



International

*Innovation in Knowledge Based and Intelligent
Engineering Systems*



INVITED SESSION SUMMARY

Title of Session: *Computational Systems and Synthetic Biology*

Name, Title and Affiliation of Chair:

Co-Chair: Eugen Czeizler, Ph.D., University of Helsinki, Finland and National Research and Development Institute for Biological Sciences, Bucharest, Romania

Co-Chair: Victor Mitrana, Ph.D., National Research and Development Institute for Biological Sciences, Bucharest, Romania

Co-Chair: Ion Petre, Ph.D., University of Turku, Finland and National Research and Development Institute for Biological Sciences, Bucharest, Romania

Details of Session (including aim and scope):

We invite researchers from diverse fields—including biology, mathematics, computer science, and physics—to join this special session focused on *Computational Systems and Synthetic Biology*. This session seeks to foster interdisciplinary collaboration and exchange on topics related to the modelling, simulation, analysis, inference, design, and control of biological systems, spanning both foundational methods and real-world applications.

Topics of interest include, but are not limited to:

- Advanced methods and tools for biological system analysis, modelling, and simulation
- Frameworks for model verification, validation, and analysis of biological systems
- Applications of machine learning in biological research
- Advanced methods and tools for the development of DNA algorithmic self-assembly systems and DNA nanotechnology
- Network modelling, analysis, and inference techniques
- Design, analysis, and verification methods in synthetic biology
- Innovations in biomolecular computing and engineered molecular devices
- Data-driven approaches in systems and synthetic biology

We welcome both novel theoretical contributions with potential applications to systems and synthetic biology and practical case studies that demonstrate the effectiveness of existing methods, tools, or frameworks. Join us to share your research and contribute to advancing computational approaches in systems and synthetic biology!

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

National Institute of Research and Development for Biological Sciences, Bucharest, Romania

Research Program in Systems Oncology, University of Helsinki, Finland

Department of Information Systems, Polytechnic University of Madrid, Spain

Faculty of Mathematics and Computer Science, University of Bucharest, Romania

Faculty of Science, University of Turku, Finland

Research Institute for Artificial Intelligence, Romanian Academy, Romania

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