Student	Lukas Kretschmar
Examiner	Prof. Dr. Daniel Patrick Politze
Subject Area	Innovation in Products, Processes and Materials - Business Engineering and Productions

Lukas
Kretschmar

Data Science Exercises for the Education of Industrial Engineers

Jupyter
https://jupyter.org

Problem: Engineers of the future have to be data scientists to some extent. Therefore, we have to include data science into their education. With the newly created specializations for industrial engineers at the HSR, basic knowledge in data science will be taught. But with the new specializations, new exercises have to be developed for the students. And since the HSR tries to provide realistic exercises, we cannot rely on many of the existing, simple school book examples.

Result: During this project, we developed three different exercises for the students. The idea is that the students can apply their knowledge in a larger exercise at the end of the semester. Trying to cover the whole range of topics, we picked affinity analysis, classification and time series as part of the exercises. Further, data cleansing, feature selection, model validation and data visualization have to be applied also throughout the exercises.

Approach / Technology: The secondary objective of this project was to buildup knowledge in the application of Jupyter and its usage as part of education. It is planned to apply Jupyter more widespread within the education of industrial engineers since it offers a good platform for interactive examples.
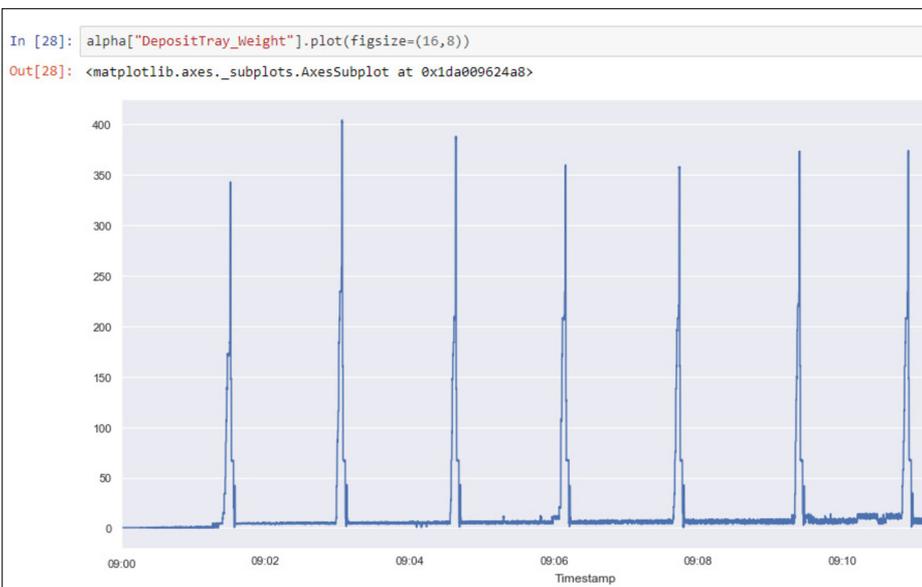

Preparing configurations for a market basket analysis.
Own presentment

Visualization of a time series with a slight trend and noise.
Own presentment