Verification of infinite state systems

Angelo Montanari and Gabriele Puppis

Department of Mathematics and Computer Science
University of Udine, Italy
{montana,puppis}@dimi.uniud.it

Go

Go

We briefly reviewed *decidability* and *undecidability* results for

- model-checking problems for MSO and FO logics
  over several families of transition graphs
  (e.g., **context-free graphs**, **prefix-recognizable**,
   graphs, **rational graphs**, **automatic graphs**, ...)
- reachability problems over some transition graphs
  (e.g., **automatic graphs**, **pushdown graphs**,
   Petri net graphs, ...)

We described basic techniques for establishing
the decidability of the above problems and we
mentioned natural generalizations of them.

We gave alternative (internal and external) representations
of the graphs that belong to some of the above families
(e.g., by means of **graph grammars**, **inverse mappings**, ...)

We did not mention:

- non-classical logics and their model checking problems (e.g., **LTL**, **CTL**, **transitive closure logics**, ...)

- equivalence testing problems, which consist in testing the **isomorphism**, **bisimilarity**, **similarity**, ... of graphs

- game theory, which focuses on **multi-player games** over transition graphs and on **winning strategies**.

Course material (an up-to-date version of the lecture
notes and the slides) will be soon available at

http://www.dimi.uniud.it/~montana