FOREWORD
SPECIAL ISSUE ON MEMBRANE COMPUTING

The present volume contains a selection of papers presented at the Fifth Asian Conference on Membrane Computing (ACMC 2016, `http://2016.asiancmc.org/`), held in Bangi, Selangor, Malaysia, from November 14 to November 16, 2016. The meeting was jointly organized by the Center for Software Technology and Management (SOFTAM) and a Centre for Research Excellent at the Faculty of Information Science and Technology, National University of Malaysia (UKM), under the auspices and with the support of International Membrane Computing Society (IMCS). There were 35 full papers accepted and four invited lectures, delivered by Gexiag Zhang (Chengdu, China), Henry N. Adorna (Diliman, Philippines), D. Gnanaraj Thomas (Chennai, India), and Ibrahim Venkat (Penang, Malaysia). The meeting was dedicated to the memory of IMCS honorary member, Professor Solomon Marcus, a Romanian academician with many contributions to (theoretical) computer science, in particular, to membrane computing, who passed away in March 2016.

ACMC is a series of yearly meetings that started in 2012, in Wuhan, China, with the next editions taking place in Chengdu, China, in Coimbatore, India, and in Hefei, China, providing a high-level international forum for researchers working in membrane computing and related areas, especially for the ones from the Asian region. On those occasions special issues were published, including *International Journal of Unconventional Computing* (volume 9, numbers 5-6, 2013), *Romanian Journal of Information Science and Technology* (volume 17, number 1, 2014), *Natural Computing* (volume 15, number 4, 2016) and *Journal of Computational and Theoretical Nanoscience* (volume 13, number 6, 2016).

Membrane computing is a branch of natural computing, having as its main goal to abstract computing models (data structures, operations about them, computing architectures and so on) from the organization and the functioning of the biological cell and from populations of cells, such as tissues, organs (brain included), colonies of bacteria. The proposed models are called P systems. The area was initiated in the fall of 1998, and it is already well developed, both at the theoretical level and in what concerns the applications. The bibliography is huge (see, e.g., `http://ppage.psystems.eu`), including a series of monographs, collective volumes, a Handbook (published by Oxford University Press, in 2010), as well as about 100 PhD theses. There are several classes of P systems, inspired by various biological ideas – among them, the so-called *spiking neural P systems*, SN P systems for short, starting from the way the neurons cooperate in the brain by exchanging *spikes*, electrical impulses transmitted along the axons. This class of P systems, introduced in 2016, is much used in (technological) applications, a fact which is illustrated also in this volume.

For instance, two papers discuss the use of fuzzy reasoning spiking neural P systems to identify fault sections (W. Yu et al.: Fault diagnosis of power systems using fuzzy reasoning spiking neural P systems with interval-valued fuzzy numbers) and to

classify fault types (H. Rong et al.: A novel approach to fault classification of power transmission lines using singular value decomposition and fuzzy reasoning spiking neural P systems) in power systems. Theoretical results are reported about the computing power of spiking neural P systems with anti-spikes and without annihilating priority (X. Wang et al.: Spiking neural P systems with anti-spikes and without annihilating priority) and of tissue P systems with promoters (L. Pan et al.: Flat maximal parallelism in tissue P systems with promoters). The other two papers included in the volume describe computer simulators for spiking neural P systems (J.P.A. Carandang et al.: CuSNP: spiking neural P systems simulators in CUDA) and cell-like spiking neural P systems (L. Valencia-Cabrera et al.: A simulation software tool for cell-like spiking neural P systems), respectively.

Therefore, the volume contains papers covering all three main directions of research in membrane computing: theoretical developments, applications, and simulators.

We would like to thank all the reviewers for their contributions to the improvement of the papers submitted to ACMC 2016 and to this special issue.

Guest Editors:
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