INSTITUTUL DE MATEMATICĂ "SIMION STOILOW" AL ACADEMIEI ROMÂNE

Conferința lunară

A glimpse on membrane computing after seventeen years

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la sediul IMAR, amfiteatrul "Miron Nicolescu", parter

Abstract: Membrane computing is a branch of natural computing, initiated in the fall of 1998, which abstracts computing models, called now P systems, from the architecture and the functioning of the living cell. Several classes of P systems were introduced. Roughly speaking, in the compartments of a hierarchical (cell-like) or non-hierarchical (tissue-like) arrangement of membranes, multisets of symbols (or more complex) objects evolve by means of rules inspired from biochemistry or mathematically inspired. Distributed massively parallel computing models are obtained. Most of them are Turing complete and in several cases able to solve computationally hard (typically **NP**-complete) problems in an efficient way (in polynomial time). Applications in biology, biomedicine, ecology, but also in computer graphics, robot control, approximate optimization, linguistics, economics were reported. Dedicated software is available.

The domain is rather developed, with a large bibliography (including, e.g., over 60 PhD theses, tents of collective volumes, around a dozen of monographs, an Oxford Handbook of Membrane Computing, etc.), three yearly meetings - see the web site at http://ppage.psystems.eu for details.

The presentation will be informal, discussing directions of research, types of P systems, types of results, recent developments.