

Abstract

The study focuses on Timed-Arc Petri Nets based agent communication in Real Time Multi-Agent Systems. There are a number of systems available for agent communication to solve complicated problems autonomously. An agent gets its objectives by interacting to other agents. The Agent Communication Language is a proposed standard language for the agent to communicate. In this research, the researcher deals with the interaction of agents that are based on Timed-Arc Petri Nets in Multi-Agent System. The objective of the research is the combination of Timed-Arc Petri Nets and FIPA Performatives in Real Time Multi-Agent System. FIPA standards are providing richer framework for the interaction of agents system. It makes easier to develop a well define system. It also ensures the management by providing outline and reliability. It is also useful for complex message interaction in Real Time Multi-Agent Systems. FIPA protocol is already described through Petri Nets but time aspect was not specified. The main idea of this research is to model the existing FIPA performatives by Timed-Arc Petri Nets in Real Time Multi-Agent Systems. In a real time system, there are actions that have specified deadlines, waiting duration for response or extent to perform next action. Properties are used such as liveness, deadlock and reachability for the verification of model. FIPA performatives are specified and verified for Real Time Multi-Agent System using TAPN.