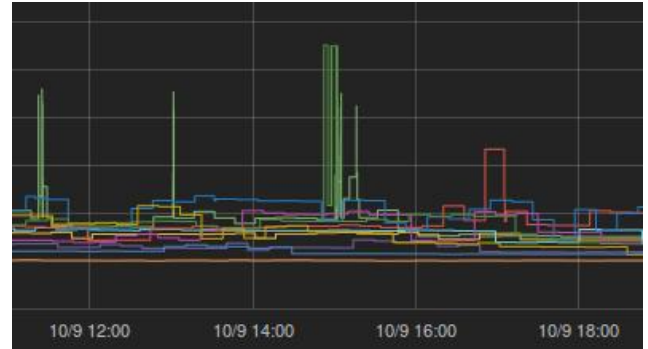




How much personal information is hidden in energy consumption data?

Introduction

The increase of energy efficiency is an important target on all levels of society. According to studies, it is best achieved when users receive information about their energy consumption such as how much is consumed, when, by which device, in what form.



Problem

As it is possible to directly associate building inhabitants with their energy consumption, these data is considered *personal* data and must therefore be protected by the Bundesdatenschutzgesetz and the European Data Protection Directive. Nevertheless, it is still unclear, how much information can actually be retrieved from raw energy consumption logs (energy consumption in time series).

Task Description

We provide you with energy consumption log from our chair and some other buildings. Your task is to research and try techniques which allow gaining actual insights from this raw data. Some relevant questions are

- 1) Is it possible to extract the energy consumption of single devices from an aggregated time series?
- 2) What knowledge about the user behaviour can be derived from her energy consumption?
- 3) What characteristics do different consumers (fridge, micro wave, light ...) have?
- 4) Is it possible to find some fingerprinting function which allows identifying the consumer when given a slice of a energy consumption log?

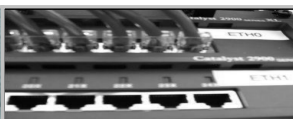
Depending on your findings you can afterwards assess to which degree energy consumption logs can actually be seen as personal data.

Requirements

You should have basic knowledge in data mining or pattern recognition. Furthermore creativity and self-initiative is necessary to be successful in finding effective strategies of discovering information in the given data.

Miscellaneous

This thesis can be performed in German or English. As a Bachelor student you have the opportunity to stay at our chair after the thesis is finished as student researcher (HiWi) to continue your work.



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