

Common modeling language for model checkers

ABSTRACT

Problem statement: There are many different model checkers that have been developed. Each of the model checkers is based on different input languages and they are suitable for model checking different types of systems. Thus it is important for us to choose the right model checker or modeling and verifying a given system. However, moving from one model checker to another is not an easy task since we have to deal with different input languages.

Approach: In order to solve the problem we propose a common modeling language that is based on UML state chart. Some translation rules for translating the model described in the common modeling language into the input languages of model checkers are also presented.

Results: The result of the case study shows that our approach has been successfully applied in modeling the control system through the process of transformation and translation.

Conclusion: Common modeling language can be used as a front end to help users to properly model a system before it is translated into input language of model checkers.

Keyword: Computational Tree Logic (CTL); Linear Temporal Logic (LTL); Model checking; Probabilistic Computation Tree Logic (PCTL); UML state chart