sirris

driving industry by technology

1 Sirris profile

Sirris is a non-profit and industry-driven knowledge center founded by Agoria, the federation of the Belgian technology industry. Sirris helps Belgian companies in the implementation of technological innovations, by providing companies with technological advice, by supporting companies in the definition and realization of innovation projects, and by setting up and participating in European R&D projects. Sirris is active in several domains, among which Software and ICT.

2 Master Thesis Description

Sirris is involved in several projects related to *big data*, i.e. large volumes of data that can be automatically analyzed in order to derive knowledge. Ever more data is becoming available in many different domains, such as social networks (e.g. Facebook & Twitter), energy (e.g. smart energy meters, renewable energy parks), and mobility & transport (e.g. TomTom GPS data). Big data technologies are applied to extract knowledge from this data, e.g. recommending people you might know, detecting personal energy usage patterns, or predicting travel times and traffic flows.

Sirris is working on the development of a research and testing environment, to create a repository of scripts and tools for forecasting. An important part of this work is related to the main first part of any forecasting problem: the data exploration. In this context, you will be working on the development of machine learning algorithms for exploring (temporal) sustainable energy data.

This master thesis will focus on:

1. Tools and scripts to automatically clean and preprocess the data, among others:
    a. Outliers detection e.g. K-nearest neighbor or one class support vector machine
    b. Dimensionality reduction e.g. principal component analysis or canonical correlation analysis
2. Tools and scripts to automatically detects trends and patterns e.g. K-mean or association rules
3. Tools and scripts to automatically detects abnormal behaviors e.g. clustering

The main challenges will be to combine all these methods (through existing libraries) into one unified research environment and to realize a deep study of these fields to find the most appropriate methods for this kind of data.

3 Practical Details

No prior knowledge related to the domain of sustainable energy is assumed.

The internship is not paid and takes place in Sirris premises in Brussels (Diamant Building, Boulevard A. Reyers). We are working in a very informal and social environment with flexible office hours.

You will be working in an environment where English is the main working language.

4 Contact Persons

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