

Project COMBUSTYON

“Cooperative Operation & Management of Bus Systems utilizing Intelligent Transport Systems Online”

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Public transport (PT) is a main contributor to the modern cities' mobility. An attractive PT system's main objective is to provide a reliable and smooth operation. Irregular services are characterized by long travel times, passenger discomfort, missed transfers and difficulties in schedule adherence, phenomena such as bus bunching and poor administration of the available resources. In the era of Intelligent Transport Systems, Advanced Public Transport System technologies are utilized by operators in order to react dynamically in potential disturbances on the system resulted by the stochastic nature of travel times and passenger demand, that have a severe impact on the system. APTS regulate public transport operation through control strategies. Such control policies can be applied both at stops (station strategies, e.g. holding) and between stops (inter-station strategies e.g. speed adjustments and signaling).

The research focuses on maintaining a high level of service by regulating the operation not only at stops but also along the links in between, with the objectives of maintaining even spaced headways between buses, ensuring a satisfying level of synchronization, providing conditional priority rules and minimizing the delays at intersections. Throughout the PhD research, optimization heuristics for the aforementioned factors, subject to travel time, passenger demand, traffic conditions and signaling will be developed, while also integrating V2V and V2I communications. The project will take into account different levels of real time information availability, since for instance it is considered to be limited according to C-ITS communication ranges.

