

Heuristic for the Combined Vehicle and Driver Scheduling Problem^{*}

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Abstract. Vehicle scheduling problem consists of scheduling a fleet of vehicles to cover a set of tasks at minimum cost. The tasks are given by prescribed time intervals and vehicles are supplied by different depots. The problem is to minimize the number of vehicles used. There are several mathematical models for this problem. In the multi-commodity network flow model the optimal schedule is computed by solving a linear integer programming problem. The disadvantage of this model is that it is not easy to handle specific restrictions coming from real-world applications, like vehicle refueling requirements and restrictions coming from driving times, etc. In this talk we present our promising experiences and results on the application of these techniques to the real life problem given by the Szeged local bus company. Assigning drivers to the schedules is also necessary to get practically usable solution. Because of the strict restrictions applied for the drivers this task is different from the vehicle scheduling. So we need other kind of techniques to solve this part. However the two solutions should be compatible. In the second phase of the algorithm we apply an iterative heuristic for modifying the vehicle schedules to satisfy the driver restrictions. In the talk we present this heuristic as well.

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