungarian Academy of Sciences in 1987. He received four Doctor Honoris Causa degrees. He served as the Rector of Budapest Tech from 2003 till 2010. He was the founder of Óbuda University, the successor of Budapest Tech and was elected as the first Rector in the period 2010-2014. He is Rudolf Kalman Distinguished Professor, Rector Emeritus and Professor Emeritus of Óbuda University. He is a Fellow of IEEE and the President of the IEEE Systems, Man, and Cybernetics Society 2020-2021. He is the Senior Past Chair of IEEE Hungary Section. He received many awards, among the Hungarian Order of Merit in 2009 and Pro Óbuda award in 2014. His present areas of research activities are Computational Cybernetics, Fuzzy Control and Fuzzy Sets, Robotics, Cyber Physical Systems of Systems. He has edited and/or published 22 three books, published more than 850 papers in international scientific journal, conference proceedings and book chapters, and received more than 5000 citations

Prof. Dr. habil. Levente Kovács received his MSc degrees in electrical engineering in 2000 ("Politehnica" University of Timisoara, Romania) and biomedical engineering in 2011 (Budapest University of Technology and Economics, Hungary). He received his PhD from the Budapest University of Technology and Economics in 2008. His fields of interest are modern control theory and physiological controls – within these subjects, he has published more than 400 articles in international journals and refereed international conference papers. Currently, he is the president of Óbuda University. He is full professor of the John von Neumann Faculty of Informatics at Obuda University. He founded the Physiological Controls Research Center at Obuda University in 2013 being the head of it. He was János Bolyai Research Fellow of the Hungarian Academy of Sciences. Prof. Kovács is the chair of IEEE Hungary Section and the chair of the IEEE SMC Hungary Chapter. He is 2015 recipient of the highly prestigious ERC StG grant of the European Union.

Dr. György Eigner earned his B.Sc. degree in Mechatronic Engineering at Óbuda University, Bánki Donát Faculty of Mechanical and Safety Engineering in 2011, and M.Sc. degree in Biomedical Engineering at Budapest University of Technology and Economics in 2013. He received his Ph.D. degree at Óbuda University in 2017. György is the acting dean of the John von Neumann Faculty of Informatics and the Head of the Biomatics and Applied Artificial Intelligence Institution, where he is currently an associate professor. His main research focus is the application of

advanced control methods in physiological relations, biomedical engineering, human-in-the-loop systems, artificial intelligence base cybermedical systems. Having published more than 100 scientific works on these topics, his h-index is 7. He is a member of the Board of Governors of the IEEE System, Man, and Cybernetics Society, Co-Chair of the Computational Cybernetics Technical Committee, and the Director of the Robotics Special College of the Óbuda University.

IEEE Member or SMC Society Member

IEEE member and IEEE SMCS member

Category

Please select one of the following categories:

- **Cybernetics**
- Human-Machine Systems
- Systems Science and Engineering

Number of Expected Paper Submissions:

6 or more

Keywords

Biometric Systems and Bioinformatics, Computational Intelligence, Computational Life Science, Cybernetics and Informatics, Fuzzy Systems and Evolutionary Computing, Fuzzy Systems and their applications, Medical Informatics, Optimization, Neural Networks and their applications

Brief Description and Justification (200-250 words):

The aim of the special session is to provide a platform for recent advances in computational and medical cybernetics focusing on some practical approaches. Furthermore, it aims to collect and discuss efficient techniques and methods able to cope with the current challenges in the field of computational and medical cybernetics.

Hence, the goal of this special session is twofold: present different application approaches of cybernetics on the medical field, moreover, to present such advanced algorithms, cybernetics solutions, algorithms for cryptocurrencies, specific computational methods, soft-computing techniques, advanced software development ways and control engineering solutions which would be able to use to solve real world problems of medicine.