Bounded Model Checking using Answer Set Programming

Ilkka Niemelä
Helsinki University of Technology

In this talk bounded model checking of asynchronous concurrent systems is introduced as an application area for answer set programming.

As an example model of asynchronous systems a generalization of communicating automata, 1-safe Petri nets, are used. It is shown how a 1-safe Petri net and a requirement on the behavior of the net can be translated into a logic program such that the bounded model checking problem for the net can be solved by computing stable models of the corresponding program. The use of the stable model semantics leads to compact encodings of bounded reachability and deadlock detection tasks as well as the more general problem of bounded model checking of linear temporal logic.

(This is joint work with Keijo Heljanko.)