

Driver scheduling for vehicle schedules using a set covering approach: a case study*

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Abstract

A significant aspect of the transport companies is to decrease their operational costs. This can be done by optimizing their public transport services. Usually the operational cost of the transportation consists of the cost of the used vehicles and their drivers. It is a very complex task to solve such optimization problems and usually the optimized planning process is divided into more phases. These can be the vehicle scheduling, driver scheduling and driver rostering parts. First the journey tasks are assigned to vehicles, then these vehicle schedules are divided into driver schedules, which are usually shorter, because of driving time restrictions. Finally the driver schedules are assigned to individual drivers.

In this talk we deal with the second part, i.e. with driver scheduling for given vehicle schedules. It is NP-hard to find the optimal driver schedules. We use the well-known set partition approach to model the problem. It is formalized as an integer programming problem, which is solved by column generation. For generating the new columns a time-space network based generator network is used as proposed by Gintner et al. [1], and Steinzen et al. [2]. In this talk we present a case study how we applied these techniques for real data of the Szeged transportation company.

Keywords: Operations Research, Integer Programming, Driver Scheduling

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