

A statistical and machine learning framework for new energy vehicle ride sharing system

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Abstract: Recently, the number of electric vehicles (EVs) served on the online ride-hailing companies, like Uber, Didi Chuxing, increased rapidly. Not like conventional fuel vehicles, EVs have some unique characteristics: they do not travel as far as fuel vehicles, and it takes much longer for EVs to be charged. Adapting these characteristics into the dispatching system of online ride-hailing companies becomes increasingly important. In this talk, we will present our recent progress on two major components of an EV friendly dispatching system. Firstly, we will introduce a stochastic partial differential equation approach to model the power consumption by an EV. The power consumption model takes real time vehicle and environment factors into account to estimate the state of charge. Secondly, we will introduce a deep multi-objective reinforcement learning approach to solve the order dispatching problem based on the estimated state of charge of EVs. Some results on real data and simulated system will be shown as well.