abstract

Video of this lecture

COMPUTER SCIENCE/DISCRETE MATH II

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We present two new approximation algorithms for Unique Games. The first generalizes the results of Arora et al. who give polynomial time approximation algorithms for graphs with high conductance. We give a polynomial time algorithm assuming only good local conductance, i.e. high conductance for small subgraphs. The second algorithm runs in mildly exponential time, exp(alpha n), but makes no assumptions about the underlying constraint graph. As the completeness approaches 1 (completeness 1-epsilon), the constant alpha in the running time rapidly approaches 0 (alpha = O(exp(1/epsilon^(1/3))) .) The value of the solutions returned by these algorithms depend only on the completeness of the Unique Game and either the local conductance or the allowed running time respectively. In particular, the performance of these algorithms does not depend on the number of labels in the Unique Game. Both algorithms are based on new methods for partitioning graphs by cutting small fractions of edges when the graph can be embedded in a suitable metric space. (Joint work with Russell Impagliazzo)