



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Symbolic Implementation of PastPSL

Master-Thesis Proposal

1 Project Description

The IEEE standardized *Property Specification Language*, PSL for short, allows one to express ω -regular properties by extending the well-known linear-time temporal logic LTL with semi-extended regular expressions. PSL is increasingly used in industry (IBM, Intel, Infineon, ...) in many phases of the hardware design cycle, from specification to verification.

This project builds upon our recent work [1, 2]. In particular, we propose an extension of PSL with past operators, PastPSL for short, and we present a model checking algorithm for PastPSL. This algorithm has a similar worst-case complexity as standard model checking algorithms for PSL. The objective of this project is to evaluate the model checking algorithm for PastPSL in practice.

We are looking for a student who is interested in automatic verification techniques, temporal logics, and automata theory. The project comprises the following tasks:

1. Implementation of a translation from PastPSL into alternating automata.
2. Symbolic encoding of alternating automata in the state-of-the-art model checker NuSMV.
3. Experimental evaluation.

2 Contact

For further information, please do not hesitate to contact

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References

- [1] Christian Dax and Felix Klaedtke. Alternation elimination by complementation. In *Proceedings of the 15th International Conference on Logic for Programming, Artificial Intelligence and Reasoning*, Lecture Notes in Computer Science. Springer-Verlag, 2008.
- [2] Christian Dax, Felix Klaedtke, and Martin Lange. On PSL with past operators, 2008. Submitted for publication.