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Slezská univerzita v Opavě

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Pozvánka na přednášku OP VK

A Formal Framework for Social Networks

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Abstrakt přednášky:

One of the major challenges for membrane computing is to find applications of the obtained theoretical results in different scientific areas.

Concepts and methods in P systems theory have been so far successfully employed in solving various problems in computer science and in modelling several biological phenomena, but except applications in linguistics and natural language processing, only a limited amount of attention has been paid to utilization of membrane systems in social sciences. One of the few steps in this direction was made in (Csuhaj-Varjú, Gheorghe, Vaszil Oswald, 2011) where P systems (membrane systems) were proposed to model social networks, an area of contemporary computer science and practice which is in the focus of interest.

Social networks are communities of individuals forming a communication network based on some social phenomena. P systems, especially tissue P systems, can also be considered as collections of agents (individuals) communicating with each other: the compartments or nodes with the multisets of objects may represent the individuals and the rules of the system describe the communication/interaction between the components. In the case of so-called population P systems the established communication links may dynamically change.

In (Csuhaj-Varjú, Gheorghe, Vaszil Oswald, 2011) new classes of P systems capturing communication aspects in social networks were introduced and various research topics related to connections between P systems theory and the theory of social interactions and networks were initiated.

They are called population P systems governed by communication (pgcP systems). In this case, in addition to the multisets of standard objects which are called cellular objects, so-called communication objects are present in the network. The transition takes place by rewriting and communication of the cellular objects and recording the performed communication. The transitions are governed by communication, i.e., rules can be performed only if some predicates on the multisets of communication symbols associated to the links are satisfied. Whenever communication takes place, the number of communication symbols associated to the link increases.

In this talk we will discuss pgcP systems with different types of predicates for communication, and demonstrate how the choice of predicates affects the volume and the intensity of communication, the type of communication motifs in the network.