



Seminar Topic “Energy Informatics”

Matrix Profile: A new Pattern Recognition Method for Energy Time Series

Finding patterns in energy time series is a topic of interest for many applications, such as designing demand response systems, setting prices for energy consumption, or finding anomalies. Thus, several machine learning algorithms exist that try to tackle this problem of finding patterns. A very recent algorithm to find these patterns is the Matrix Profile.

This seminar paper should introduce to Matrix Profiles and apply them to an energy time series problem.

Introductory Literature:

Matrix Profile I: All Pairs Similarity Joins for Time Series: A Unifying View that Includes Motifs, Discords and Shapelets. Chin-Chia Michael Yeh, Yan Zhu, Liudmila Ulanova, Nurjahan Begum, Yifei Ding, Hoang Anh Dau, Diego Furtado Silva, Abdullah Mueen, Eamonn Keogh (2016). IEEE ICDM 2016.

Matrix Profile V: A Generic Technique to Incorporate Domain Knowledge into Motif Discovery. Hoang Anh Dau and Eamonn Keogh. KDD'17, Halifax, Canada.

<http://www.cs.ucr.edu/~eamonn/MatrixProfile.html>

Requirements:

- Knowledge of Matlab would be a plus as the original code is written in Matlab
- Motivation to work with data
- Some basic statistics knowledge would be an advantage

If you are interested in taking part in the seminar, please write an email to nicole.ludwig@kit.edu or marian.turowski@kit.edu.