Abstract

Self-Adaptive software systems based on Multi Agent System (MAS) can modify their behavior in response of any internal or external environment change during their execution. State of the art exploited the notion of different strategies and techniques to interpret the segmentation and functionality of relevant segment of MAPE-K loop or loops and their underlying managed systems. As there are well established standards using these, a managed system has to implement so that it can interact with the MAPE-K loop. Rigorous engineering requires trustworthy methods and tools that help in trusting that self adaptive multi agent systems centered about MAPE-K fulfill its intended purpose and trustworthy. Research still lacks in providing specifications and the verification of trustworthy properties of self-adaptive multi agent systems centered about MAPE-K feedback loop to preserve self-adaptation. To enhance trustworthiness in self adaptive multi agent systems, we proposed Self-Adaptive Trustworthy Agent-System methodology ensures worthiness of adaptation behavior at run-time. We proposed trustworthiness in context of formal specifications and verification of Agent. Our proposed trustworthy properties and their verification enhanced the trustworthiness factor in self adaptive multi agent systems. In addition, we map our proposed model to platooning domain, effectively tackled adaptation scenarios and verify the correspond trustworthy properties, which are never discussed before in state of the art. We model the system in Uppaal model checker and specified it in TCTL.