Verification of Timed Automata Using Rewrite Rules and Strategies

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Abstract. ELAN is a powerful language and environment for specifying and prototyping deduction systems in a language based on rewrite rules controlled by strategies. Timed automata is a class of continuous real-time models of reactive systems for which efficient model-checking algorithms have been devised. In this paper, we show that these algorithms can very easily be prototyped in the ELAN system.

This paper argues through this example that rewriting based systems relying on rules *and* strategies are a good framework to prototype, study and test rather efficiently symbolic model-checking algorithms, i.e. algorithms which involve combination of graph exploration rules, deduction rules, constraint solving techniques and decision procedures.