EMULATE .energy

Want to do your master thesis on clean energy?

Who we are

At Emulate Energy, our mission is to accelerate the transition to clean energy. A big hurdle towards the transition has been the ability to store energy. We have developed an algorithm which emulates a physical battery by using flexibility in electricity demand. This means that we tackle the issue of energy storage without the need for a physical battery and the associated raw materials and maintenance.

Our solution

Our software solution coordinates the electricity use of household devices, such as air conditioning, heat pumps, and electric vehicle chargers. These units have some flexibility in when they use electricity, and through proper coordination, they can collectively mimic a single, well-understood battery. This virtual battery can then be used to balance renewable energy production and support electrification of transportation and heat. (The solution is a spin-off from academic research. A brief overview is given here https://news.mit.edu/2017/virtual-batteries-cheaper-cleaner-power-0324)

Who we're looking for

Having just closed our first funding round with 5 energy companies and a large institutional investor, we are looking for passionate young talent to grow with us on our journey. We are currently looking for one or two MSc thesis students who are interested in working on modeling, control and machine learning for one of the following applications.

Modelling and identification of a heat pump

The objective is to develop a model that can be used to predict and control the electric power draw of the heat pump. A candidate model structure has already been derived and the main task is to identify its parameters from collected field data.

Data-driven prediction of EV charging pattern

The objective is to apply machine learning to predict charging behaviors. For instance, what is the likelihood of a specific EV plugging in at a certain location? Or given that an EV plugs in at a certain location, how long will it stay plugged-in?

Modelling of indoor temperature dynamics

The objective is to model the indoor temperature dynamics of a home and use the model to quantify the potential for reducing energy waste.

Optimal control of battery units

The objective is to develop a charging policy that maximizes the revenue that a battery can generate from a combination of energy arbitrage and ancillary services.

If this sounds interesting, please contact:
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