Electrical Demand Prediction Using Machine Learning and Regression Algorithms

Research Area
Machine learning and big data analytics

Keywords
Regression models, prediction models

Description
Due to the increase in the decentralized generation, the electrical power sector faces new challenges, as they must provide electricity in a sustainable and efficient way. As one of the power grid's prospective main components, smart meters will collect information regarding users' consumption automatically over short and regular time intervals. Thus, they can be considered as a source of big data, which can be utilized for management and operational purposes.

Electricity demand forecasting has been a subject of investigation over the last decades. However, recently it has been widely reconsidered due to the emerging of big data analytics. As a small scale approach, this work aims to predict the power consumption – or in other words the electric load from the power grid's point of view – for individual or multiple household based on collected real measurements over a long period of time.

Goal
As a direct application of machine learning and big data analytics, the student has to choose a suitable regression/prediction model, for example support vector regression or hidden Markov models, in order to predict the future electricity demands based on the provided real measurement data.

Requirements
- Good understanding of some machine learning algorithms.

- Experience in Python programming.

Contact
- Rana Al Halaseh   ✉ rana.alhalaseh@ti.rwth-aachen.de   ☎ +49 241 80 27708