

Semester Assignment 1-2022: Time series – energy price prediction

Objectives

This assignment will be performed and handed in as a piece of individual work. It will determine 50% of the final grade in the course. It deals with data science and price prediction.

Scope

Energy prices are soaring these days. You are going to create an energy price predictor. Before you conclude on the method to use you are going to compare their performance. For this you are going to use historic records from the NordPool energy exchange. The data resources that will get you started are uploaded to Canvas. The two methods to be compared are XGBoost and LSTM. Comparison should be presented in the form of graphs, lists and/or tables as much as possible. You are free to define the set-up, architecture and hyper-parameters as you see fit.

Focus should be price zone NO1(Oslo) and NO2(Kristiansand). The following criteria should determine the comparison:

1. RMSE of both training and validation
2. Precision and accuracy on a selected test set, not part of validation or training
3. Percentage, average error in predicting very high peaks and low valleys

Presentation

In the second week of the course, on Wednesday, September 14, you should present your work and preliminary results before the class. For this you will prepare a power point presentation and hold a 10- minute lecture on what you have done and achieved

Final report

The final report should be in the form of a “scientific article” using two columns and an abstract. The IEEE format is recommended. It should be between 6 and 10 pages long, including images and reference list.

The report should have a brief summary, an introduction part where you describe the problem, the objectives of your work and why a solution would be important. Include a chapter on related work. Can you find literature that can help you solve the problem? Describe important, related work. Then you should describe your approach (not all the failed efforts), but the method that led to the results that you present. After that you should have a chapter that presents the results of each method and the comparisons that you have done. Finally you should sum up and discuss how well you achieved the goals defined and recommend future work.

Submission

Submission will be in the form of a report (see above) and Python code version. Deadline is 4th of November at 17:00