Smart car on demand

Peri Rahamin (s2683523), Jits Schilperoort (s2788659), Twan Schoonen (s2756978)

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1 Introduction

Our general idea is to have self-driving cars drive through our city. If a customer wants to go somewhere using our service he/she will log in to our app, and select where he whats to go (we already know where he is). We then let him know how long he has to wait and manage that a car will pick him up.

Furthermore there will be car2car communication. This will include cars communication with each-other about location / district.

2 Needed requirements

Although we don't have information about what the actual requirements mean yet, we think that we will use them in the following way.

- Socket, used for car control
- message queuing, used in car person interaction
- web services (REST), used in the mobile app

3 Main steps of a MVP

1. customer sends a request, location destination number of pass.
2. car receivers a request all information is included
3. car searches shortest path
4. car picks up customer. and searches for the shortest / fastest path to the location.
5. request is popped from queue and marked as done.
6. Car returns to car center

4 car2car communication

Whenever a customer makes a request, the cars will have to communicate with each other in order to decide which of them should pick up the customer. This decision should at least be based on both the availability of the cars and the distance to the customer.

Whenever a change is made in the system (e.g. a customer is picked up), the cars should again be evenly distributed around the area. To coordinate this, it is also very important that they communicate with each other in order to figure out what their new path should be.

5 Additional notes

We do not yet know the level of abstraction we are going to end up with. For our first version we will do the following:
1 Car, 1 customer, a car center.
No GUI just command line statements.
After this working system we can start working on the following extensions:
More cars, more customers, cars communicating to eachother about position in the city, option to send for cars, show a car grid, have actual car agents etc.