Modelling an electricity price and journey time trade-off routing decision for electric vehicles

Research Project (CSE3000) by Joaquin van Loon (j.l.k.vanloon@student.tudelft.nl) | Supervised by Valentin Robu | 2021

1. Background

The increasing adaptation of electric vehicles demands charging infrastructures and electric vehicle routing policies over a road network which avoid congestion at charging stations as much as possible.

An efficient allocation of electric vehicles over the different charging stations in a road network is important since charging a car takes





[1] Mathijs M De Weerdt, Sebastian Stein, Enrico H Gerd-ing, Valentin Robu, and Nicholas R Jennings. Intention-aware routing of electric vehicles. IEEE Transactionson Intelligent Transportation Systems, 17(5):1472–1482, 2015.

When presented with the choice of several charging stations who each charge a certain price for electricity, how can we best model the choice of which station to go to?

A greedy decision strategy where the next road segment

A decision strategy which follows from the intention aware routing system proposed by de Weerdt et al. [1]



Figure 3: Money spent comparison for different vehicle types on the grid road network



Figure 1: Grid road network with en-route charging stations





