Modelling and analysis of real-time coordination patterns

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Stellingen

behorende bij het proefschrift
Modelling and Analysis of Real-Time Coordination Patterns
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1. Timed Automata have been an adequate formalism to model real-time systems for almost 15 years. Within this period, the number of features that software systems are required to support has increased to a large extent. It is about time that Timed Automata make room for more up-to-date formalisms (Chapter 2).

2. Satisfiability Modulo Theory (SMT) is a relatively recent field of research, which combines the performance and efficiency achievements of SAT solvers with the possibility to include constraints (of a certain theory) that as such are not expressible in propositional logic. We expect SMT solvers to benefit from SMT competitions in the same way as SAT solvers have benefited from SAT competitions, which makes SMT solvers promising candidates for the verification of large systems (Chapter 3).

3. Automatically finding suitable abstractions—whether depending on or independent from the property under test—is a difficult task. Nevertheless, to support system developers in the design and analysis process as much as possible, it should be an ultimate goal in this field of research to develop fully automatic abstraction refinement techniques for real-time coordination patterns (Chapter 4).

4. While computer scientists and researchers can work very well with mental models only (i.e., without having to visualise them in any way), for non-experts it is important to provide tool support to visualise their mental models. This is particularly true for automata-based models of for example component-based real-time systems. (Chapter 5).

5. The results of Bounded Model Checking seem to be bounded, but in addition to existing (admittedly theoretical) completeness thresholds, a number of approaches exist that can turn Bounded Model Checking into Unbounded Model Checking.

6. Abstraction techniques loose information and gain information at the same time.

7. Correctness of coordination patterns is more important than correctness of the coordinated components.

8. It is important to be able to express and impose upper time bounds on the reaction times of component-based systems, but it is equally important to be able to express and impose lower time bounds.

9. To broaden your mind, you should go abroad, even if this is closer in distance than going to some place in your own country.

10. Good coffee machines are bad for devout tea drinkers.

11. If you want your grandmother to be able to answer the question "What is your granddaughter's profession?" properly, do NOT work in theoretical computer science. This is equally true if you want other people to not be stunned or to not be confused when you tell them about your profession.

12. In contrast to what seems to be common knowledge, computer science is a very diversified field, with many different research directions. This unfortunately means that computer scientists are not able to instantaneously solve every computer related problem.