

STOCK PRICE PREDICTION

GOALS

THE GOAL OF STOCK FORECASTING IS TO ENDEAVOR TO PREDICT FUTURE STOCK PRICES. THIS CAN ASSIST INVESTORS IN MAKING INVESTMENT DECISIONS, AS THEY CAN UTILIZE THESE PREDICTIONS TO DETERMINE WHEN TO BUY OR SELL STOCKS.

INVESTORS MAY USE THESE FORECASTS TO DETERMINE OPTIMAL TIMES TO BUY OR SELL STOCKS, ENABLING THEM TO MAKE INFORMED INVESTMENT CHOICES



[Source Code](#)

IMPORT DATA

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
import yfinance as yf
import datetime

ticker = ['BBRI.JK']
start = datetime.datetime(2019, 1, 1)
end = datetime.datetime(2023, 1, 1)
stock_prices = yf.download(ticker, start=start, end = end, interval='1d').Close

df=pd.DataFrame(stock_prices)
df=df.rename(columns = {"Close": "harga_saham"})
df
```

FOR IMPORTING DATA, WE USE PANDAS TO READ TABLES, MATPLOTLIB AND SEABORN FOR CREATING CHARTS AND GRAPHS, AND YFINANCE TO FETCH STOCK DATA FROM YAHOO FINANCE

[Source Code](#)

THE TABLE BELOW REPRESENTS THE STOCK DATA OF BANK BRI BASED ON INPUT FROM YFINANCE WITH THE CODE BBRI.JK.

THE SELECTED COLUMNS INCLUDE THE 'DATE' COLUMN AND THE 'CLOSE' COLUMN, WHICH HAS BEEN RENAMED AS 'HARGA_SAHAM'.

THE SAMPLE STOCK DATA PERIOD SPANS FROM 2019 TO 2022

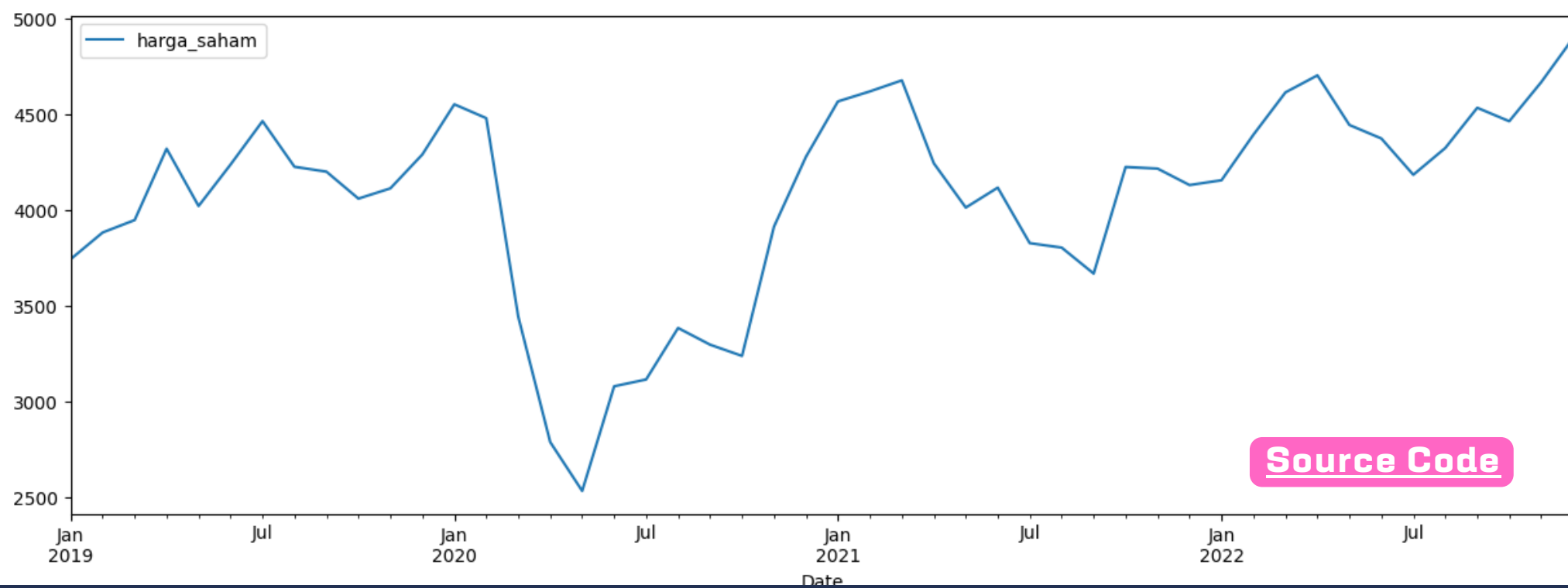
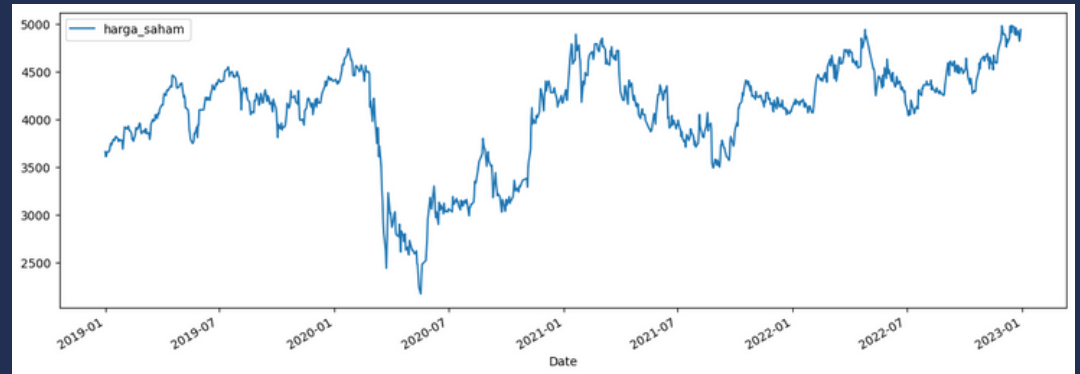
[Source Code](#)

harga_saham	
Date	
2019-01-01	3660.0
2019-01-02	3610.0
2019-01-03	3620.0
2019-01-04	3660.0
2019-01-07	3660.0
...	...
2022-12-26	4930.0
2022-12-27	4870.0
2022-12-28	4820.0
2022-12-29	4870.0
2022-12-30	4940.0
992 rows × 1 columns	

RESAMPLE DATA

THE PURPOSE OF RESAMPLING
IS TO NORMALIZE DATA TO
SIMPLIFY THE APPEARANCE OF
THE GRAPH

GRAPHIC BEFORE RESAMPLE



[Source Code](#)

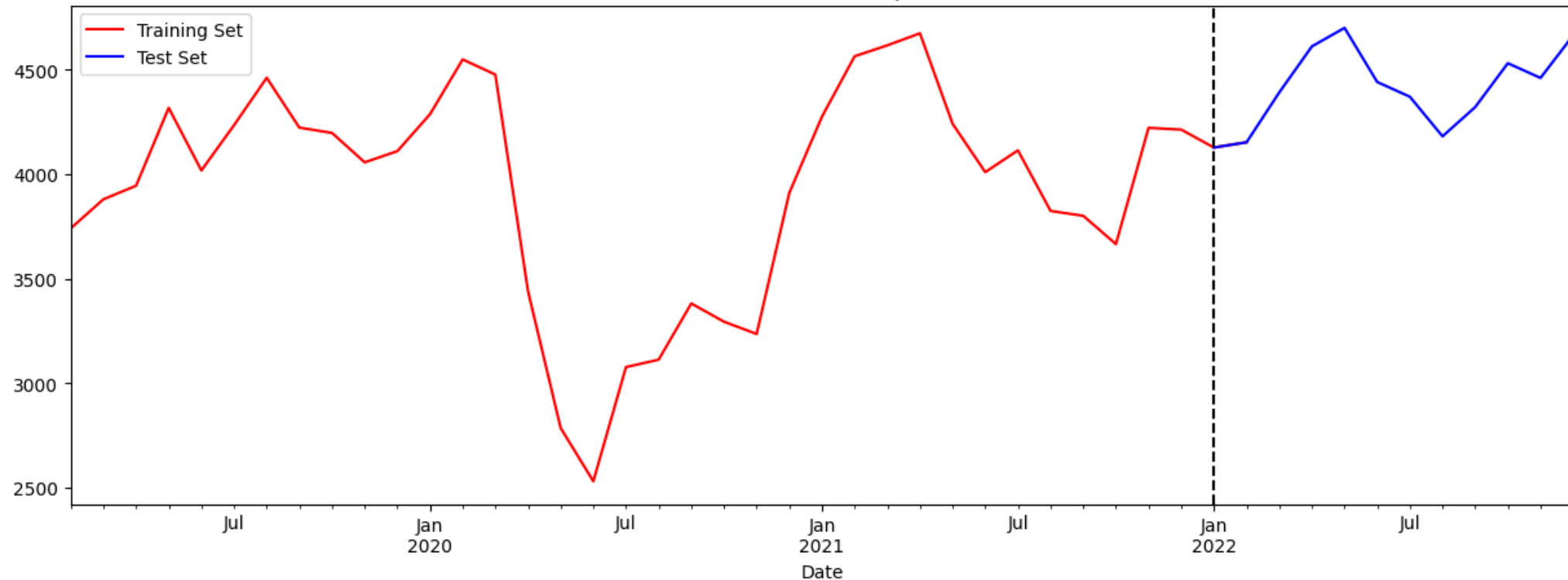
CREATING A PREDICTION COLUMN

Date	harga_saham	y
2019-02-28	3741.304348	3880.500000
2019-03-31	3880.500000	3945.238095
2019-04-30	3945.238095	4318.181818

IN THE TABLE NEXT TO IT, THERE IS A NEW COLUMN CALLED 'Y,' WHICH HAS A VALUE THAT IS +1 PERIOD FROM THE STOCK PRICE DATA. IN SIMPLE TERMS, IT PREDICTS THAT THE STOCK PRICE IN FEBRUARY IS THE RESULT OF THE STOCK PRICE IN MARCH

[Source Code](#)

Data Train/Test Split



TRAIN TEST SPLIT GRAPH

THE RED LINE ON THE LEFT REPRESENTS THE TRAINING DATA, WHILE THE BLUE LINE ON THE RIGHT REPRESENTS THE TESTING DATA. THE DATA ON THE LEFT (RED) SERVES AS THE REFERENCE FOR CREATING A PREDICTIVE MODEL. THE DATA ON THE RIGHT (BLUE) IS USED AS A REFERENCE TO DETERMINE WHETHER THE NEW PATTERNS CREATED BY THE MACHINE ARE ACCURATE OR NOT

THE TRAIN-TEST SPLIT FUNCTION SERVES TO ASSESS HOW ACCURATE A MACHINE IS IN MAKING PREDICTIONS BASED ON PATTERNS IN PREVIOUS PERIODS OF DATA

THIS TABLE IS THE TEST TABLE THAT INCLUDES A TIME COLUMN, A 'Y' COLUMN, WHICH IS THE ACTUAL PREDICTION COLUMN, AND A 'PREDICTION' COLUMN.

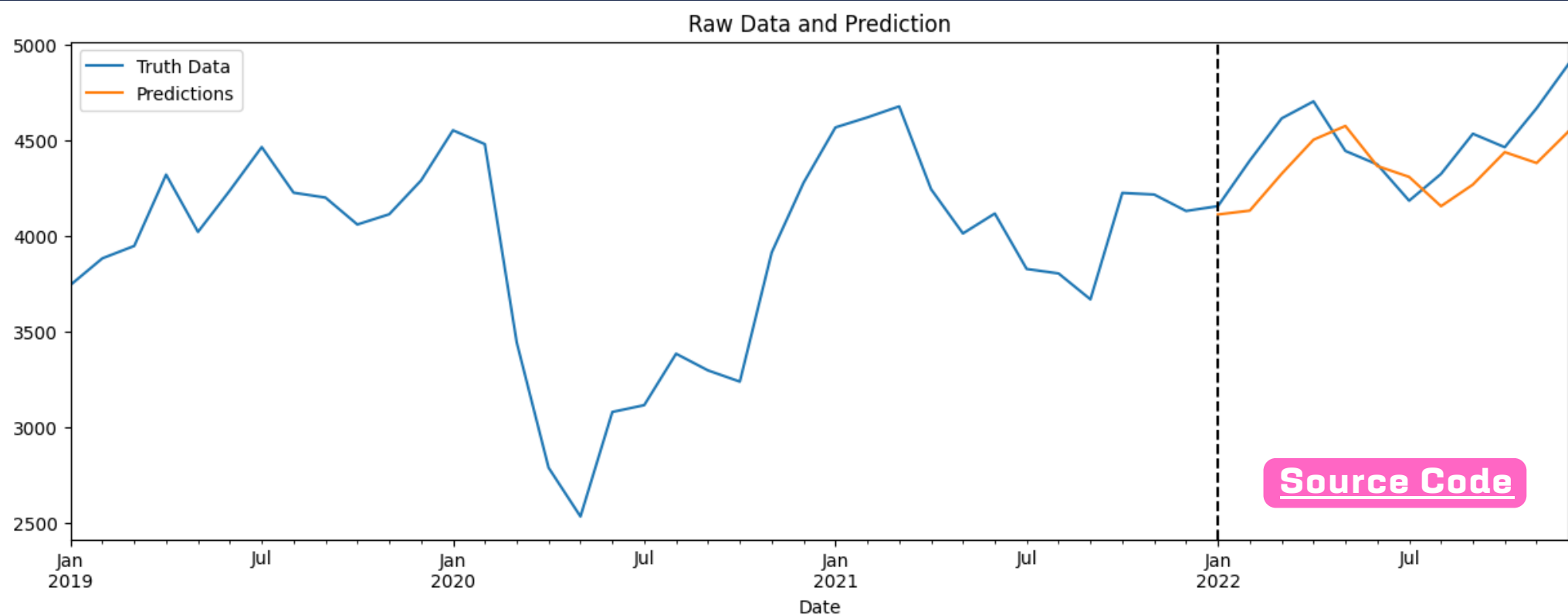
THE 'PREDICTION' COLUMN REPRESENTS THE RESULTS OF THE MACHINE'S PREDICTIONS BASED ON THE PRICE PATTERNS IN THE PREVIOUS TRAINING DATA, WHICH GENERATE ESTIMATED STOCK PRICES FOR THE YEAR 2022

[Source Code](#)

	y	prediction
Date		
2022-01-31	4153.333333	4109.664118
2022-02-28	4391.666667	4129.986002
2022-03-31	4612.272727	4322.554218
2022-04-30	4701.052632	4500.799178
2022-05-31	4442.000000	4572.531434
2022-06-30	4371.428571	4363.222470
2022-07-31	4181.904762	4306.202271
2022-08-31	4321.818182	4153.071103
2022-09-30	4531.818182	4266.118142
2022-10-31	4461.428571	4435.793633
2022-11-30	4665.454545	4378.920339
2022-12-31	4895.909091	4543.768945

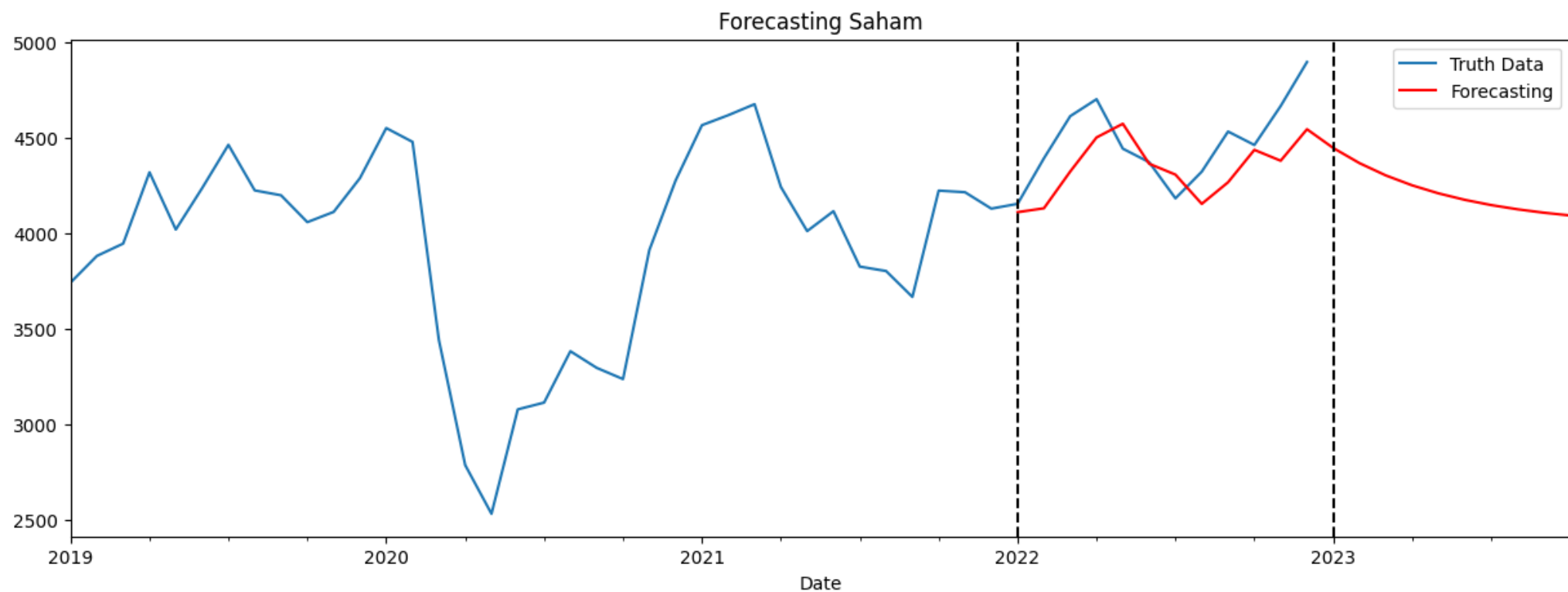
RAW DATA PREDICTION

IN THE GRAPH BELOW, YOU CAN SEE A COMPARISON BETWEEN THE MACHINE'S PREDICTED DATA AND THE ACTUAL DATA. THERE IS A SIMILARITY IN PATTERNS, EVEN THOUGH THE VALUES AND TIMING ARE DIFFERENT. THIS INDICATES THAT STOCK DATA EXHIBITS PATTERNS THAT CAN BE DISCERNED AND PREDICTED BY THE MACHINE



FORECASTING STOCK PRICES

IN THE GRAPH BELOW, THE STOCK DATA PREDICTION FOR BANK BRI APPEARS TO SHOW A GRADUAL DECLINE, BUT NOT TOO STEEP. THIS GRAPH ACCURATELY DETERMINES THE PREDICTION FOR JUST ONE PERIOD (ONE MONTH), WHICH MEANS THAT IN THE MONTH IMMEDIATELY FOLLOWING 2022, THE STOCK PRICE OF BRI IS EXPECTED TO EXPERIENCE A MODERATE DECLINE



[Source Code](#)

EXPLANATION OF THE FORECASTING

FROM THE FORECASTING GRAPH, IT CAN BE INFERRED THAT BANK BRI IS PREDICTED TO UNDERGO A PERIOD OF STOCK PRICE DECLINE, BUT NOT TOO DRASTIC. THIS CAN BE CONSIDERED RELATIVELY STABLE, AND THE STOCK PRICE OF BANK BRI CAN BE REGARDED AS FAVORABLE. ADDITIONALLY, FROM A CORPORATE PERSPECTIVE, IT INDICATES THAT THE COMPANY HAS IMPLEMENTED EFFECTIVE RISK MANAGEMENT STRATEGIES, AS THE ACTUAL STOCK PRICES BEFORE THE PREDICTED DECLINE WERE AT A HIGH LEVEL



SUMMARY

MACHINE LEARNING FORECASTING CAN BE UTILIZED TO PREDICT STOCK PRICES. HOWEVER, IT'S IMPORTANT TO REMEMBER THAT THE STOCK MARKET IS HIGHLY DYNAMIC, AND AS A RESULT, THE PREDICTIVE OUTCOMES MAY NOT ALWAYS BE ENTIRELY ACCURATE. THEREFORE, PERIODIC EVALUATION IS ESSENTIAL TO ENSURE THE RELIABILITY AND ACCURACY OF THE PREDICTIONS. THE USE OF THIS TECHNOLOGY CAN AID INVESTORS AND FINANCIAL ANALYSTS IN MAKING MORE EFFECTIVE AND STRATEGIC INVESTMENT DECISIONS

