



Coping with Incomplete Information in Scheduling? Stochastic and Online Models

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Cuvillier Verlag Mai 2007, 2007. Taschenbuch. Condition: Neu. Neuware - Incomplete information is an omnipresent issue when dealing with real-world optimization problems. Typically, such limitations concern the uncertainty of given data or the complete lack of knowledge about future parts of a problem instance. This thesis is devoted to investigations on how to cope with incomplete information when solving scheduling problems. These problems involve the temporal allocation of limited resources for executing activities so as to optimize some objective. Scheduling problems are apparent in many applications including, for example, manufacturing and service industries but also compiler optimization and parallel computing. There are two major frameworks for modeling limited information in the theory of optimization. One deals with 'stochastic information', the other with 'online information'. We design algorithms for NP-hard scheduling problems in both, the online and the stochastic scheduling models. Thereby, we provide first constant performance guarantees orimprove previously best known results. Both frameworks have their legitimacy depending on the actual application. Nevertheless, problem settings are conceivable that comprise both, uncertain information about the data set and the complete lack of knowledge about the future. This rouses the need for a generalized model that integrates both traditional information environments. Such...



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