

AGCO Seminar

Author

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Title

Approximating Vector Scheduling

Abstract: In this talk we will consider the Vector Scheduling problem, a natural generalization of the classical makespan minimization problem to multiple resources. Here, we are given n jobs, represented as d -dimensional vectors in $[0,1]^d$, and m identical machines, and the goal is to assign the jobs to machines such that the maximum load of each machine over all the coordinates is at most 1. For fixed d , the problem admits an approximation scheme, and the best known running time is $n^{f(\epsilon, d)}$, where $f(\epsilon, d) = (1/\epsilon)^{\tilde{O}(d)}$, where $\tilde{O}$ suppresses polylogarithmic terms in d . In particular, the dependence on d is double exponential. In this talk we will show that a double exponential dependence on d is necessary, and give an improved algorithm with essentially optimal running time. This gives the first efficient approximation scheme (EPTAS) for the problem. This is joint work with Nikhil Bansal, Tjark Vredeveld and Ruben van der Zwaan.

Where: Republica 701, Sala 33.

When: Wednesday, March 21, 14:30.