

Multi-Agent Systems

Assignment: A Multi Agent System for Autonomous Public Transport in Amsterdam
Report Week 2

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The goal this week is to implement a first version of the transportation system in which buses pick up passengers, travel to destinations, and drop off passengers according to a fixed schedule.

Bus routes:

In order to let buses drive according to a fixed schedule, we defined the following four routes:

North

Centraal – Hendrikkade – Hasseltweg – Buikslotermeer – Hasseltweg – Floradorp – Hasseltweg – Hendrikkade – Centraal

East

Centraal – Waterlooplein – Muiderpoort – SciencePark – UvA – SciencePark – Amstel – Wibautstraat – Weesperplein – Waterlooplein – Centraal

South

Centraal – Dam – Leidseplein – Museumplein – Zuid – RAI – Zuid – VU – Amstelveenseweg – Haarlemmermeerstation – Surinameplein – Leidseplein – Dam – Centraal

West

Centraal – Dam – Evertsenstraat – Surinameplein – Lelylaan – Sloterdijk – Centraal

Bus initialization:

For each bus route six buses are initialized, since this seems enough to cover each route. Of these six buses, half go in the direction specified here and the other half goes in the opposite direction. The buses are initialized five minutes apart from each other, to ensure that the buses are spread out over the route.

Picking up and dropping off passengers:

Passengers at any station except Central are always picked up by passing buses if the bus capacity allows. Passengers are dropped off if they are at their destination, or if they are at stop Central and their destination is not in the itinerary of the bus they are currently in. Central was chosen as only changing point as this is the central point of all routes and the only point that could sever each path from A to B.

Switching routes:

Passengers can switch between different bus routes only at stop Central. At Central, first the passengers are dropped whose destination is not in the itinerary of the bus they are currently in. Then, only passengers are picked up whose destination is in the itinerary of the current bus. This to avoid full busses and passengers driving a full route to be dropped at central again.

Results:

Final average travelling time: 74.55 minutes

Buses' expense: 530919