



Kolloquium zur Masterarbeit

## Optimizing Vehicle Grouping by Slicing Routes for Platooning in Road Networks

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Vehicle platooning uses radar and vehicle-to-vehicle communications to form and maintain a close-headway formation between at least two vehicles. Grouping vehicles into platoons can significantly reduce fuel consumption and increase the roads' capacity. One essential problem in the state-of-art approach is that the vehicle can drive at maximum in one platoon, regardless of the possibility of driving in multiple platoons along its route. This problem may produce many non-disjoint groups and reduce the fuel savings. This thesis focuses on optimizing the grouping approach in directed graph with positive edge weights by slicing the proper vehicles' routes, so one vehicle can drive in several platoons in the same travel. Choosing the correct slicing approach is very significant, because wrong slicing may lead to poor results and increase the overall cost. In any slicing approach, two main points should be considered to obtain good results: the vehicles' routes that are more probable to be sliced, and the slicing points. The efficiency of any slicing approach depends on the amount of information that is available when the slicing decision is made. Subsequently these concepts are applied to develop two new approaches for slicing the vehicles' routes efficiently in order to achieve more fuel savings.

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