

EINLADUNG

Zeit: Donnerstag, 26. Juni 2008, 11.00 Uhr
Ort: Hörsaal AH V, Ahornstr. 55
Referent: Dipl.-Math. Dipl.-Inform. Łukasz Kaiser
Thema: **Logic and Games on Automatic Structures**

Abstract The evaluation of a logical formula can be viewed as a game played by two opponents, one trying to show that the formula is true and the other trying to prove it false. This correspondence is exploited algorithmically to evaluate formulas on *finite* structures. We extend this game-based algorithmic approach to first-order logic on *infinite* structures that arise in computer science. Such structures are stored and manipulated by a computer, thus elements and relations must be represented in a finite way. We study a class of finitely presentable structures where relations are recognized by finite automata working in a synchronous way, called *automatic structures*.

To define model-checking games for automatic structures we extend the classical two-player games to a multiplayer setting where two coalitions play against each other with a particular kind of *hierarchical* imperfect information about actions of the players. We show that the problem which coalition wins in a hierarchical game can be expressed in first-order logic extended by game quantification. Game quantification is a classical topic in model theory and we investigate it over automatic structures, showing that it is intimately connected to alternating automata. Finally, we give an overview of other generalized quantifiers that preserve regularity on automatic structures.

Es laden ein: Die Dozenten der Informatik