APPLIED MATHEMATICS COLLOQUIUM

Combinatorial Algorithms for Convex Programs
(Capturing Market Equilibria and Nash Bargaining Solutions)

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Abstract:
Over the last 50 years, the primal-dual paradigm has had two highly successful "lives"-- in combinatorial optimization and in approximation algorithms. In addition to yielding efficient and practically useful algorithms, it has also provided deep insights into the combinatorial structure underlying the problems solved.

Recently, in the context of solution of problems from game theory and mathematical economics, a third life of this paradigm appears to be emerging: combinatorial algorithms for solving certain classes of convex programs. The algorithms found so far are based on exploiting a surprisingly rich and clean structure, which is in some ways reminiscent of the majestic structure of matching.

Besides providing an in-depth perspective on this new development, I will introduce the fascinating problems that led to it and point out the challenges that lie ahead.

This talk is based on Chapter 5 from http://www.cambridge.org/journals/nisan/downloads/Nisan_Non-printable.pdf and http://www.cc.gatech.edu/fac/Vijay.Vazirani/NBalg.pdf

Monday September 28th 2009
4:30 PM
Building 4, Room 370
Refreshments are available in Building 2, Room 290
(Math Common Room) between 3:30 – 4:30 PM

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