IYBSSD2022

facet

UNIVERSIDAD NACIONAL DE TUCUMÁN

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ICTP The Abdus Salam International Centre for Theoretical Physics
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Trieste, Italy

IAEA

Hands on #2
Prediction (using Keras)

Problem 1:

It is desired to make predictions from the SYM-H geomagnetic index time series data. For this, the data of the same is held from 01/01/2007 to 12/31/2020 in the file "symh.csv".
For this exercise you want:

1. Analyze the data of the time series (maximum, minimum, existence of missing data, mean, median, etc.)
2. Plot the time series for visual analysis.
3. Develop a function that allows the selection of an interval of the time series (this can be used to take a part of the time series for analysis).
4. Develop a function that allows dividing the data into train set and test set.
5. Develop a function that allows the sliding window to accommodate the time series in the number of variable input steps and output steps (this is a requirement for data accommodation before entering the modeling).
6. Develop a walking forward function that allows prediction according to the sliding window defined on the test set.
7. Develop a grid search function (taking into account at least 2 hyperparameters) that allows generating different models and choosing the best one.