

EINLADUNG

Zeit: Dienstag, 23. April 2013, 16:00 Uhr

Ort: Hörsaal AH III, Ahornstr. 55

Referent: Dipl.-Inform. Diana Fischer

Thema: The Quantitative μ -Calculus

In this talk, we discuss a quantitative generalisation of the modal μ -calculus and present an overview over the results obtained for this logic. In the quantitative μ -calculus formulae do not just evaluate to true or false but to arbitrary real values. The semantics is given by quantitative transition systems, i.e. directed graphs where the nodes are labelled with real values. Connections to games are a fundamental aspects of logics and play a particularly important role in the study of the modal μ -calculus. Our main focus is the question to what extent these connections can be lifted from the qualitative logics to their quantitative counterparts.

First, we discuss a quantitative generalisation of bisimulation, a notion of behavioural equivalence for transition systems. We present quantitative versions of the invariance theorem for the μ -calculus and the characterisation theorem for modal logic on finitely-branching systems. Our proofs make use of a game-based description of bisimulation.

Then, we discuss the model-checking problem for the quantitative μ -calculus. For the modal μ -calculus, model checking can be described by parity games. We show a similar correspondence in the quantitative setting for an appropriate quantitative extension of parity games.

In the last part of the talk, we show how to model-check the quantitative μ -calculus on discounted systems where also the transitions are labelled with real values, and on a simple class of hybrid systems, again using a game-based approach.

Es laden ein: Die Dozenten der Informatik