cryptocurrency_price_prediction_for_the_next_30_days

December 23, 2025

1 Cryptocurrency Price Prediction With Machine Learning

[2]:
```
pip install yfinance
```

```
Requirement already satisfied: yfinance in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (0.2.66)
Requirement already satisfied: pandas>=1.3.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (2.3.3)
Requirement already satisfied: numpy>=1.16.5 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (2.1.3)
Requirement already satisfied: requests>=2.31 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (2.32.5)
Requirement already satisfied: multitasking>=0.0.7 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (0.0.12)
Requirement already satisfied: platformdirs>=2.0.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (4.5.0)
Requirement already satisfied: pytz>=2022.5 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (2025.2)
Requirement already satisfied: frozendict>=2.3.4 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (2.4.7)
Requirement already satisfied: peewee>=3.16.2 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (3.18.3)
Requirement already satisfied: beautifulsoup4>=4.11.1 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (4.14.2)
Requirement already satisfied: curl_cffi>=0.7 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (0.13.0)
Requirement already satisfied: protobuf>=3.19.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (6.33.1)
Requirement already satisfied: websockets>=13.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from yfinance) (15.0.1)
Requirement already satisfied: soupsieve>1.2 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
beautifulsoup4>=4.11.1->yfinance) (2.8)
Requirement already satisfied: typing-extensions>=4.0.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
beautifulsoup4>=4.11.1->yfinance) (4.15.0)
Requirement already satisfied: cffi>=1.12.0 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
```

```
curl_cffi>=0.7->yfinance) (2.0.0)
Requirement already satisfied: certifi>=2024.2.2 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
curl_cffi>=0.7->yfinance) (2025.11.12)
Requirement already satisfied: pycparser in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
cffi>=1.12.0->curl_cffi>=0.7->yfinance) (2.22)
Requirement already satisfied: python-dateutil>=2.8.2 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
pandas>=1.3.0->yfinance) (2.9.0.post0)
Requirement already satisfied: tzdata>=2022.7 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
pandas>=1.3.0->yfinance) (2025.2)
Requirement already satisfied: six>=1.5 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from python-
dateutil>=2.8.2->pandas>=1.3.0->yfinance) (1.17.0)
Requirement already satisfied: charset_normalizer<4,>=2 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
requests>=2.31->yfinance) (3.4.4)
Requirement already satisfied: idna<4,>=2.5 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
requests>=2.31->yfinance) (3.11)
Requirement already satisfied: urllib3<3,>=1.21.1 in
c:\users\user\miniconda3\envs\ds4b\lib\site-packages (from
requests>=2.31->yfinance) (2.5.0)
Note: you may need to restart the kernel to use updated packages.
```

[17]:
```python
import pandas as pd
import yfinance as yf
from datetime import date, timedelta
today = date.today()

d1 = today.strftime("%Y-%m-%d")
end_date = d1
d2 = date.today() - timedelta(days = 760)
d2 = d2.strftime("%Y-%m-%d")
start_date = d2

data = yf.download('BTC-USD',
                   start=start_date,
                    end = end_date,
                    progress = False,
                    auto_adjust=False
                   )

#  FIX: Flatten MultiIndex columns
if isinstance(data.columns, pd.MultiIndex):
```

```
    data.columns = data.columns.get_level_values(0)


data["Date"] = data.index
data = data[["Date", "Open", "High", "Low", "Close", "Adj Close", "Volume"]]
data.reset_index(drop = True, inplace = True)
```

[18]:
```
print(data.head())
```

```
Price       Date          Open          High           Low         Close  \
0     2023-11-03  34942.472656  34942.472656  34133.441406  34732.324219
1     2023-11-04  34736.324219  35256.031250  34616.691406  35082.195312
2     2023-11-05  35090.011719  35340.339844  34594.242188  35049.355469
3     2023-11-06  35044.789062  35286.027344  34765.363281  35037.371094
4     2023-11-07  35047.792969  35892.417969  34545.816406  35443.562500

Price     Adj Close       Volume
0      34732.324219  17158456701
1      35082.195312   9561294264
2      35049.355469  12412743996
3      35037.371094  12693436420
4      35443.562500  18834737789
```

[19]:
```
print(data.tail())
```

```
Price       Date          Open          High           Low         Close  \
755   2025-11-27  90517.765625  91897.578125  90089.515625  91285.375000
756   2025-11-28  91285.382812  92969.085938  90257.117188  90919.265625
757   2025-11-29  90918.742188  91187.617188  90260.187500  90851.757812
758   2025-11-30  90838.210938  91965.046875  90394.312500  90394.312500
759   2025-12-01  90389.109375  90398.156250  83862.250000  86321.570312

Price     Adj Close       Volume
755    91285.375000  57040622845
756    90919.265625  60895830289
757    90851.757812  37921773455
758    90394.312500  38497902869
759    86321.570312  87962894424
```

[20]:
```
data.shape
```

[20]:
```
(760, 7)
```

[21]:
```
data.isnull().sum()
```

[21]:
```
Price
Date         0
Open         0
```

```
High         0
Low          0
Close        0
Adj Close    0
Volume       0
dtype: int64
```

[14]:
```
import yfinance as yf
print("yfinance version:", yf.__version__)
```

```
yfinance version: 0.2.66
```

[22]:
```
print(data.dtypes)
```

```
Price
Date         datetime64[ns]
Open                float64
High                float64
Low                 float64
Close               float64
Adj Close           float64
Volume                int64
dtype: object
```

[23]:
```
import plotly.graph_objects as go
figure = go.Figure(data = [go.Candlestick(x=data["Date"],
                                          open=data["Open"],
                                          high=data["High"],
                                          low=data["Low"],
                                          close=data["Close"])])

figure.update_layout(title = "Bitcoin Price Analysis",
                     xaxis_rangeslider_visible = False)
figure.show()
```

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