Re: Research proposal: Member of the Advisory Board invitation

Natalio Krasnogor <natalio.krasnogor@newcastle.ac.uk>
Sun 23/07/2023 20:57

To:Marian Gheorghe <M.Gheorghe@bradford.ac.uk>

Dear Prof. Gheorghe,

Thank you very much for this kind invitation. After reading the project description I am confident that this is a timely and exciting project and I would be delighted to participate as a member of the advisory board.

Shall you require from me any further information, please feel free to contact me.

Wishing you every success in the project!

Prof. N. Krasnogor

NATALIO KRASNOGOR, Ph.D.

Professor of Computing Science and Synthetic Biology
Royal Academy of Engineering Chair in Emerging Technologies
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On 23/07/2023 16:14, Marian Gheorghe wrote:

> ⚠ External sender. Take care when opening links or attachments. Do not provide your login details.
>
> Dear Professor Natalio Krasnogor,
>
> I am working a project proposal called Mem-ECOTEM: Unifying Approach in Membrane Computing; Expressivity, Complexity, Testing, Verification and Modelling.
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> I am writing this email in order to invite you as member of the Advisory Board of this project.
> A summary of the project can be found below.
>
> I am looking forward to your response.

Kind regards,

Professor Emeritus Marian Gheorghe
50th Anniversary Chair in
Computational Models & Software Engineering
Faculty of Engineering and Informatics
University of Bradford, Bradford BD7 1DP, UK
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Summary of Mem-ECOTEM: Unifying Approach in Membrane Computing; Expressivity, Complexity, Testing, Verification and Modelling.

Membrane computing is a mature research field, with a multitude of models, called membrane systems (or P systems), well-investigated with respect to computational power, complexity aspects, analysis methods associated to them, and having applications in engineering optimizations, data classification, fault diagnosis, robot controllers, system biology and synthetic biology, ecosystem modelling. The vast majority of the research so far has focussed on defining and studying different classes of membrane systems and then using them in solving various problems. This project proposes, for the first time, a novel approach, going in the opposite direction by unifying in a coherent and efficient manner the most relevant features of membrane systems with new computational concepts and patterns of behaviour that will increase the expressivity, flexibility and reusability of the models. Adequate analysis methods, fully compatible with these new P system models will be created and tool support provided for these new developments, helping both theoretical investigations as well as applications. The research proposed will have a multi-fold impact on: (i) fundamental aspects of computational modelling and formal analysis, and applications solving real-life complex problems; (ii) strengthening existing links of the research team with top scientists in membrane computing and related areas; (iii) connecting with research community outside membrane computing (robotics, fault-diagnosis, system and synthetic biology); (iv) engaging young researchers, doctoral and MSc students with the latest developments in membrane systems and natural computing; (v) availability of the research results to a broader audience and general public.

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