Saudi Arabia Weather

DEEP LEARNING PROJECT

Abstract

Climate studies anywhere are one of the important studies on which geographical and non-geographical studies are based.
The Kingdom of Saudi Arabia has a changing climate throughout; Due to the vastness of its geographical area and the passage of many geological stages over it during the previous centuries.
The Kingdom's climate varies with different seasons.
But in general, the climate is characterized by hot summer and cold and rainy winter.

This project will explore different models of Time Series on the data with the goal of predict the temperature and the Weather in Makkah city.

Data

The data set is from kaggle it's contain

24K rows
15 columns

Its describe the kingdom's climate throughout the years of 2017-2019

Algorithms

Understand the DataSet

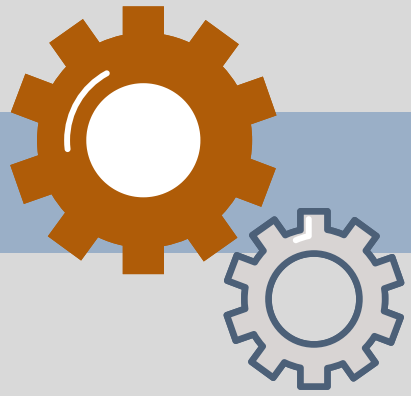
Data cleaning & Preprocessing

EDA

Scale & Split

Apply Time Series Models

Tools



Technologies

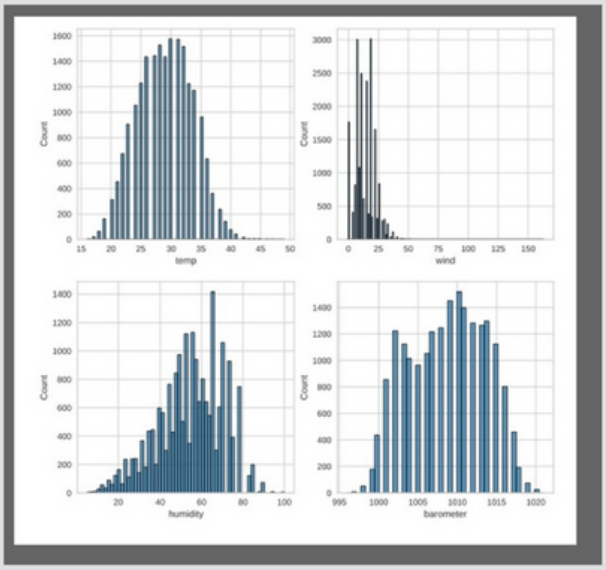
- Python
- Jupyter notebook
- Google colab

Libraries

- Pandas , NumPy ,Math
- Matplotlib ,Seaborn, rcParams
- Sklearn-Scikit
- Tensorflow
- scipy
- statsmodels
- calendar

Communication

The figure shows the distribution of (Tempreture , Wind , Humidity Barometer)



LSTM

LSTM 1

n_lag = 24
n_seq = 1
n_batch = 1
n_epoch = 20
n_neurons =20

RMSE : 0.126512

LSTM 2

n_lag = 24
n_seq = 1
n_batch = 1
n_epoch = 20
n_neurons = 50

RMSE: 0.150887

LSTM 3

RMSE: 0.122265

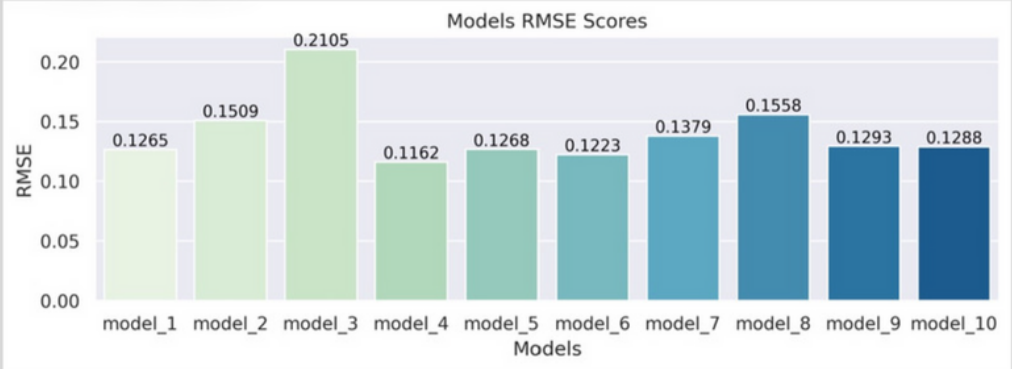
n_lag = 24
n_seq = 1
n_batch = 1
n_epoch = 20
n_neurons = 10

LSTM 4

RMSE: 0.137903

n_lag = 24
n_seq = 1
n_batch = 1
n_epoch = 20
n_neurons = 24

Best Model



From above we can say that the best model is model_4
The big stacked LSTM with the lowest RMSE (0.116172).