Abstract

E-learning plays an important role in today's education using digital media. In classrooms, teachers change their behaviors, techniques and teaching methods according to the response they receive from students. E-Learning system in its entirety should be able to do so. However, to do this open communication is necessary and based on that decision-making from associated users should be driven by the system. Only then an e-learning system can be reliable and effective. The presented architecture uses Coloured Petri-Nets, with the inclusion of a feedback module in the existing architecture for the reduction of a communication problem to enhance the system's efficiency. In this way, users communicate for optimizing the system and updating it with best learning practices and techniques. With the help of Simulation and its analysis report generated by the state space analysis tool, the users will be able to understand the behavior of the system more effectively and tackle faults before implementation.

Keywords: *Adaptive E-learning; Multi-agent systems; Coloured Petri Nets, Modelling, and State-Space Analysis*