Energy disaggregation using non-intrusive load monitoring

Introduction

Greeniant is a small company based in Rijswijk working on creating consumer focused energy awareness using data from smart meters. Specifically, we are developing a technology for energy disaggregation, also known as non-intrusive load monitoring.

Energy disaggregation is the practice of estimating the energy consumed by each appliance in an household by only analyzing the total household energy consumption measured at the smart meter, which avoids the need to install separate hardware (plugs/sensors) on the individual appliances. For example, it extracts the energy consumed by washing machines, dryers, dish washers, ovens, etc. from the aggregate electricity meter reading of a household. Energy disaggregation provides the consumer with more understanding on how the individual appliances contribute to the total energy consumption and bills. The increased awareness about the energy consumption of the appliances helps consumers to take effective measures to improve their energy efficiency.

Project

Currently, we are looking for an intelligent student to join our science team to work on developing our non-intrusive load monitoring algorithms. The task of the student is to work on developing algorithms to learn the energy consumption patterns of different appliances, using techniques from machine learning and pattern recognition. The position starts as a short internship of 2-4 months, and can be extended to an MSc thesis project of 6-9 months.

Requirements

We are looking for a student with the following background:
• Working on MSc degree in computer science, mathematics or related field.
• Has knowledge/experience in machine learning/pattern recognition, particularly using Bayesian Networks (Hidden Markov Models, Midden semi-Markov Models).
• Has experience in programming languages, such as Java or C++, experience with Matlab and/or Python + Numpy/Scipy is a plus.
• Creative and motivated, capable of working in teams.
• Good command of either Dutch or English.

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