ASSIGNMENT – Recurrent Neural Networks

Develop a Deep Learning-based approach to Wind Power Forecasting using the dataset available at https://www.kaggle.com/theforcecoder/wind-power-forecasting

- Instructions on how to download the dataset and initial preparations are contained in the following notebook: https://colab.research.google.com/drive/1wDWdQtlTVRbQYRuDQ84CFFwFWasZh8RN?usp=sharing.
- Investigate the dataset to find some insights about cleaning and preprocessing steps required.
- Split the dataset in training / validation / testing set as suggested in the notebook above.
- Develop a Simple Recurrent Neural Network.
- Modify architecture, network parameters, and data to improve the classification performance.
    - Try to use different architectures, such as SimpleRNN, LSTM, or GRU;
- Insert regularization (Dropout, L2, etc); add/remove layers; modify optimizer and other parameters in general.
- Plot the loss metric curves of the training and test set for all different architectures.
- Make predictions on the testing set.

Write a report containing the data cleaning and data processing performed, and the learning curves and metrics of your best model in the training and validation set.
Also report the predictions for all different architectures used (RNN, LSTM, etc.), as well as an analysis of the results obtained in the experiments and the impacts related to the variation in network architecture/parameters and data.
Finally, briefly describe the experiments performed that did not achieve the best result.