Algorithms for Constrained Resource Allocation

Emerging computational models (such as the Cloud paradigm and large data centers) give rise to new variants of fundamental scheduling and resource allocation problems, which are known to be hard to solve. In this seminar we review recent results for some of these problems, focusing on the new approximation techniques developed for solving them. This includes techniques based on local search, submodular optimization, results from matroid theory, and mathematical programming relaxations.

The seminar suits best for senior undergraduate students and graduate students. While basic knowledge of linear programming will be useful, the required background material will be presented in several introductory lectures at the beginning of the seminar.

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