

Faculty of Computer Science

CS6999 Reading Course Presentation

Probabilistic Methods in Integer Programming

By

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Wednesday, May 7th, 2003

3:30 p.m.

ITC317

STUDENTS ARE ENCOURAGED TO ATTEND

The Probabilistic Method is a powerful tool for demonstrating the existence of discrete structures that have certain properties. The method is increasingly important in the design and analysis of algorithms, particularly for combinatorial optimization.

This talk will focus on the specific technique of randomized rounding for approximating integer programs. The randomized rounding technique will be described and illustrated through applying it to the problem of finding the minimum covering radius of a code. Probabilistic methods will be used to analyze the performance of the algorithm. The techniques of scaling variables to enforce feasibility and derandomization by conditional probabilities will also be described.

Recent advances will also be discussed. These include using correlation inequalities in covering and packing problems, using the Lovasz Local Lemma to exploit limited dependence between constraints, and oblivious rounding to improve efficiency.

