Data Analytics

Micro Project – FIM Living Lab

Introduction:

You're a data scientist team at the FIM-Research Centre for applied business informatics. Recently your office building was provided with a smart energy system (Solar Panels, charging stations, Battery storage, etc.) that is trying to provide one hundred percent of green energy used to run all your systems and office equipment including cars and servers. However, this is not always possible to sustain because the solar panels don't perform the at their maximum efficiency during the day. Because of that your boss asks you to analyze the time series datasets he has provided you with and asks you to create a model that can forecast the energy production and usage in your building.

Tasks:

Your project should include the following points and should also be included in your project presentation:

- Data Understanding and Cleanup: Describe your dataset and give an insight into the data you're working with. In the end the data should be accessible to business analysts (data preprocessing, visualization, etc.)
- Choosing a model: Choose a model for your specific problem. This should include a definition of the prediction problem. Compare different models and explain which model you have chosen and why it's the best suited one for your project.
- Evaluation: Talk about the experiences you have collected during your project. What were your biggest challenges, how did you overcome them and talk about your biggest lesson learned during the project. evaluate the trained model on unseen data. Which data is better suited for forecasting: minute base or quarterly-hour-base?
- Creating a presentation: Your presentation should include and represent the most important aspect of the tasks named above. It should also include a brief description of the single steps that you've taken to achieve your goals.

(Note: This project is meant to give you a head on approach on data analytics. Also, creative solutions such as feature engineering, the collection of additional data, etc. are welcome and will have a positive impact on the amount of bonus points you will earn from this project.)

Additional information:

You were provided with three different datasets:

MSJO 60 01-03 2023	A time series with measurements made every 60 seconds.
MSJO 900 01-03 2023	A time series with measurements made every quarter hour.
TB Counter	Provides the actions the different components in your system have taken.