JOHANN WOLFGANG GOETHE
UNIVERSITÄT
FRANKFURT AM MAIN

Informatikkolloquium

Im Rahmen der Kolloquiumsveranstaltungen des Instituts für Informatik wird

Prof. Dr. Lane A. Hemaspaandra
University of Rochester, USA

einen Vortrag zu folgendem Thema halten:

Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners

Alle Mitglieder des Instituts sind hierzu herzlich eingeladen. Der Vortrag findet statt am

Donnerstag, den 21. Juni 2007 um 14 Uhr c.t. in Raum 307

Abstract

The mathematician Charles Dodgson (who wrote fiction under the now more famous name of Lewis Carroll) in the year 1876 devised a beautiful (and edit-distance-based!) voting system that has long fascinated political scientists. However, determining the winner of a Dodgson election is now known to be complete for parallel access to NP [HHR97] (see also [BTT89]), which implies that unless P=NP no polynomial-time solution to this problem exists, and unless the polynomial hierarchy collapses to NP the problem is not even in NP. Nonetheless, we show that when the number of voters is much greater than the number of candidates (although the number of voters may still be polynomial in the number of candidates), a simple greedy algorithm very frequently finds the Dodgson winners in such a way that it "knows" that it has found them, and furthermore the algorithm never incorrectly declares a nonwinner to be a winner. (If time permits, this talk will also include comments on issues beyond winner problems—such as control and manipulation problems.)

This is joint work with Christopher Homan.

[BTT89] Bartholdi III, J., Tovey, C., and Trick, M., Voting schemes for which it can be difficult to tell who won the election, Social Choice and Welfare 6:157–165, 1989.

[HHR89] Hemaspaandra, E., Hemaspaandra, L. A., Rothe, J., Exact analysis of Dodgson elections: Lewis Carroll's 1876 voting system is complete for parallel access to NP, Journal of the ACM 44(6):806–825, 1997.

Gastgeber: Dr. Andreas Malcher und Prof. Dr. Detlef Wotschke