Suboptimal scheduling of a fleet of AGVs to serve online requests

Markó Horváth
Institute for Computer Science and Control
marko.horvath@sztaki.hu
Péter Györgyi
Institute for Computer Science and Control
peter.gyorgyi@sztaki.hu
Tamás Kis
Institute for Computer Science and Control
tamas.kis@sztaki.hu

In the talk we consider an online problem in which a fleet of vehicles must serve transportation requests arriving over time. We propose a dynamic scheduling strategy, which continuously updates the running schedule each time a new request arrives, or a vehicle completes a request. The vehicles move on the edges of a mixed graph modeling the transportation network of a workshop. Our strategy is complete in the sense that deadlock avoidence is guaranteed, and all requests get served. The primary objective is to minimize the total tardiness of serving the requests, and the secondary objective is to minimize the total distance traveled. We provide qualitative results and a comparison to another complete strategy from the literature. The main novelty of our approach is that we optimize the schedule to get better results, and we measure solution quality which is very rare in the AGV literature.