EXCELR
Raising Excellence

FORECAST GOLD PRICES

GROUP – 5 (P-111)

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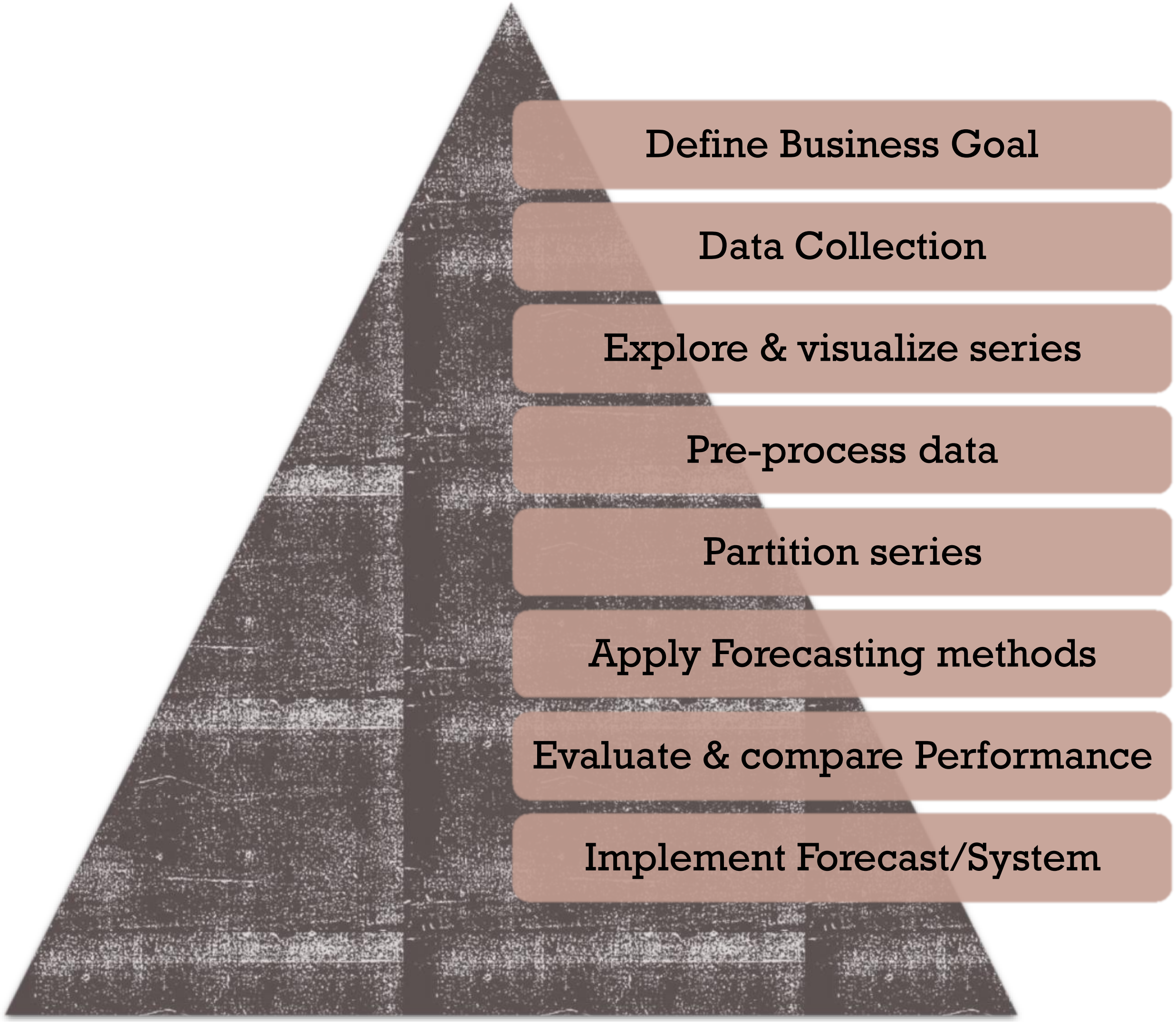
BUSINESS OBJECTIVE

Business Objective: Data provided is related to gold prices. The objective is to understand the underlying structure in your dataset and come up with a suitable forecasting model which can effectively forecast gold prices for next 30 days. This forecast model will be used by gold exporting and gold importing companies to understand the metal price movements and accordingly set their revenue expectations.

PROJECT ARCHITECTURE/FLOW



Define Business Goal

Data Collection

Explore & visualize series

Pre-process data

Partition series

Apply Forecasting methods

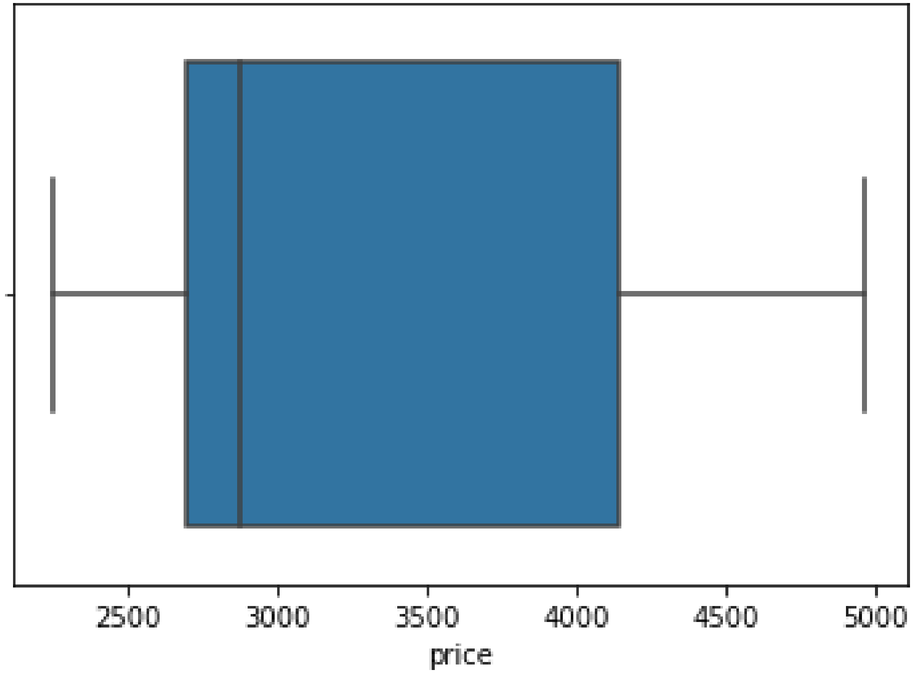
Evaluate & compare Performance

Implement Forecast/System

EXPLORATORY DATA ANALYSIS

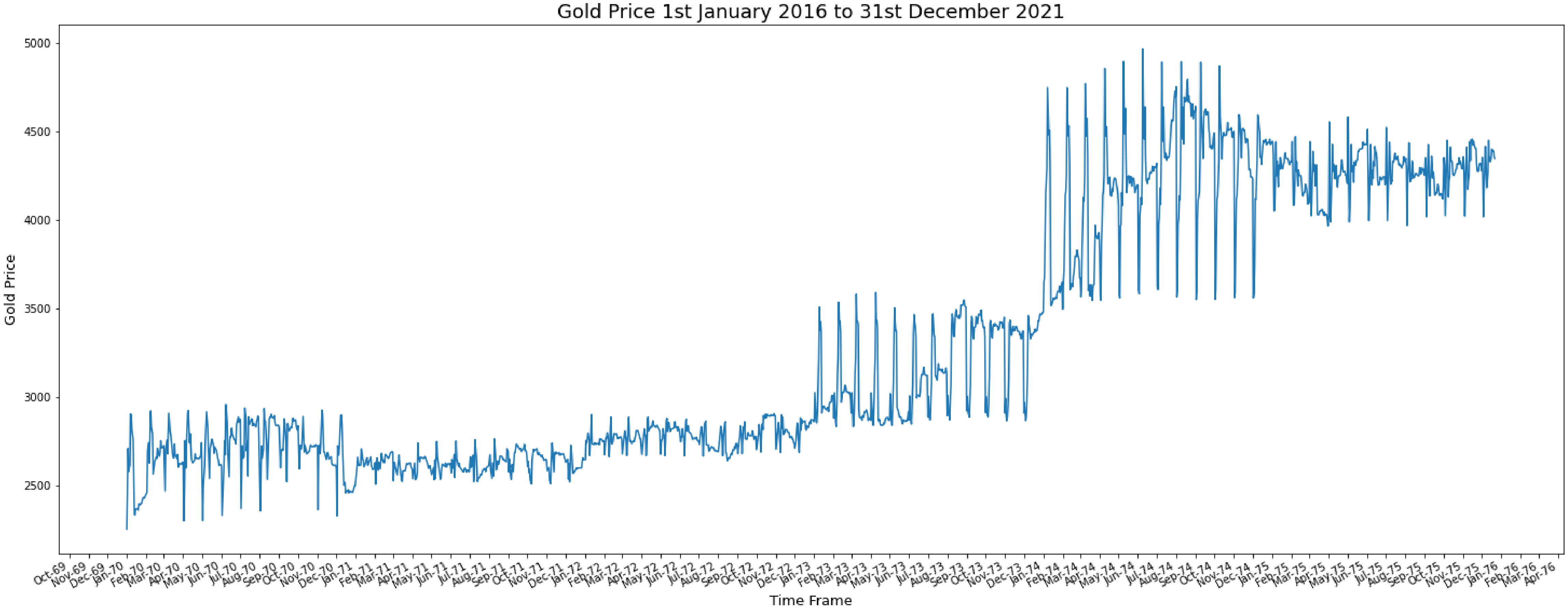
Insights of the dataset:

- 2182 rows & 2 columns
- No Null values and duplicate values observed
- No outliers detected

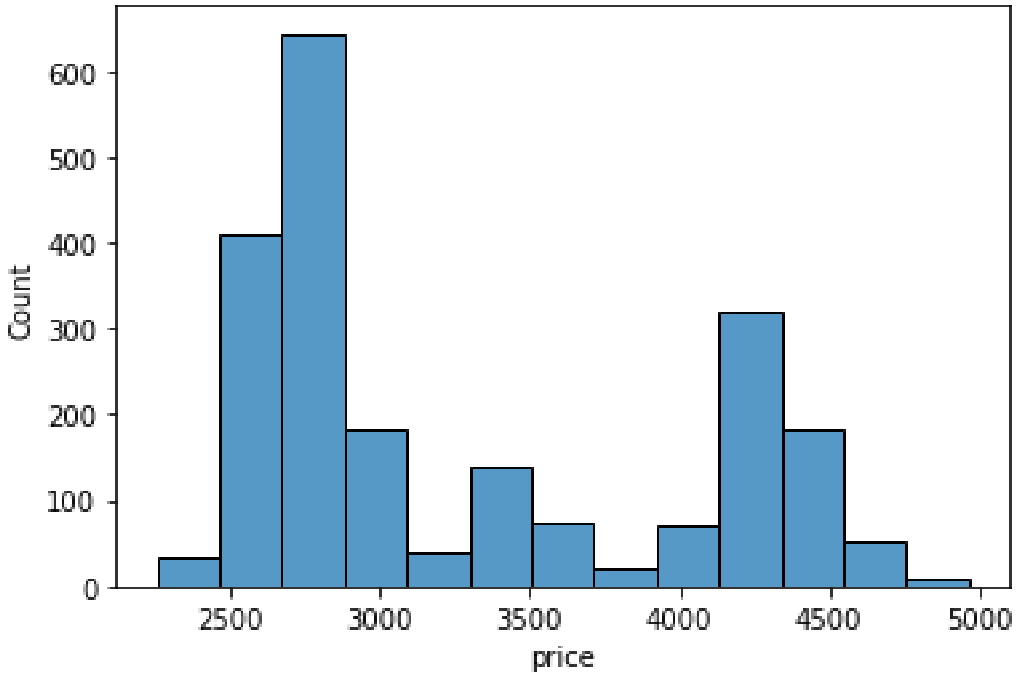


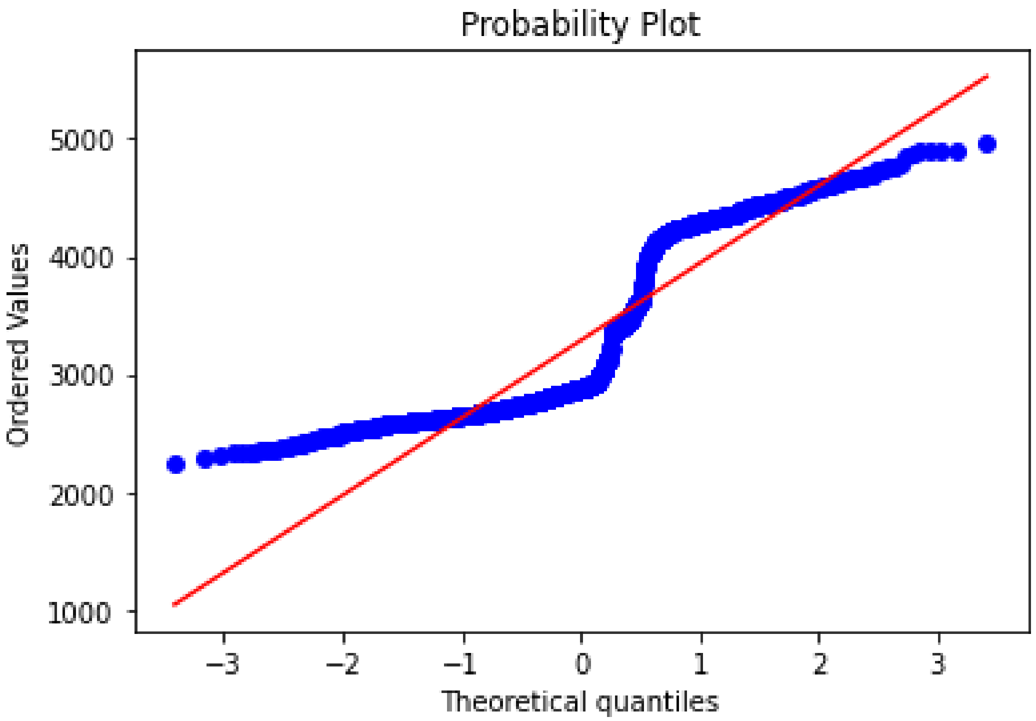
TIME PLOT

- From the plot we can refer that with respect to the month and year price of gold also increasing



- From the graph , we can analyze that data points are not following the normal distribution.



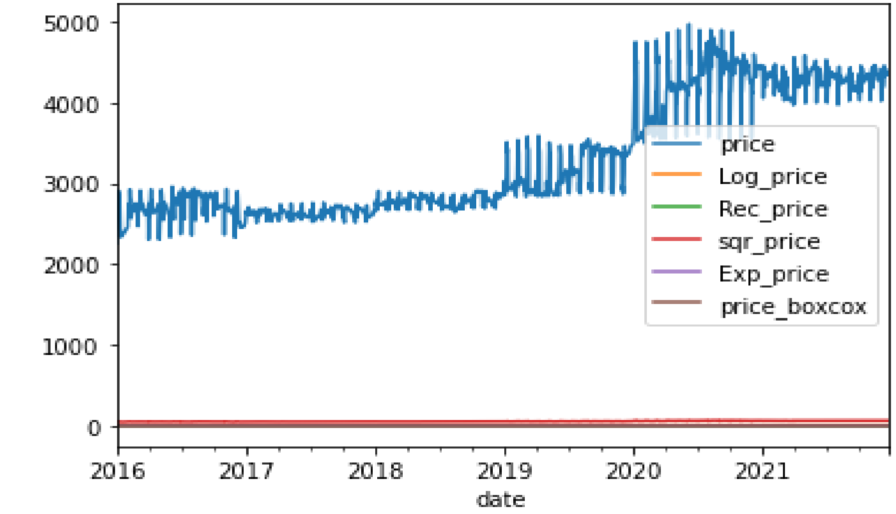


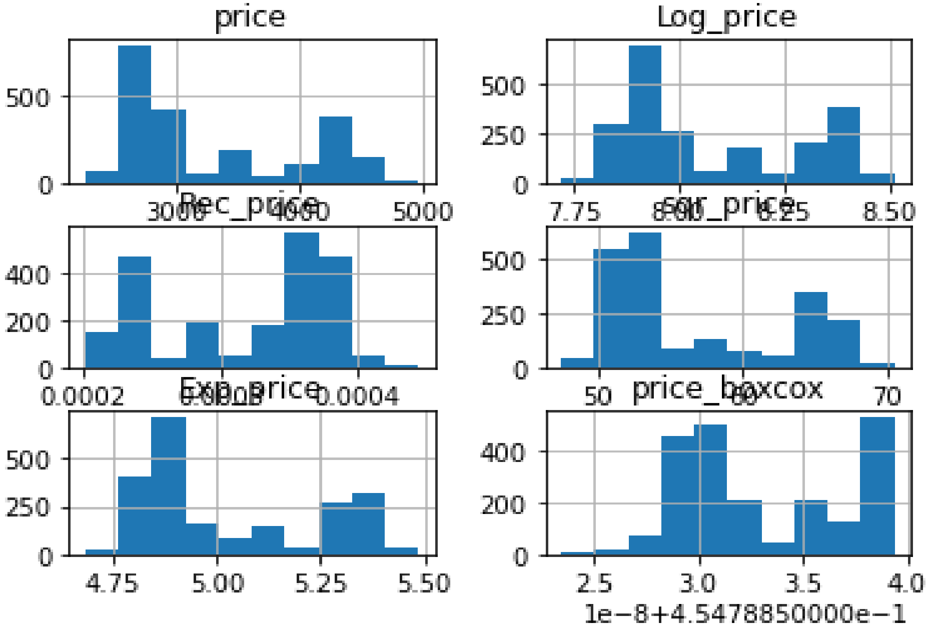
TRANSFORMING TO NORMAL DISTRIBUTION

Transforming techniques used:

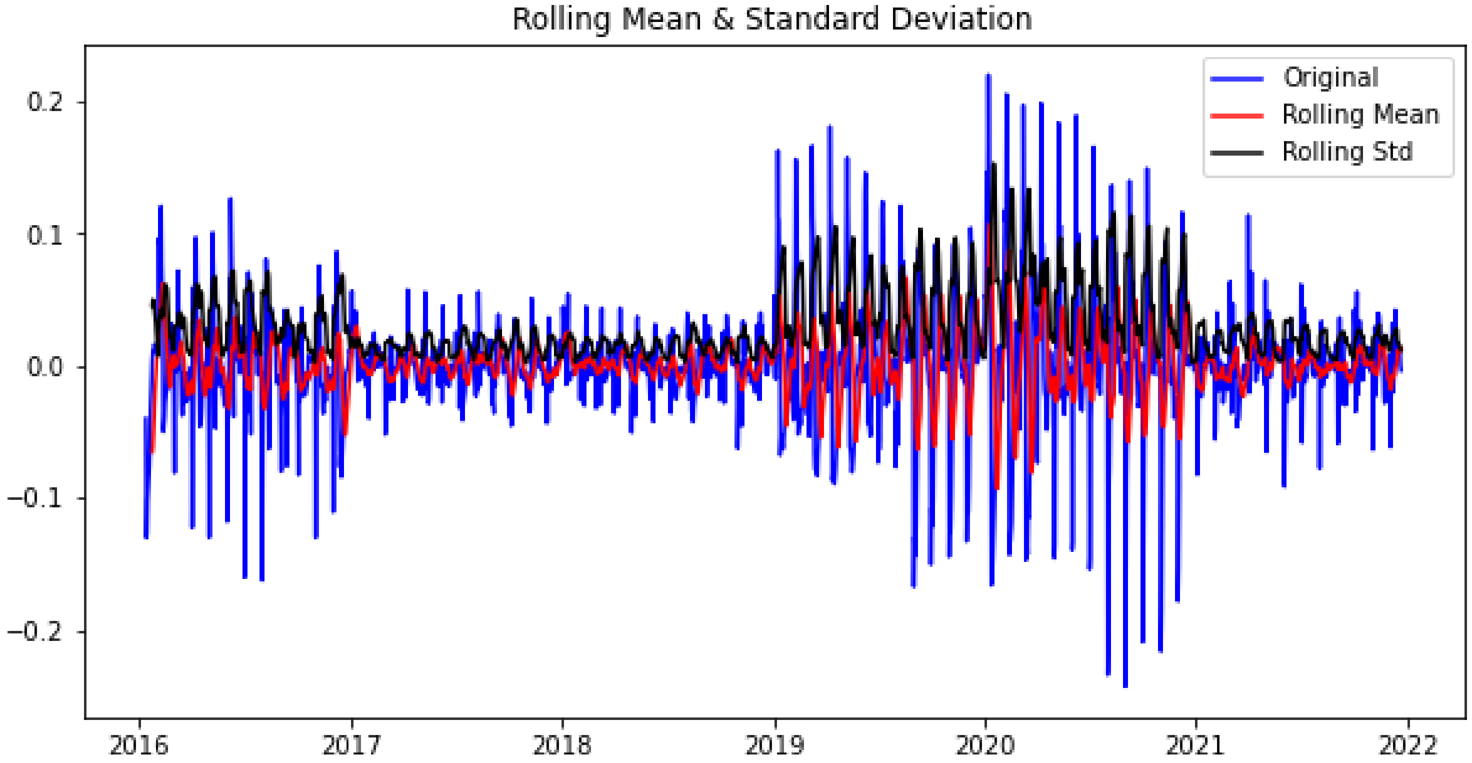
- logarithmic transformation
- Reciprocal transformation
- Square-root transformation
- Exponential transformation
- Box – cox transformation

- Even after transformations data is Not normal so we moved ahead Without transformation

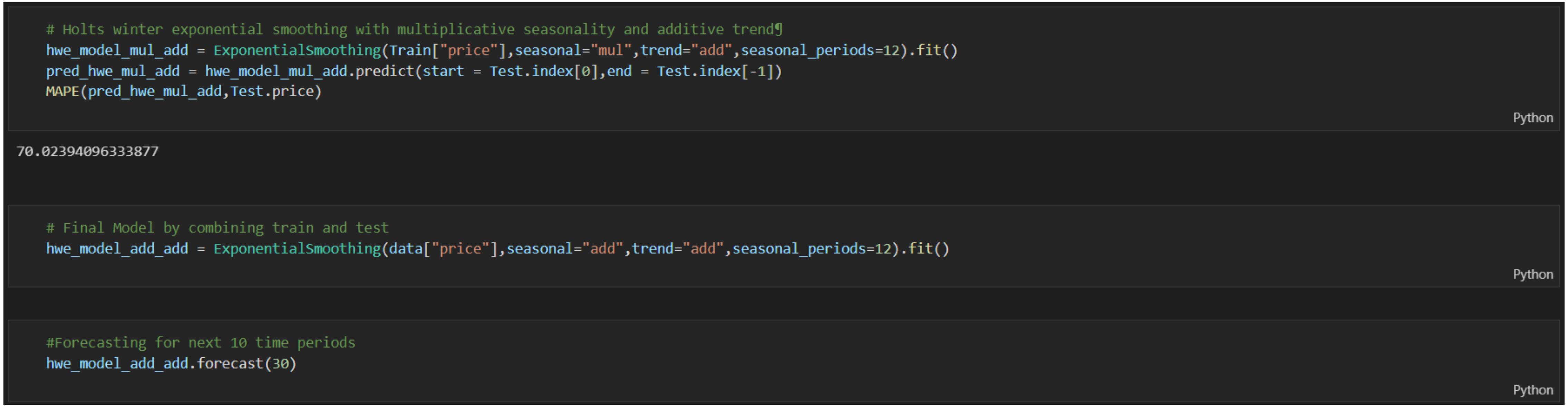




ROLLING MEAN & STANDARD DEVIATION



HOLT WINTER EXPONENTIAL MODEL



```python
# Holts winter exponential smoothing with multiplicative seasonality and additive trend¶
hwe_model_mul_add = ExponentialSmoothing(Train["price"],seasonal="mul",trend="add",seasonal_periods=12).fit()
pred_hwe_mul_add = hwe_model_mul_add.predict(start = Test.index[0],end = Test.index[-1])
MAPE(pred_hwe_mul_add,Test.price)
```

Python

```
70.02394096333877
```

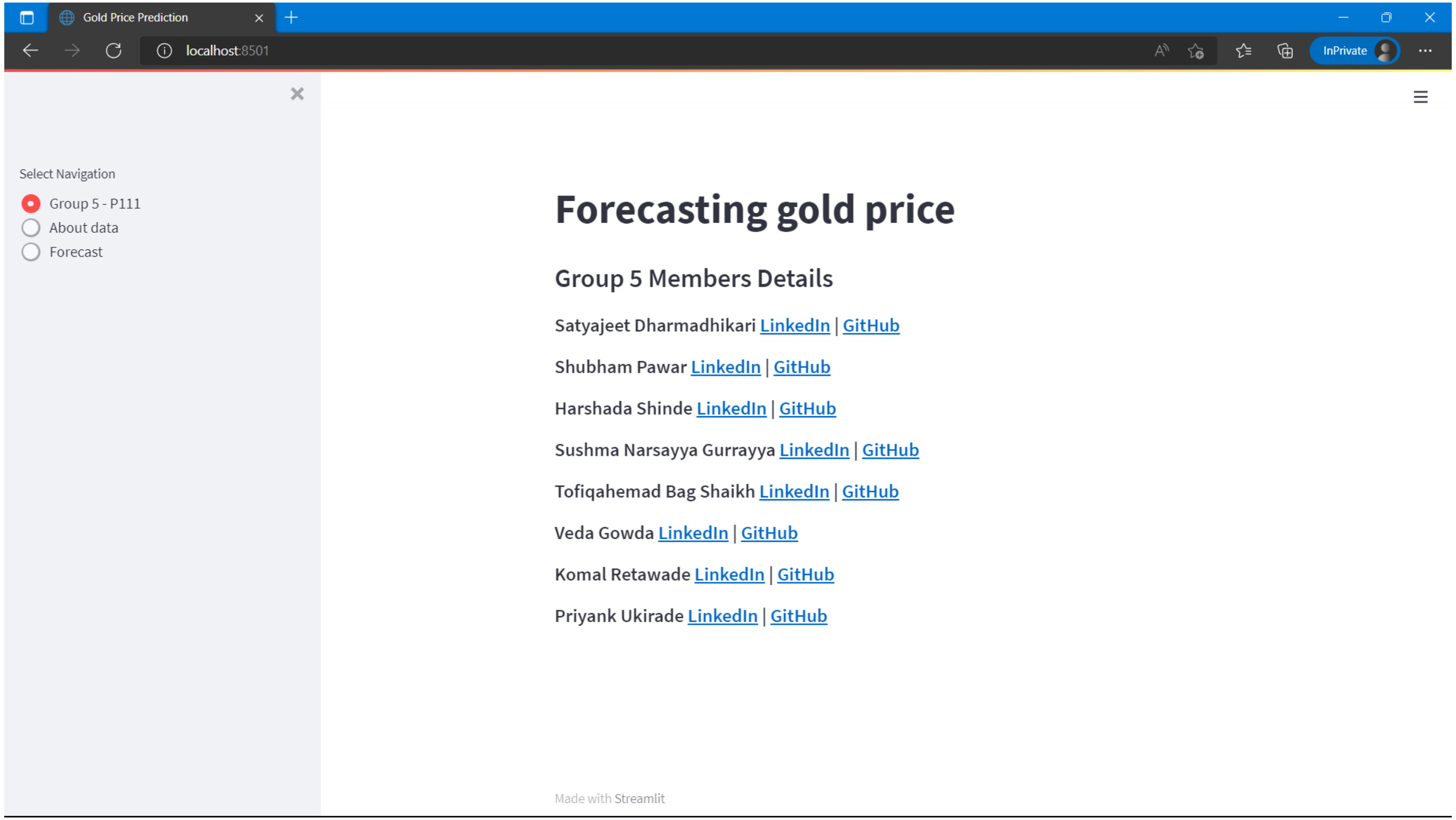
```python
# Final Model by combining train and test
hwe_model_add_add = ExponentialSmoothing(data["price"],seasonal="add",trend="add",seasonal_periods=12).fit()
```

Python

```python
#Forecasting for next 10 time periods
hwe_model_add_add.forecast(30)
```

Python

DEPLOYMENT



Select Navigation

● Group 5 - P111

○ About data

○ Forecast

Forecasting gold price

Group 5 Members Details

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Shubham Pawar LinkedIn | GitHub

Harshada Shinde LinkedIn | GitHub

Sushma Narsayya Gurrayya LinkedIn | GitHub

Tofiqahemad Bag Shaikh LinkedIn | GitHub

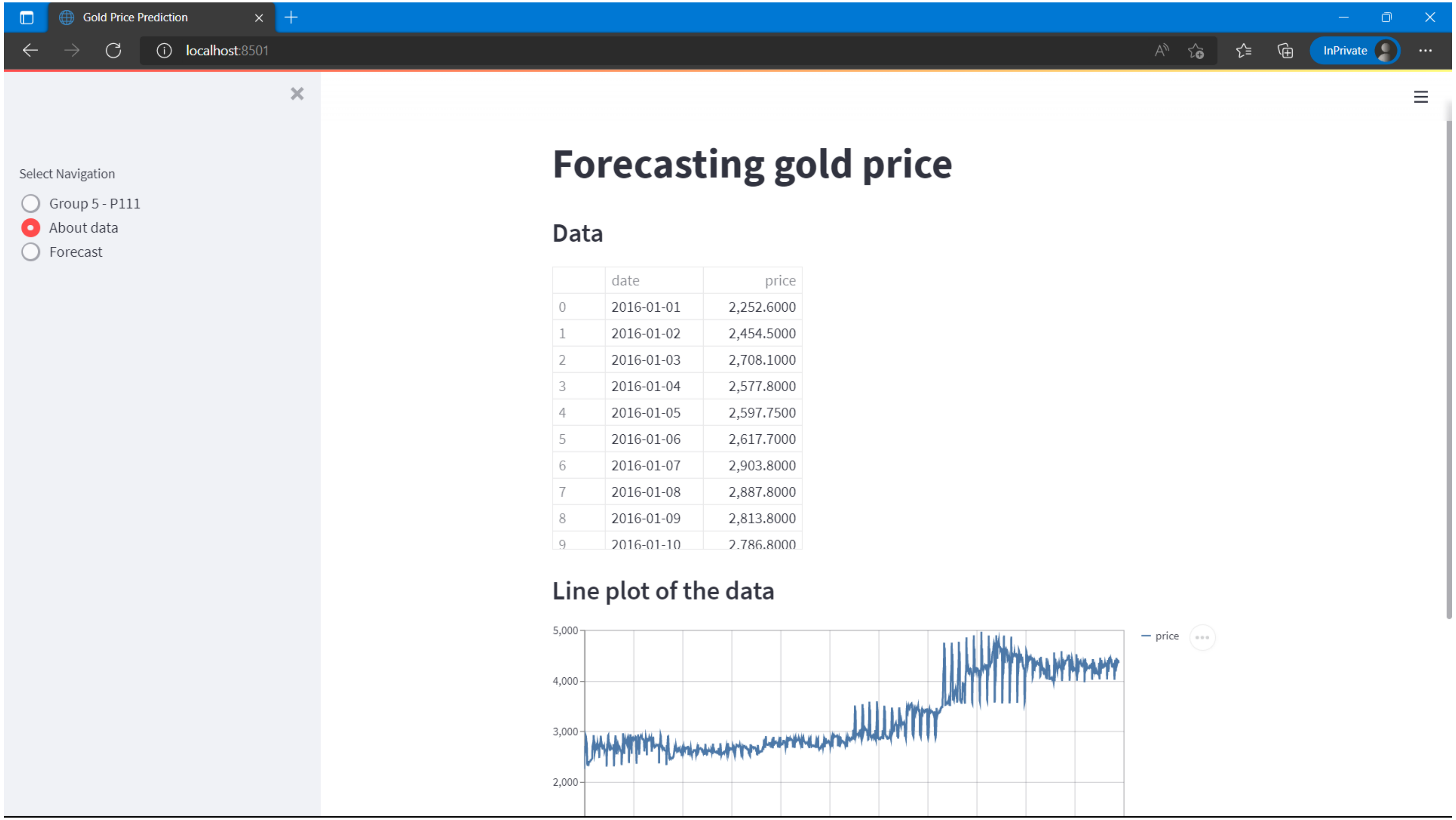
Veda Gowda LinkedIn | GitHub

Komal Retawade LinkedIn | GitHub

Priyank Ukirade LinkedIn | GitHub

Made with Streamlit

DEPLOYMENT - ABOUT DATA



Select Navigation

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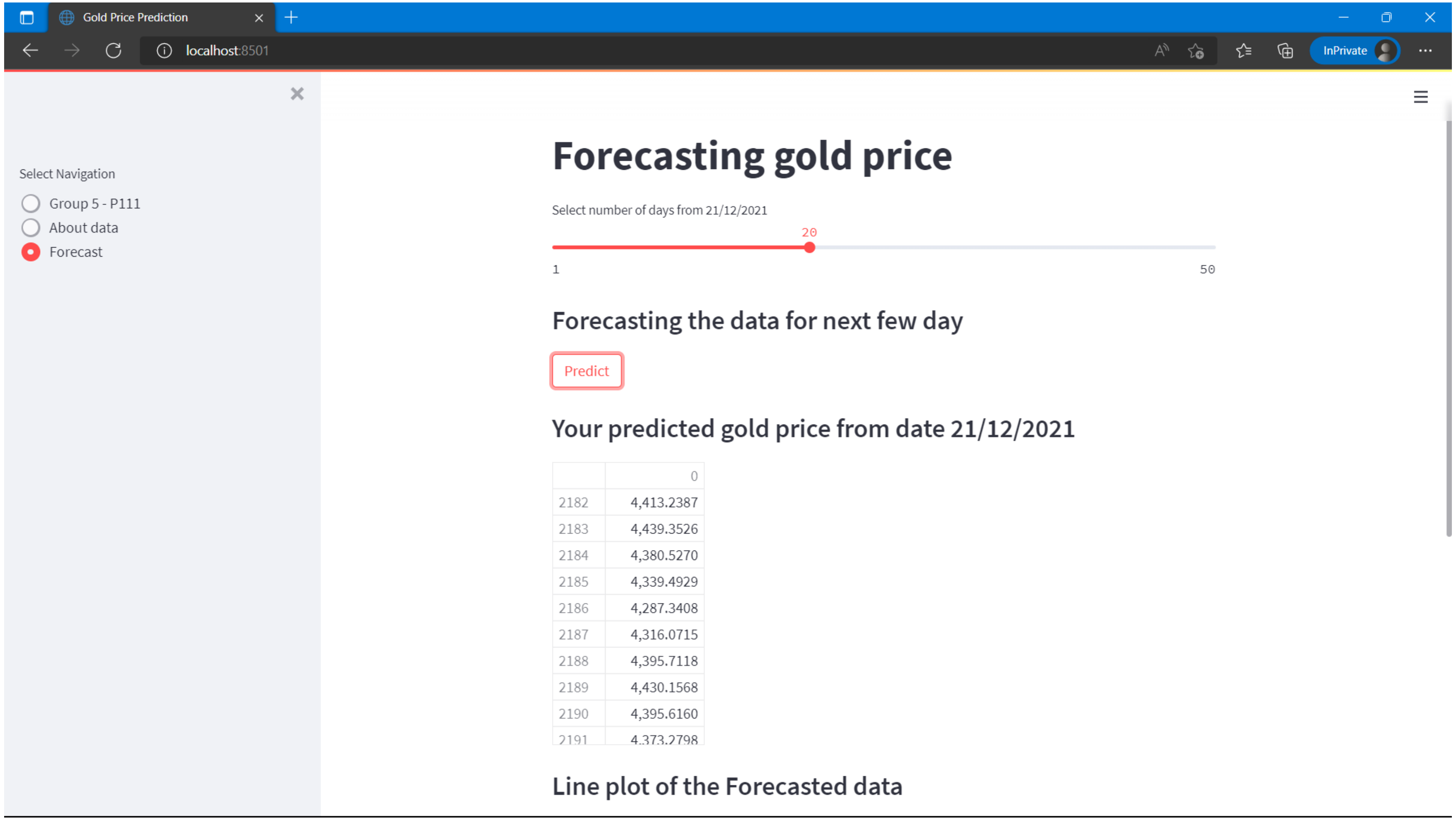
Forecasting gold price

Data

	date	price
0	2016-01-01	2,252.6000
1	2016-01-02	2,454.5000
2	2016-01-03	2,708.1000
3	2016-01-04	2,577.8000
4	2016-01-05	2,597.7500
5	2016-01-06	2,617.7000
6	2016-01-07	2,903.8000
7	2016-01-08	2,887.8000
8	2016-01-09	2,813.8000
9	2016-01-10	2,786.8000

Line plot of the data

DEPLOYMENT - FORECASTING



Select Navigation

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● Forecast

Forecasting gold price

Select number of days from 21/12/2021

20

1 50

Forecasting the data for next few day

Your predicted gold price from date 21/12/2021

	0
2182	4,413.2387
2183	4,439.3526
2184	4,380.5270
2185	4,339.4929
2186	4,287.3408
2187	4,316.0715
2188	4,395.7118
2189	4,430.1568
2190	4,395.6160
2191	4,373.2798

Line plot of the Forecasted data

CHALLENGES

- Model Building
  - ARIMA model slowed same values
  - Holt Winter Exponential Smoothing Model forecasted expected output
- Deployment
  - Tried AWS deployment
  - Streamlit

THANK YOU