Abstract

In this work, we propose a new formal tool called CGPN (Conceptual Graph Petri Nets) which is a combination of CG (Conceptual Graph) and CPN (Color Petri Net) to model collaborative behavior of agents in a MAS (Multi Agent System) to achieve some goals. The CG is used to represent knowledge and on the other side CPN is used to model the concurrent and dynamic aspects of a system. It is difficult to extract precise information from MAS which is dynamic in nature. Modeling MAS with CGPN will help in representing the knowledge and dynamic behavior together. Finally, the CGPN model for MAS is tested for deadlock freedom and reachability analysis to verify its correctness.

References

A Conceptual Graph Petri Net Model based Multi Agent System

- Danny Weyns, Tom Holvoet, "A Color Petri Net for Multi Agent Application",
Conference on evolutionary computations, 2002
- Laura Recalde, Enrique Teruel, and Manuel Silva, "On Linear Algebraic Techniques for Liveness Analysis of P/T systems"

**Index Terms**

Computer Science  
Artificial Intelligence

**Keywords**

Multi Agent System  
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Conceptual Graph  
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