Web GUI Development from ML Notebooks using Python

Timelines

- 10th Jan 2022

The Integrated Web GUI has to be developed for the following Machine Learning Python Code Notebooks:

Time Series Forecasting:

- MSC Traffic
- APN Utilization

Prediction:

- eCell_Accessibility
- eCell_Retainability

Anomaly Detection:

- IP_Link_Jitter
- IP_Router_Port_Total_Traffic_Rate

The web GUI has to be developed using **'Python Streamlit'**.

The design of the web GUI has to be a very basic, comprising of the following:

Note: The below given design and sample layouts are for explanation of the requirements only. The actual design and layouts can be adopted as per available options taking into account the content to be demonstrated.

Home Page:

Title: Network Analytics

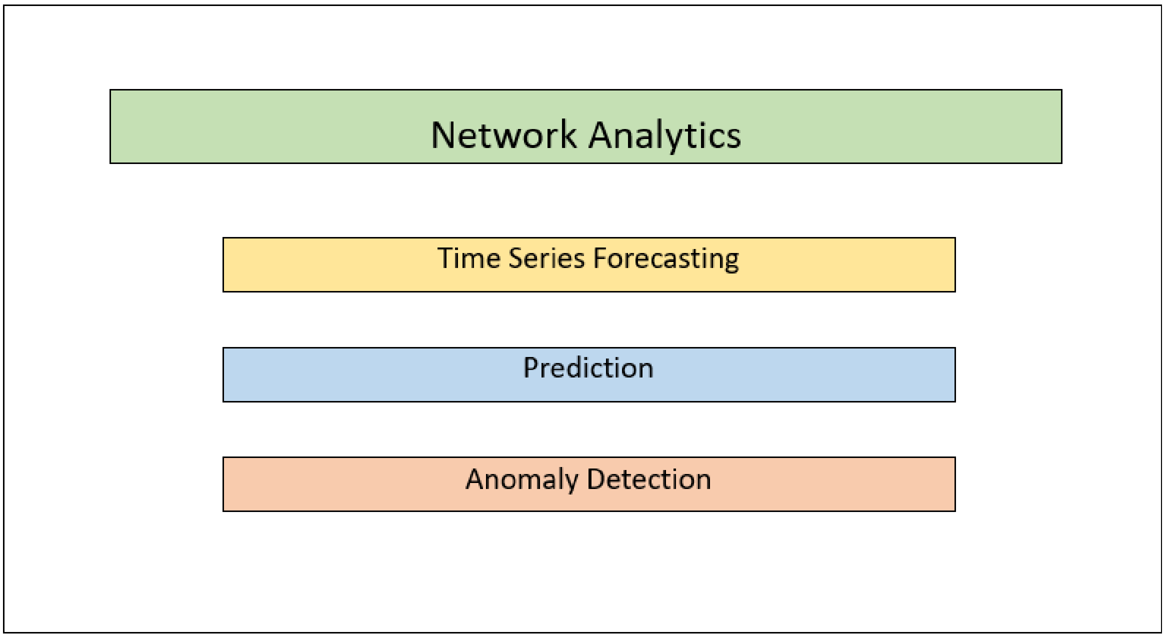
The following options for selection:

- Time Series Forecasting
- Prediction
- Anomaly Detection

A Sample layout is as follows:

This is just an example. Exact same layout is not mandatory.

The user will select any one of the three options to move to the specific web page of that use case.



Network Analytics

Time Series Forecasting

Prediction

Anomaly Detection

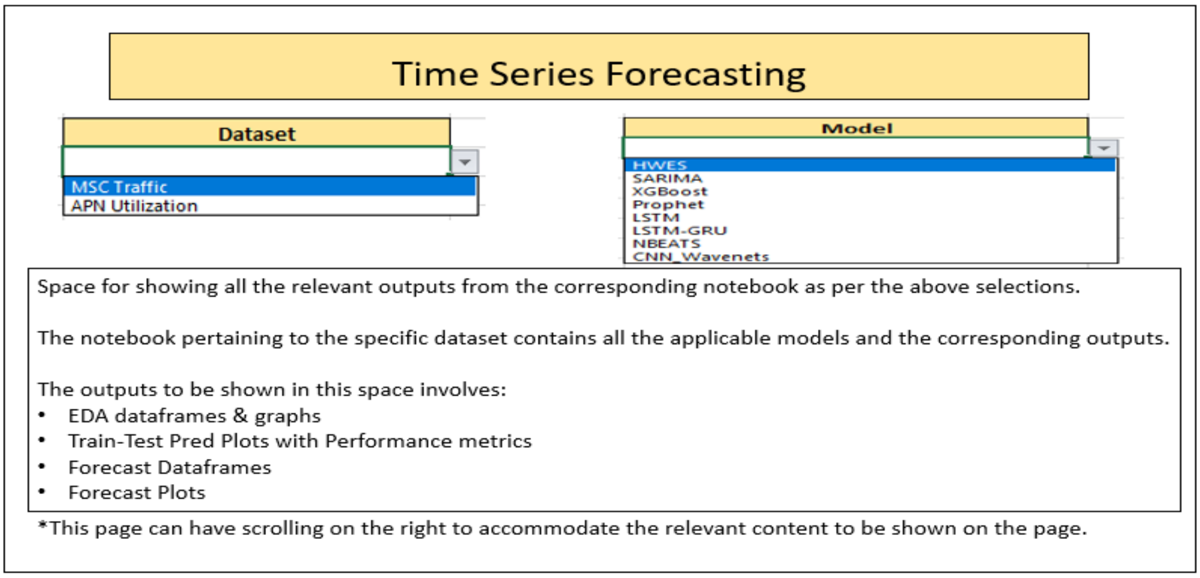
Time Series Forecasting Web Page:

Once the user selects the Time Series Forecasting option on the Home Page, he will land up on the Time Series Forecasting Web page.

A Sample layout is as follows:
This is just an example. Exact same layout is not mandatory.

The user will select the dataset and model and the corresponding outputs will be displayed on the web page. The details of the required outputs that are to be shown on the web page corresponding to each selected dataset-model combination are mentioned in below sample layout.

The scrolling option can be used in order to accommodate all the required content on the web page.



Time Series Forecasting

Dataset
MSC Traffic
APN Utilization

Model
HWES
SARIMA
XGBoost
Prophet
LSTM
LSTM-GRU
NBEATS
CNN_Wavenets

Space for showing all the relevant outputs from the corresponding notebook as per the above selections.

The notebook pertaining to the specific dataset contains all the applicable models and the corresponding outputs.

The outputs to be shown in this space involves:

- EDA dataframes & graphs
- Train-Test Pred Plots with Performance metrics
- Forecast Dataframes
- Forecast Plots

*This page can have scrolling on the right to accommodate the relevant content to be shown on the page.

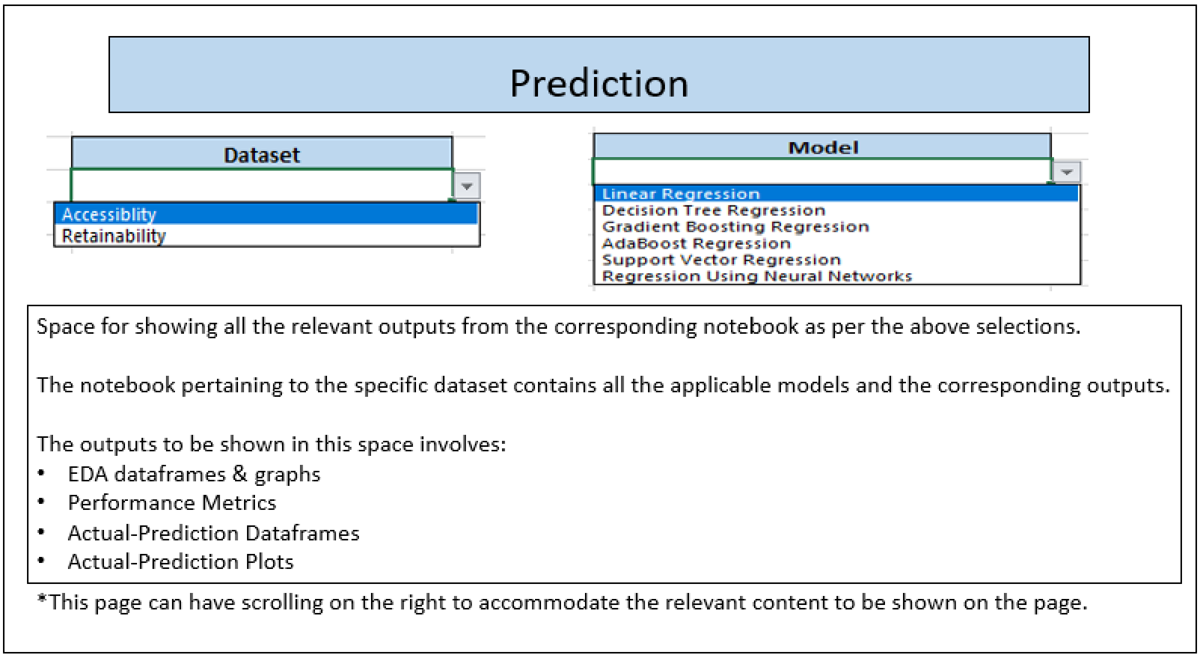
Prediction Web Page:

Once the user selects the Prediction option on the Home Page, he will land up on the Prediction Web page.

A Sample layout is as follows:
This is just an example. Exact same layout is not mandatory.

The user will select the dataset and model and the corresponding outputs will be displayed on the web page. The details of the required outputs that are to be shown on the web page corresponding to each selected dataset-model combination are mentioned in below sample layout.

The scrolling option can be used in order to accommodate all the required content on the web page.



Space for showing all the relevant outputs from the corresponding notebook as per the above selections.

The notebook pertaining to the specific dataset contains all the applicable models and the corresponding outputs.

The outputs to be shown in this space involves:

- EDA dataframes & graphs
- Performance Metrics
- Actual-Prediction Dataframes
- Actual-Prediction Plots

*This page can have scrolling on the right to accommodate the relevant content to be shown on the page.

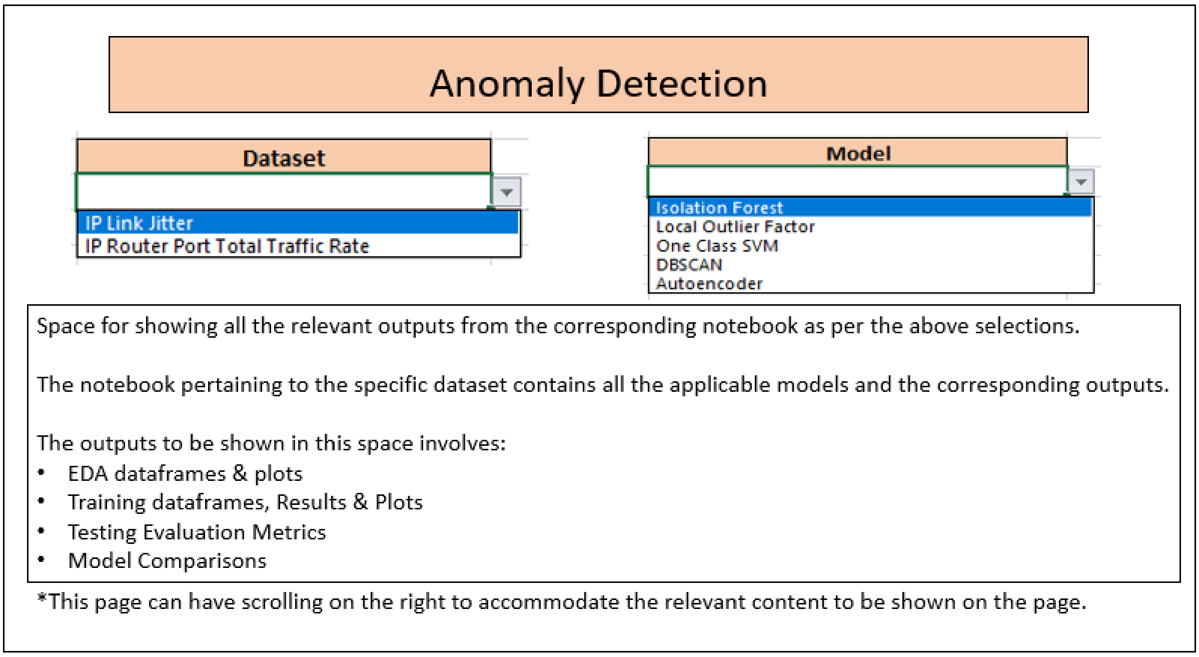
Anomaly Detection Web Page:

Once the user selects the Anomaly Detection option on the Home Page, he will land up on the Anomaly Detection Web page.

A Sample layout is as follows:
This is just an example. Exact same layout is not mandatory.

The user will select the dataset and model and the corresponding outputs will be displayed on the web page. The details of the required outputs that are to be shown on the web page corresponding to each selected dataset-model combination are mentioned in below sample layout.

The scrolling option can be used in order to accommodate all the required content on the web page.



Space for showing all the relevant outputs from the corresponding notebook as per the above selections.

The notebook pertaining to the specific dataset contains all the applicable models and the corresponding outputs.

The outputs to be shown in this space involves:

- EDA dataframes & plots
- Training dataframes, Results & Plots
- Testing Evaluation Metrics
- Model Comparisons

*This page can have scrolling on the right to accommodate the relevant content to be shown on the page.

- The required notebooks will be shared for all the mentioned datasets containing the code and corresponding outputs for each of the applicable models.

- Any required changes can be made to the notebooks only for incorporating the same for the web GUI development.

Important Note:

- The web GUI development should be done in such a manner that it can be incrementally updated later for more similar datasets against applicable models under the three use cases.
- The details of the steps have to documented and shared which can be used to incrementally update the web GUI later for more similar datasets against applicable models under the three use cases.
- All the required steps need to be documented and shared to setup the environment (any required installation, configurations etc.) required to run the developed web GUI.

Deliverables:

- Web GUI Python code using **streamlit** working as per requirements and showing the data from relevant ML Python notebooks.
- Documentation giving stepwise details to setup the environment for executing the code and running the Web GUI showing the data from the notebooks.
- Documentation providing the detailed steps which can be used to incrementally update the web GUI later for more similar datasets against applicable models under the three use cases.