

Home assignment - Jether Energy Research

Part 1

In this exercise you'll load, display and analyze the error of two wind forecast methodologies. Write code, preferably in python, that performs the following data analysis. Include in the code all data manipulation you performed throughout the exercise. Save the visualizations of the assignment and write a report that includes your insights along with the evidence.

Available data (time series)-

1. Actual wind generation (in wind_actual_generation.csv)
2. Two wind generation forecasts (wind_forecast.csv)

Goal -

Evaluate forecasts and recommend a forecast method.

Points to consider:

1. Validation of the input signals. Describe what you checked. Plot the data before and after validation.
2. Visualize the forecasts and the actual time-series. Describe the data characteristics.
3. Visualize the forecast error time series (actual generation - forecast) and its distribution.
4. Provide a quantitative analysis of the performance of the forecasts (e.g by Mean Absolute Error).
5. Consider the performance in different periods and in different ranges of the wind signal.
6. Statistical significance.

Write an analysis tool -

Provide a utility that given a user defined period (for example a 'Week' or 'Month') and an evaluation metric, computes the rolling value of the statist and visualizes the result. Explain why and when you would use such a utility. Run the utility on the provided forecasts and explain the results.

Part 2

In this exercise you'll inspect a wind farm project in Texas - The Trent Mesa wind project.

What can you say about the project?

You can use the the U.S. Wind Turbine Dataset at

(<https://eerscmap.usgs.gov/uswtodb/viewer/#9.16/32.3409/-100.3401>) and any other you find useful.

Hint - you want to outline details that will help forecast the wind generation of this project.

Good Luck :-)