



# Bitcoin Price Prediction

**Using Machine Learning**

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## **Our Aim**

- To create trading indicators and tools that will help us with out Bitcoin trading.

## **Method**

- We looked for relationships which could help us predict Bitcoin's price.

## **Damien will present:**

A comparison of Bitcoin (Cryptocurrency asset class) against more established asset classes

- Commodities - Gold
- Shares - S&P500
- Shares - Tech Share - Apple

## **Joe will present:**

Using other cryptocurrencies in the top 20 to predict Bitcoins price.

Both Damien and Joe will also look at some technical indicators - Moving Averages, High Lows.

## **Terry will present:**

The use of non-technical indicators to aid in Bitcoin, Ethereum and Avalanche trading predictions - in particular Sentiment

```
from fbprophet import Prophet
```

```
from sklearn.preprocessing import MinMaxScaler
```

```
from tensorflow.keras.models import Sequential  
from tensorflow.keras.layers import LSTM, Dense, Dropout
```

```
import numpy as np  
import matplotlib.pyplot as plt  
import pandas as pd  
import yfinance as yf  
from sklearn.preprocessing import MinMaxScaler
```

```
BTC = yf.download('BTC-USD',start='2016-01-01')['Close']
```

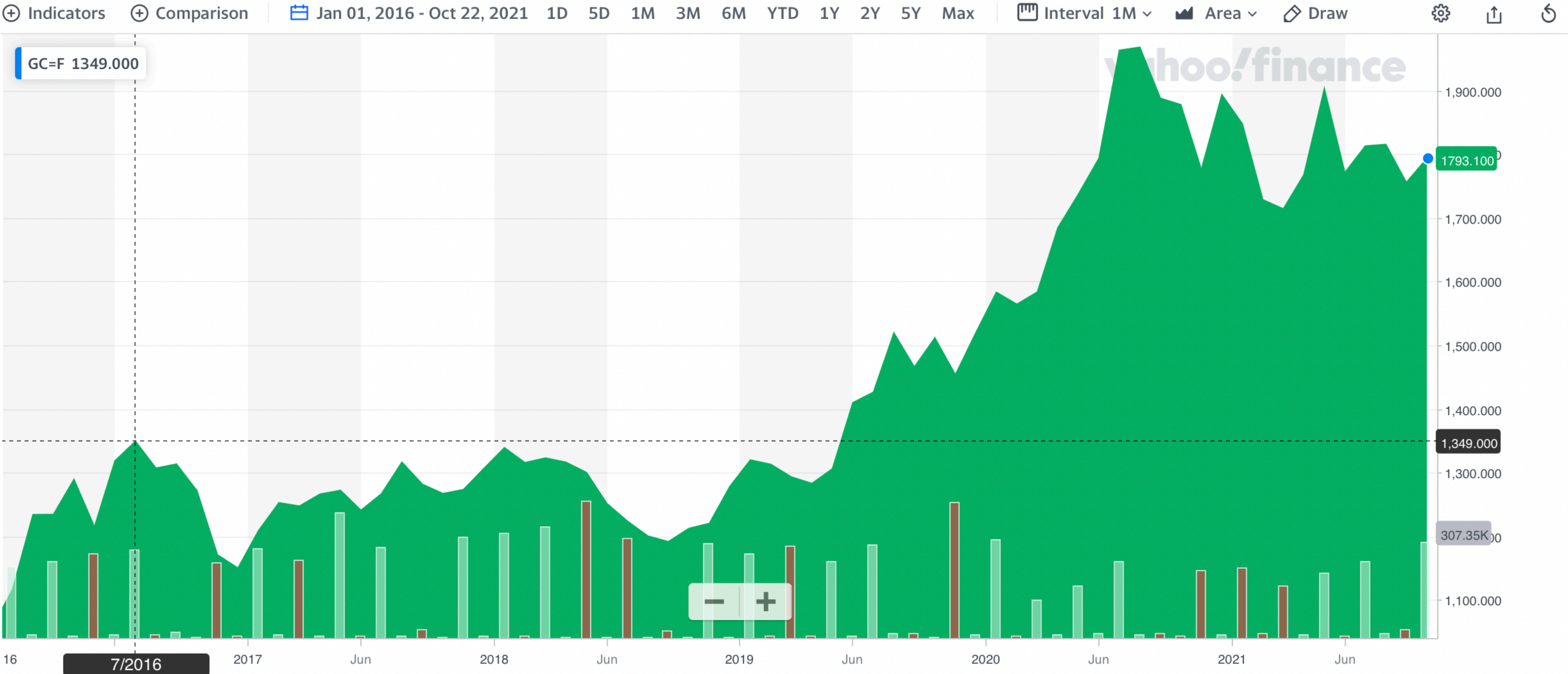
Attempting to create a momentum strategy by using

- BTC historical data
- S&P 500 historical data
- Apple historical data
- Gold Historical data

Imported from Yahoo finance

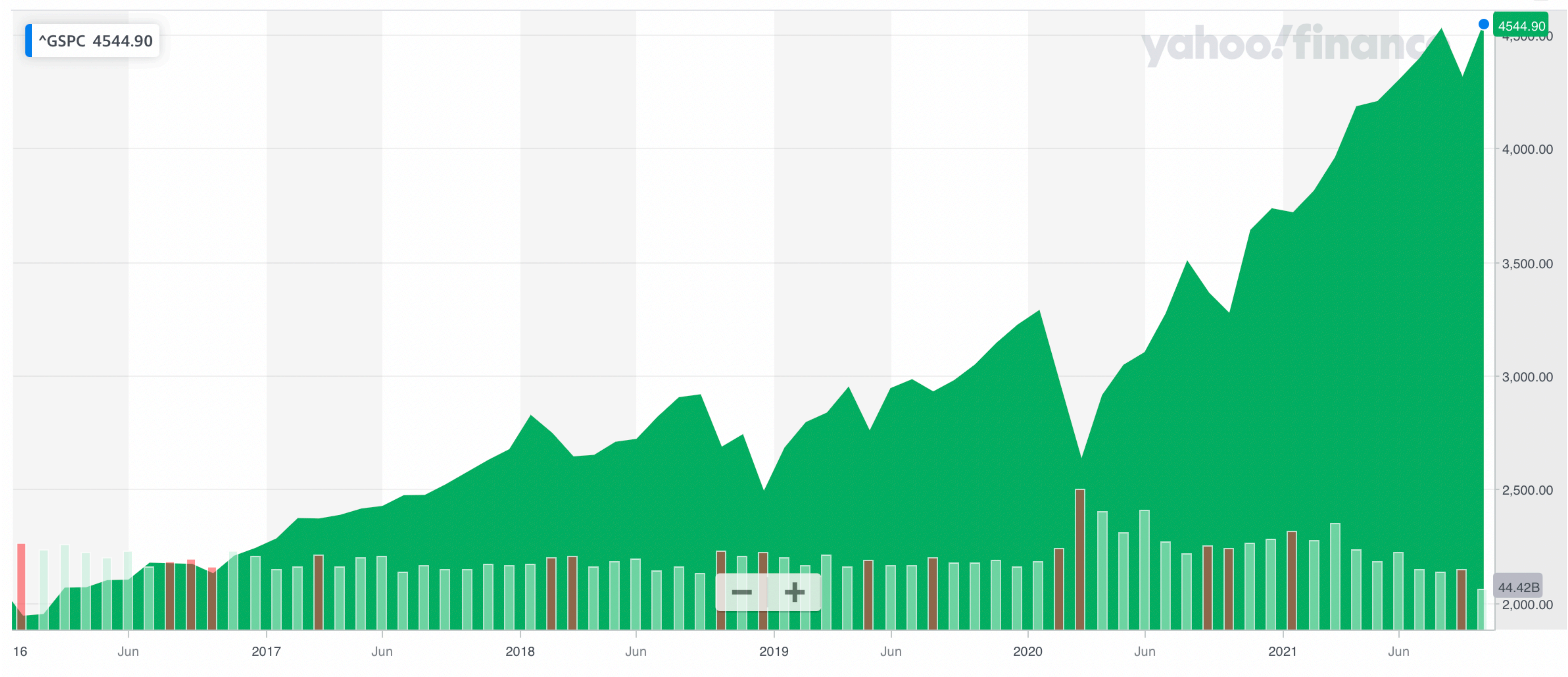


Gold  
January 2016 = \$1063  
October 2021 = \$1800  
= %70 increase

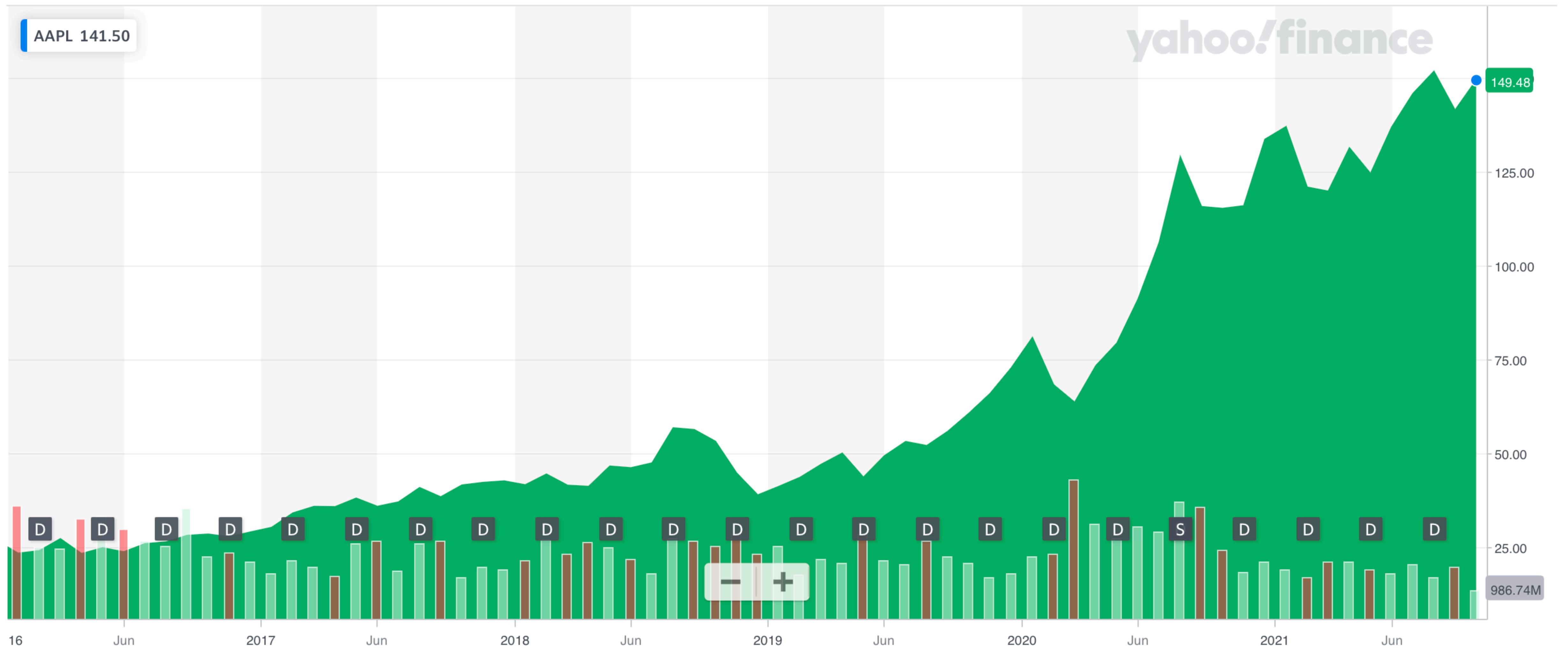




S&P 500  
January 2016 = \$2038  
October 2021 = \$4550  
= %123 increase

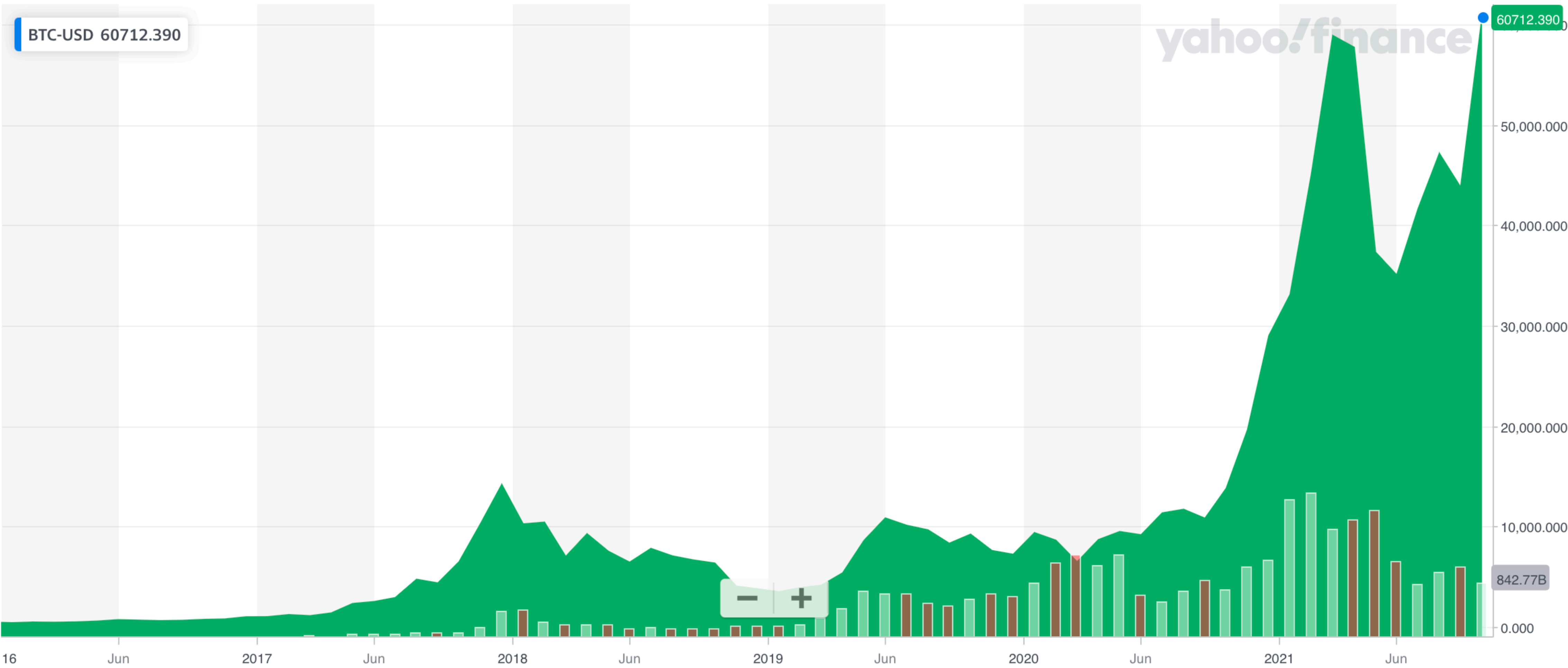


Apple  
January 2016 = \$25  
October 2021 = \$150  
= %500 increase





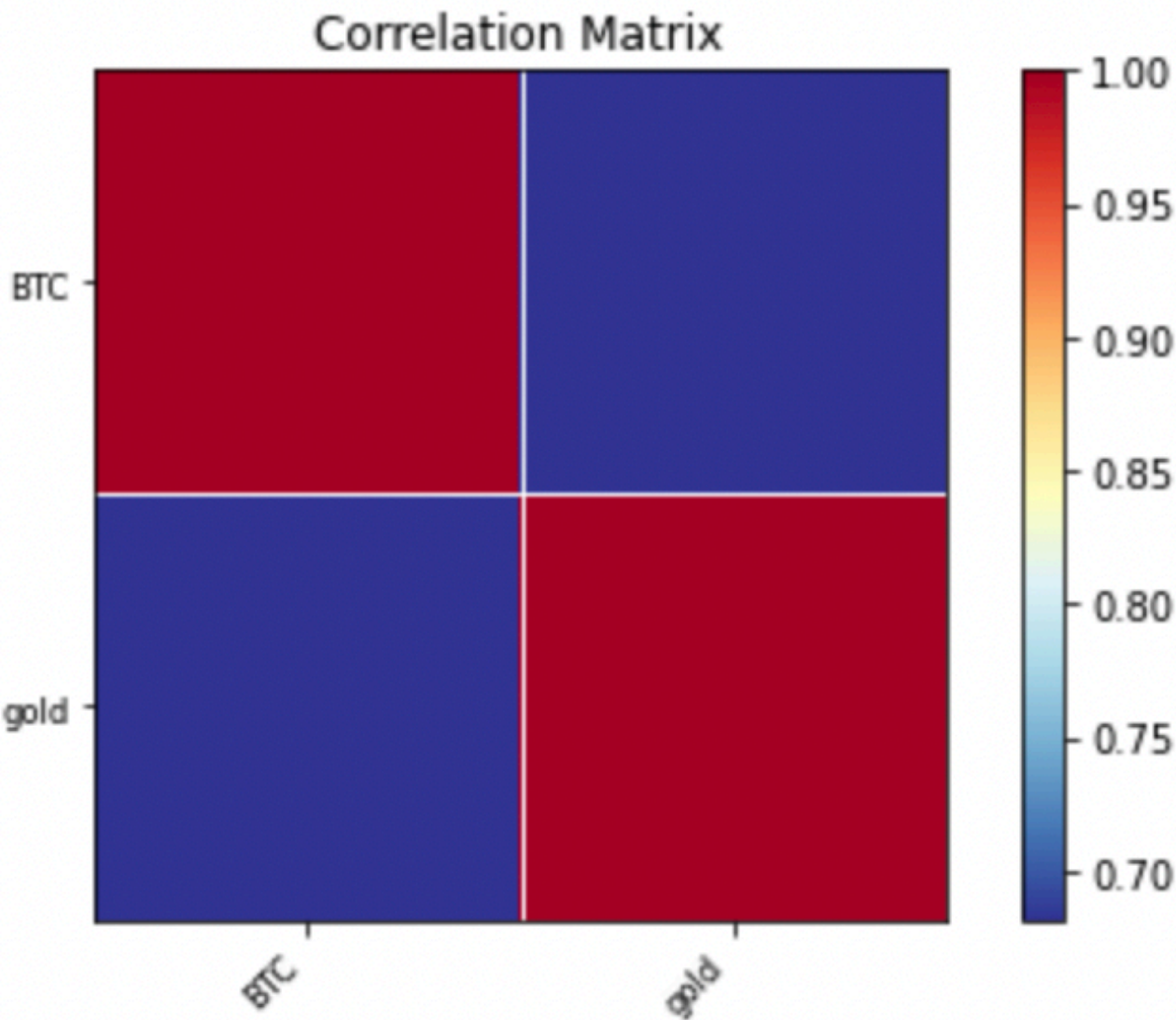
**Bitcoin**  
**January 2016 1 BTC = \$430**  
**October 2021 = \$65,000**  
**= %15,016 increase**



	BTC	gold
Date		
2016-01-04	433.091003	1075.099976
2016-01-05	431.959991	1078.400024
2016-01-06	429.105011	1091.900024
2016-01-07	458.048004	1107.699951
2016-01-08	453.230011	1097.800049
...	...	...
2021-10-12	56041.058594	1758.300049
2021-10-13	57401.097656	1793.699951
2021-10-14	57321.523438	1796.699951
2021-10-15	61593.949219	1767.199951
2021-10-19	62300.406250	1777.800049

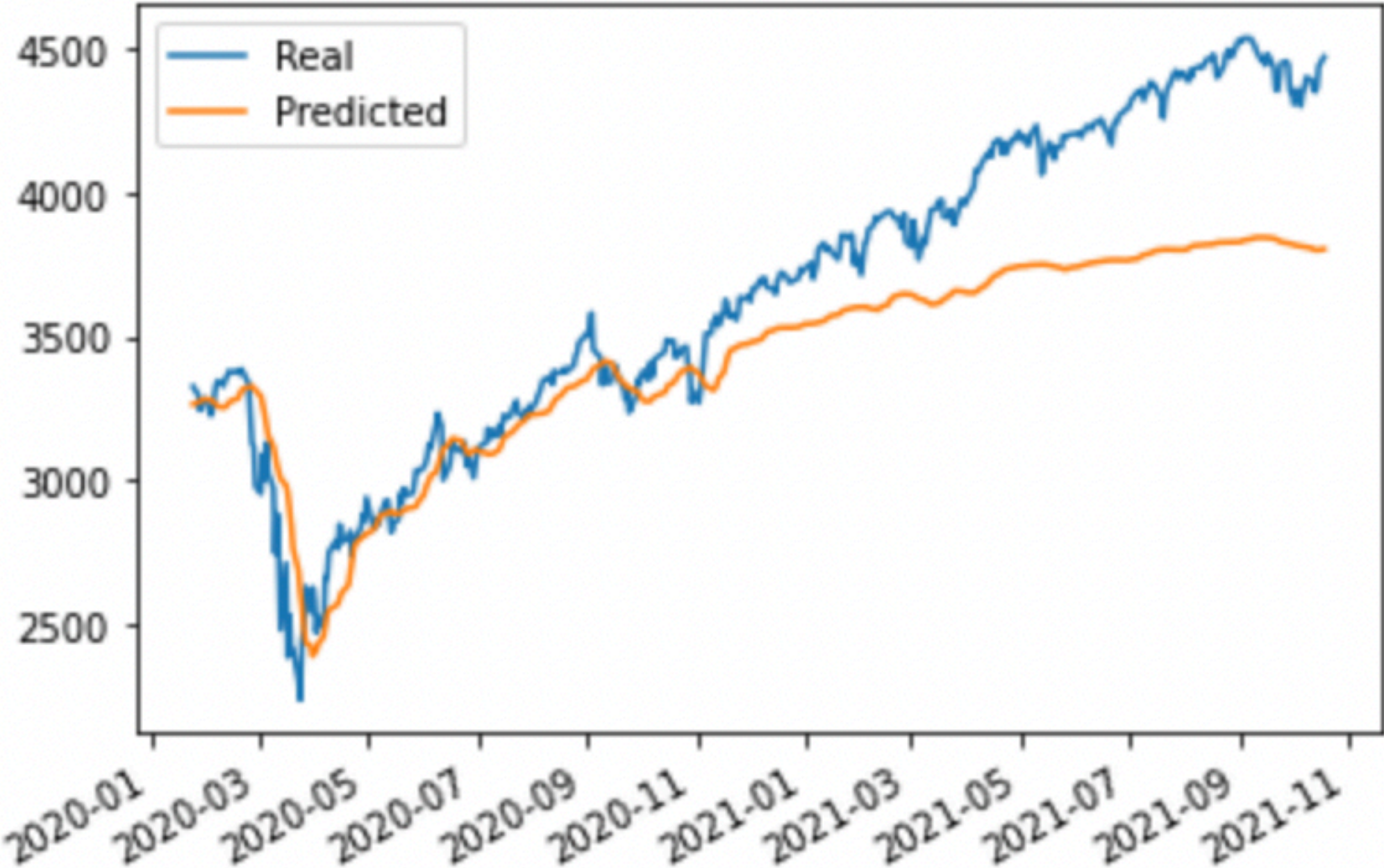
Here are GOLD and Bitcoin prices related to each other

	BTC	gold
BTC	1.000000	0.682044
gold	0.682044	1.000000



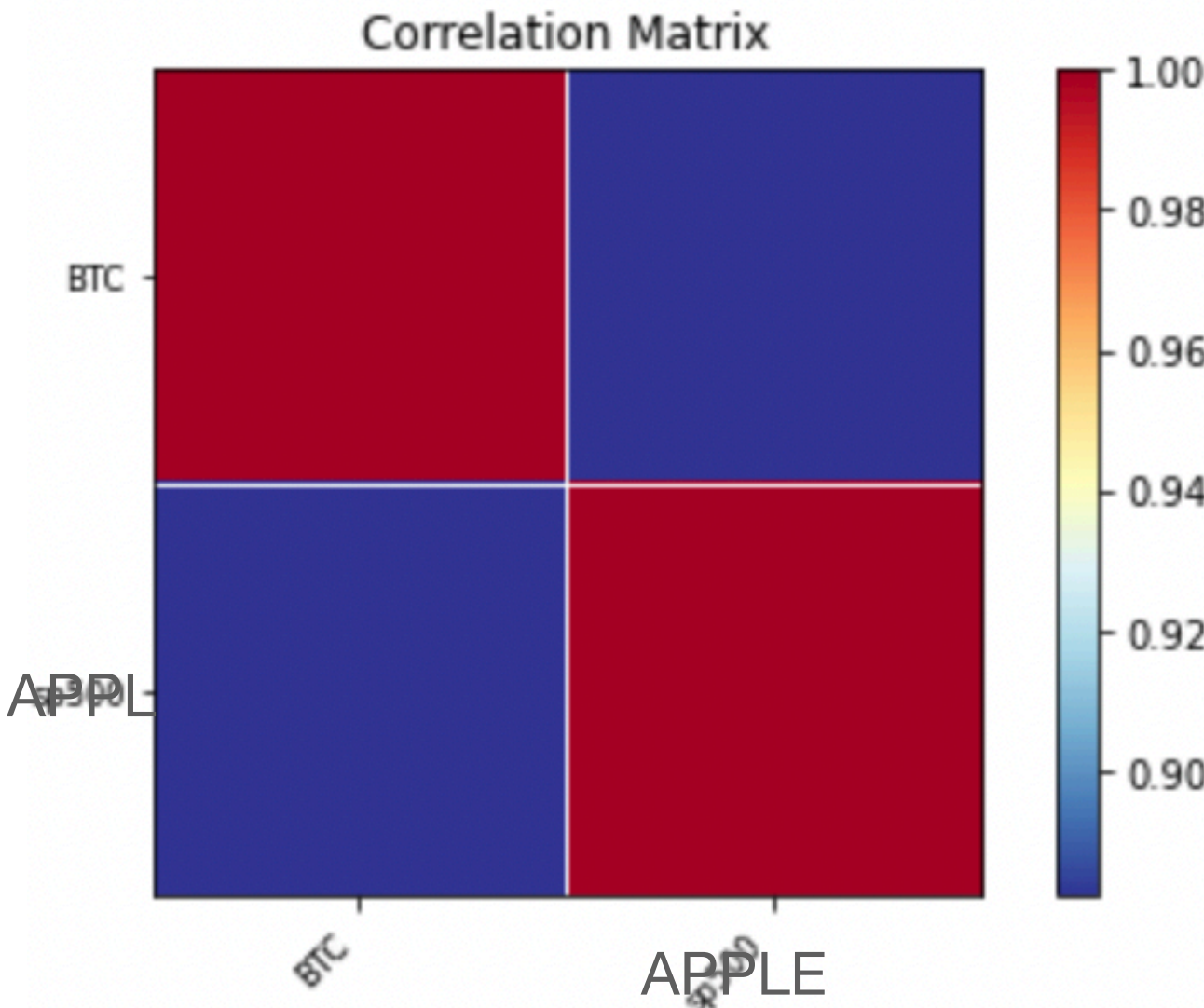


	BTC	aapl
Date		
2016-01-04	433.091003	26.337500
2016-01-05	431.959991	25.677500
2016-01-06	429.105011	25.174999
2016-01-07	458.048004	24.112499
2016-01-08	453.230011	24.240000
...	...	...
2021-10-12	56041.058594	141.509995
2021-10-13	57401.097656	140.910004
2021-10-14	57321.523438	143.759995
2021-10-15	61593.949219	144.839996
2021-10-18	62026.078125	146.550003



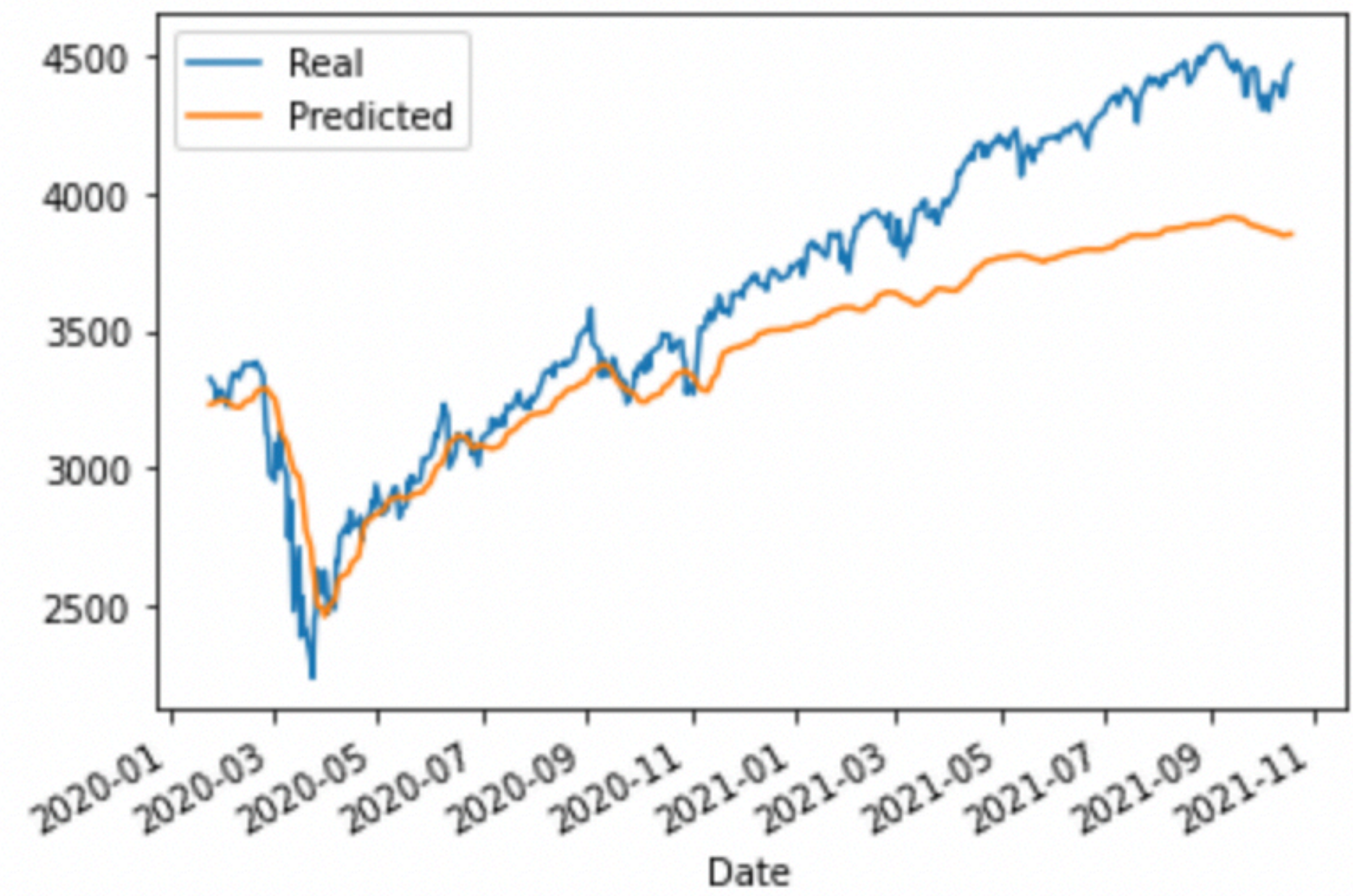
Here are AAPL and Bitcoin prices related to each other

```
      BTC      aapl
BTC    1.00000  0.85424
aapl   0.85424  1.00000
```



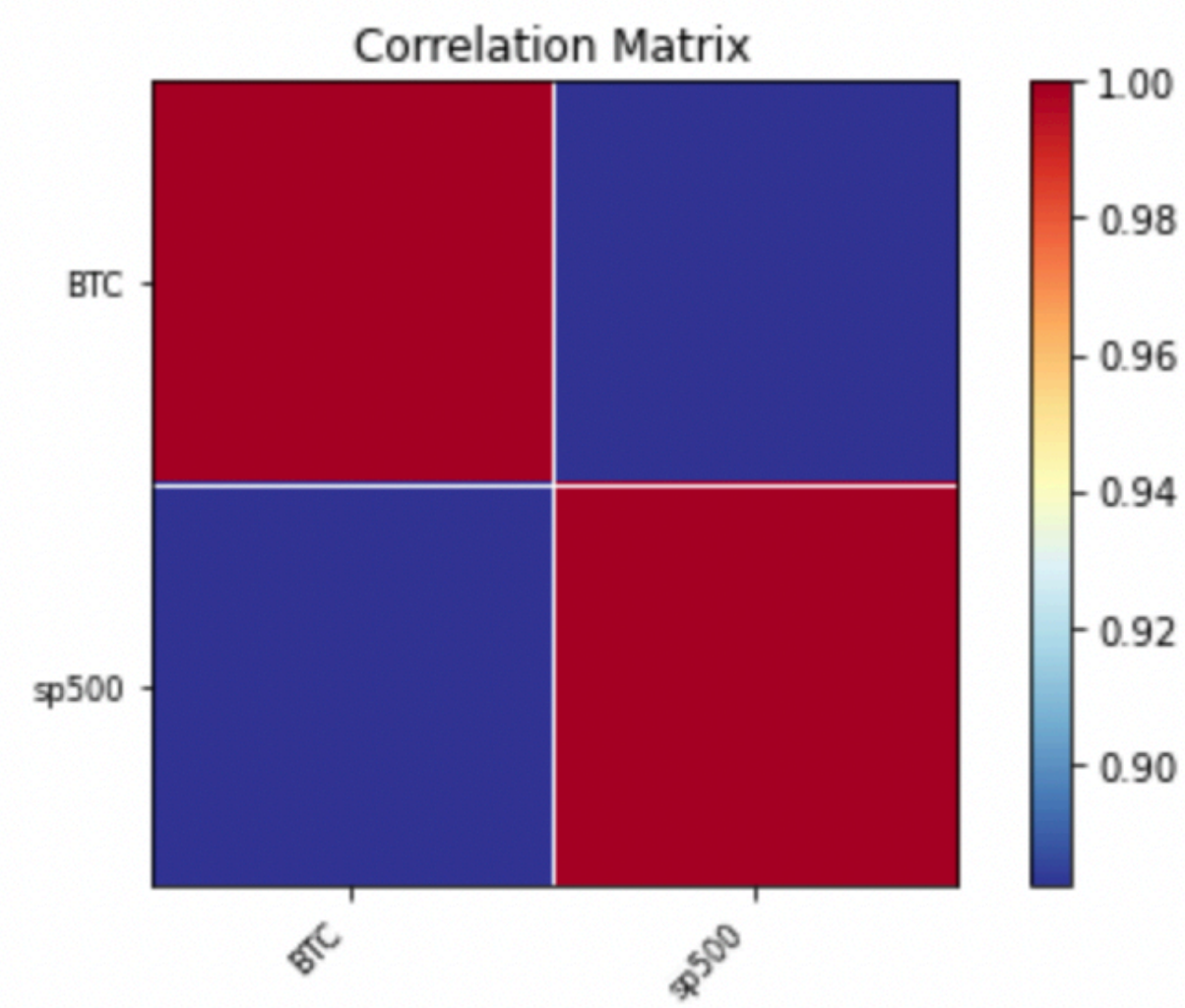


	BTC	sp500
Date		
2016-01-04	433.091003	2012.660034
2016-01-05	431.959991	2016.709961
2016-01-06	429.105011	1990.260010
2016-01-07	458.048004	1943.089966
2016-01-08	453.230011	1922.030029
...	...	...
2021-10-12	56041.058594	4350.649902
2021-10-13	57401.097656	4363.799805
2021-10-14	57321.523438	4438.259766
2021-10-15	61593.949219	4471.370117
2021-10-18	62026.078125	4486.459961



Here are S&P500 and Bitcoin prices related to each other

	BTC	sp500
BTC	1.000000	0.881932
sp500	0.881932	1.000000





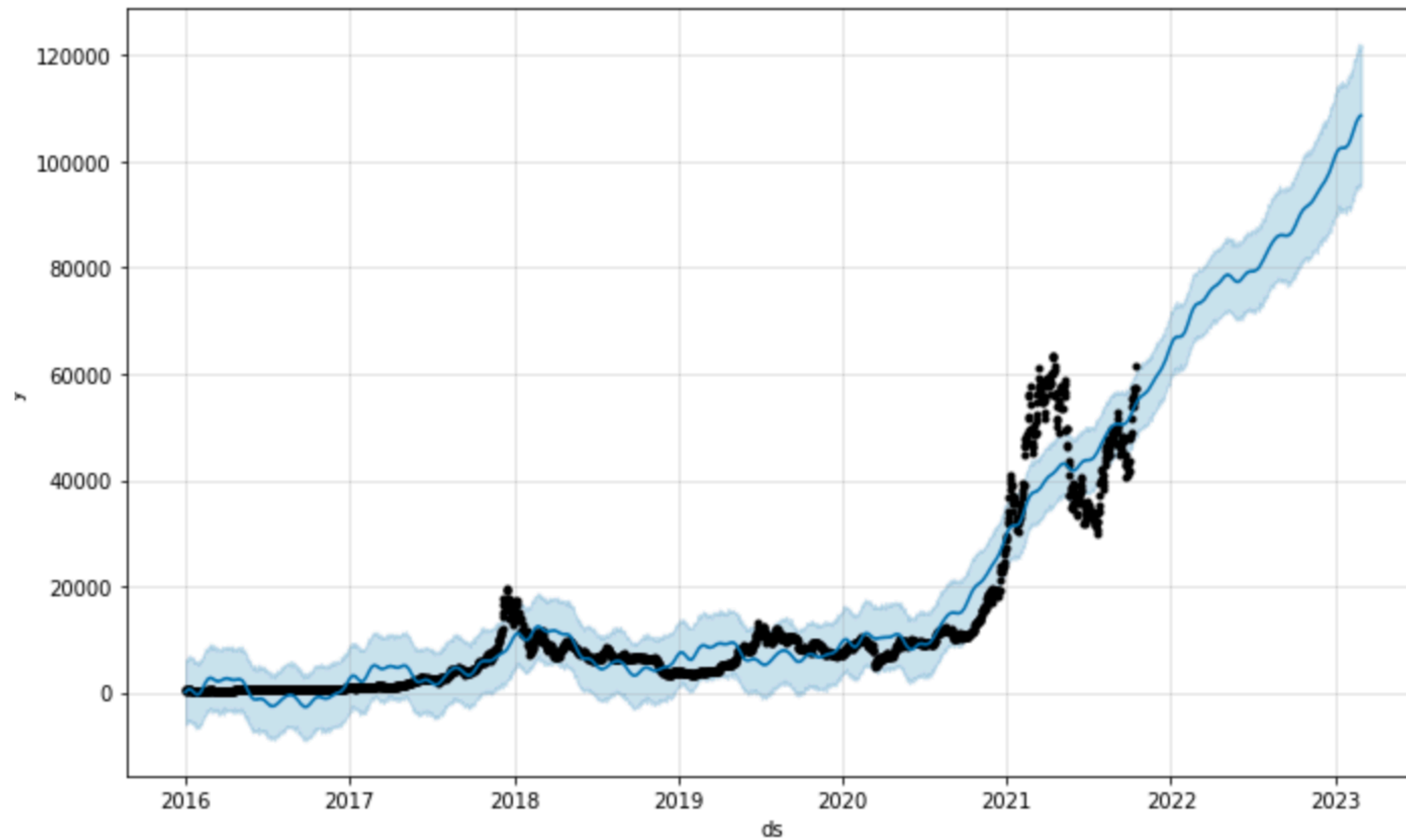
# Bitcoin Price and the 200 Day Moving Average

There are various technical indicators which are important for identifying different trends in the movement of the price . A moving average is an average price or a certain asset over a specified period of time. One of the most popular MAs is the 200-day moving average.

	Open	High	Low	Close	Adj Close	Volume	MA200
Date							
2015-04-04	254.291000	255.257996	251.100006	253.697006	253.697006	12493500	310.843170
2015-04-05	253.761002	260.674988	251.942001	260.597992	260.597992	19649200	309.859490
2015-04-06	260.721008	261.798004	254.574997	255.492004	255.492004	20034200	309.014750
2015-04-07	255.274002	255.804993	252.205002	253.179993	253.179993	18467400	308.306670
2015-04-08	253.063995	253.847000	244.214996	245.022003	245.022003	30086400	307.487260
...	...	...	...	...	...	...	...
2021-09-27	43234.183594	44313.246094	42190.632812	42235.730469	42235.730469	30980029059	45528.866504
2021-09-28	42200.898438	42775.144531	40931.664062	41034.542969	41034.542969	30214940550	45447.378770
2021-09-29	41064.984375	42545.257812	40829.667969	41564.363281	41564.363281	30602359905	45348.985156
2021-09-30	41551.269531	44092.601562	41444.582031	43790.894531	43790.894531	31141681925	45271.428047
2021-10-01	43816.742188	48436.011719	43320.023438	48116.941406	48116.941406	42850641582	45232.476758



## Forecast Future Bitcoin Price using Prophet Model



Going by the future data frame,  
Bitcoin is on track to hit \$100k  
per coin towards the end of 2022