Preface

Michael J. Dinneen¹ · Ulrich Speidel¹

Published online: 12 November 2016
© Springer Science+Business Media Dordrecht 2016

This special issue “Contributions to Membrane Computing” includes revised and expanded versions of four of the best membrane computing papers presented at the *Workshop on Membrane Computing 2015* (Dinneen 2015) and the *International Conference on Unconventional Computation and Natural Computation 2015* (Calude and Dinneen 2015) held in Auckland, New Zealand from 31 August to 4 September 2015. We have selected four extended papers (out of six invited and reviewed) for this special issue. These are listed and briefly described below.

The paper “Extended Spiking Neural P Systems with White Hole Rules and Their Red-Green Variants” by Artiom Alhazov, Rudolf Freund, Sergiu Ivanov, Marion Oswald and Sergey Verlan shows that an extended model of neural P systems are Turing complete and after adding further colored extensions allow to go beyond Turing.

The paper “A Uniform Family of Tissue P Systems with Protein on Cells Solving 3-Coloring in Linear Time” by A. Hepzibah Christinal, Daniel Díaz-Pernil and T. Mathu introduces a model of tissue P systems protein communications and highlights this with a linear-time solution of the classic NP-complete 3-coloring problem.

The paper “Some New Results of P Colonies with Bounded Parameters” by Luděk Cienciala and Lucie Ciencialová investigates the abstract computing P colonies model and summarizes the computational power with bounded number of agents and programs. New results are

provided for homogeneous P colonies with capacity two and one.

The paper “On Simulating Cooperative Transition P Systems in Evolution-Communication P Systems with Energy” by Richelle Ann B. Juayong and Henry N. Adorna studies energy-based evolution-communication P systems with cooperative rule triggers. In their constructed ECPe systems, a transition in the TP system is simulated by a k -step computation where k is a factor of the alphabet size in the original system.

References

- Calude CS, Dinneen MJ (eds) (2015) Unconventional computation and natural computation. In: UCNC'15. Lecture notes in computer science, vol 9252. Springer, Berlin, 301 pp. <http://link.springer.com/openurl.asp?genre=issue&issn=0302-9743&volume=9252volume>
- Dinneen MJ (ed) (2015) Proceedings of the workshop on membrane computing 2015 (WMC2015). Report CDMTCS-487, Centre for Discrete Mathematics and Theoretical Computer Science, University of Auckland, Auckland, New Zealand, 127 pp, August. https://www.cs.auckland.ac.nz/research/groups/CDMTCS/researchreports/index.php?download&paper_file=566CDMTCS-487

✉ Michael J. Dinneen
mjd@cs.auckland.ac.nz

Ulrich Speidel
ulrich@cs.auckland.ac.nz

¹ Department of Computer Science, University of Auckland, Auckland, New Zealand