

Abstract

A context sensitive system describes the complex and dynamic environment of the system in which the system will operate. All these systems follow principles of context which include user's preferences, physical and temporal conditions, computing capabilities and tasks. As described earlier context sensitive system involve the physical and temporal conditions with respect to how a system have been described. Designing a context model that conforms to complex and dynamic execution of all activities manifests the core of context sensitive system ideology. After defining all elements of the system with respect to its dynamical and temporal context, a model constitutes of processes entanglement with temporal triggers. These triggers are the point where petri nets are crucial for management of timings. So, for the purpose of formal context modeling petri nets are used. Petri nets are used for the best formal verification of complex models such as context sensitive system. So, petri nets are the best choice to model context sensitive system because they take into account for resource allocation, individual execution, exceptions and parallel execution.

In this work, we formally analyze and design the context sensitive system. Once we have formally design the model of the context sensitive system, we convert this model into an equivalent petri nets model, in order to verify the proper functionality of context modeling and providing the solutions to various context elements that occur during the execution, using the analysis techniques offered by petri nets.

Keywords: Context Modeling, Context Sensitive System, Formal Method, Modeling, Petri Nets, Formal Verification, Analysis, Design