Marked-Controlled Rewriting EFPN for Dynamic Knowledge Inference

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Abstract

In this paper, we introduce the descriptive marked-controlled rewriting Extended Fuzzy Petri Nets (EFPN) that can at run-time modify their own structure by rewriting some of their descriptive expression components where the enabling of a rule also depends on the net marking. They can then be used in the design of "dynamic knowledge inference" frameworks, which are adjustable according to knowledge variation as human cognition and thinking. This is very important for some domains, such as expert systems.

References

1.   T. Cao and A. C. Sanderson, Representation and analysis of uncertainty using fuzzy Petri nets, In: J. Intell. Fuzzy Syst., vol. 3, pp. 3–19, 1995.
2.   S. Chen, J. Ke, and J. Chang, Knowledge representation using fuzzy Petri nets, In: IEEE Trans. Knowl. Data Eng., vol. 2, no. 3, pp. 311–319, 1990.
3.   E. Guţuleac and M. Mocanu, Descriptive Dynamic Rewriting GSPN-based Performance Modeling of Computer Systems, In: Proceedings of the 15th International Conference CSCS15, 25–27 May 2005, Bucureşti, Romania, pp. 656–66, 2005
4.   E. Guţuleac, Descriptive Compositional Construction of Generalized Stochastic Petri Net Models for Performance Evaluation of Computer Systems, Bul. Inst. Politehnic, Tomul L (LIV), Fasc. 1–4, Automatica şi Calculatoare, Iaşi, Romania, pp. 143–159, 2004
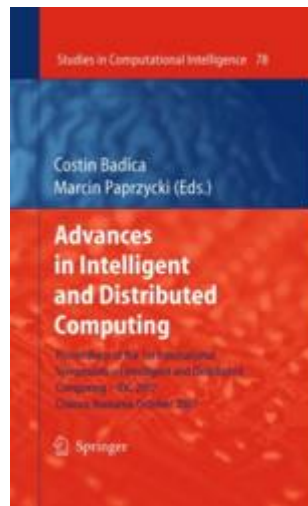
5.	X. Li, Wen Yu, and F. L. Rosano, Dynamic Knowledge Inference and Learning under Adaptive Fuzzy Petri Net Framework, In: IEEE Trans. Syst., Man and Cybernetics — Part C: Applications and Reviews, vol. 30, no.4, pp. 442–450, November 2000.

6.	W. Pedrycz and F. Gomide, A generalized fuzzy Petri net model, In: IEEE Trans. Fuzzy Syst., vol. 2, no. 4, pp. 295–301, 1994.

7.	D. S. Yeung and E. C. C. Tsang, A multilevel weighted fuzzy reasoning algorithm for expert systems, In: IEEE Trans. Syst., Man and Cybernetics — Part A, vol. 28, no. 2, pp. 149–158, 1998.