```
import numpy as np
import pandas as pd
from neuralforecast.models import NBEATS, NHITS, NBEATSx
from neuralforecast import NeuralForecast
import yfinance as yf
```

```
data =  yf.download("BTC-USD", start = "2014-09-17", end = "2024-04-21")
data.reset_index(inplace = True)
```

```
[*********************100%%**********************]  1 of 1 completed
```

```
# data = pd.read_csv("/content/BTC-USD.csv")
data['ds'] = pd.to_datetime(data['Date'])
data['unique_id'] = 1
data['y'] = data['Adj Close']
data.drop(columns = ['Date', 'Open', 'High', 'Low', 'Close', 'Adj Close', 'Volume'],axis = 1, inplace = True)
data.tail(),data.columns
```

```
(             ds  unique_id             y
 3499 2024-04-16          1  63811.863281
 3500 2024-04-17          1  61276.691406
 3501 2024-04-18          1  63512.753906
 3502 2024-04-19          1  63843.570312
 3503 2024-04-20          1  64994.441406,
 Index(['ds', 'unique_id', 'y'], dtype='object'))
```

```
data
```

	ds	unique_id	y
0	2014-09-17	1	457.334015
1	2014-09-18	1	424.440002
2	2014-09-19	1	394.795990
3	2014-09-20	1	408.903992
4	2014-09-21	1	398.821014
...	...	...	...
3499	2024-04-16	1	63811.863281
3500	2024-04-17	1	61276.691406
3501	2024-04-18	1	63512.753906
3502	2024-04-19	1	63843.570312
3503	2024-04-20	1	64994.441406

3504 rows × 3 columns

Next steps: Generate code with `data`   🔘 View recommended plots

```
from google.colab import output
output.enable_custom_widget_manager()
```

```
horizon =15
models =[NBEATS(h = horizon, input_size = 30),
        NHITS(h = horizon, input_size = 30),
        NBEATSx(h = horizon, input_size = 30)]

nf = NeuralForecast(models = models, freq = 'D')
nf.fit(df=data)
```

```
/usr/local/lib/python3.10/dist-packages/pytorch_lightning/utilities/parsing.py:199: Attribute 'loss' is an instance of `nn.Modul
INFO:lightning_fabric.utilities.seed:Seed set to 1
INFO:lightning_fabric.utilities.seed:Seed set to 1
INFO:lightning_fabric.utilities.seed:Seed set to 1
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
INFO:pytorch_lightning.utilities.rank_zero:IPU available: False, using: 0 IPUs
INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
WARNING:pytorch_lightning.loggers.tensorboard:Missing logger folder: /content/lightning_logs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
INFO:pytorch_lightning.callbacks.model_summary:
  | Name         | Type         | Params
-------------------------------------------------
0 | loss         | MAE          | 0
1 | padder_train | ConstantPad1d | 0
2 | scaler       | TemporalNorm  | 0
3 | blocks       | ModuleList    | 2.5 M
-------------------------------------------------
2.5 M     Trainable params
1.4 K     Non-trainable params
2.5 M     Total params
9.871     Total estimated model params size (MB)
/usr/local/lib/python3.10/dist-packages/pytorch_lightning/loops/fit_loop.py:298: The number of training batches (1) is smaller t
/usr/local/lib/python3.10/dist-packages/pytorch_lightning/utilities/data.py:77: Trying to infer the `batch_size` from an ambiguc
INFO:pytorch_lightning.utilities.rank_zero:`Trainer.fit` stopped: `max_steps=1000` reached.
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
INFO:pytorch_lightning.utilities.rank_zero:IPU available: False, using: 0 IPUs
INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
INFO:pytorch_lightning.callbacks.model_summary:
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2 | scaler       | TemporalNorm  | 0
3 | blocks       | ModuleList    | 2.5 M
-------------------------------------------------
2.5 M     Trainable params
0         Non-trainable params
2.5 M     Total params
9.821     Total estimated model params size (MB)
INFO:pytorch_lightning.utilities.rank_zero:`Trainer.fit` stopped: `max_steps=1000` reached.
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
```

```
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
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INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
INFO:pytorch_lightning.callbacks.model_summary:
   | Name         | Type         | Params
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1  | padder_train | ConstantPad1d | 0
2  | scaler       | TemporalNorm | 0
3  | blocks       | ModuleList   | 2.5 M
-------------------------------------------------
2.5 M     Trainable params
1.4 K     Non-trainable params
2.5 M     Total params
9.871     Total estimated model params size (MB)
INFO:pytorch_lightning.utilities.rank_zero:`Trainer.fit` stopped: `max_steps=1000` reached.
```

```
y_hat_df = nf.predict()
y_hat_df
```

```
/usr/local/lib/python3.10/dist-packages/neuralforecast/tsdataset.py:92: UserWarning: To copy construct from a tensor, it is reco
  self.temporal = torch.tensor(temporal, dtype=torch.float)
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
INFO:pytorch_lightning.utilities.rank_zero:IPU available: False, using: 0 IPUs
INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
INFO:pytorch_lightning.utilities.rank_zero:IPU available: False, using: 0 IPUs
INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
INFO:pytorch_lightning.utilities.rank_zero:GPU available: True (cuda), used: True
INFO:pytorch_lightning.utilities.rank_zero:TPU available: False, using: 0 TPU cores
INFO:pytorch_lightning.utilities.rank_zero:IPU available: False, using: 0 IPUs
INFO:pytorch_lightning.utilities.rank_zero:HPU available: False, using: 0 HPUs
INFO:pytorch_lightning.accelerators.cuda:LOCAL_RANK: 0 - CUDA_VISIBLE_DEVICES: [0]
/usr/local/lib/python3.10/dist-packages/neuralforecast/core.py:184: FutureWarning: In a future version the predictions will have
  warnings.warn(
```

unique_id	ds	NBEATS	NHITS	NBEATSx
1	2024-04-21	65044.535156	64641.109375	65044.535156
1	2024-04-22	65997.218750	64545.136719	65997.218750
1	2024-04-23	66122.265625	64160.679688	66122.265625
1	2024-04-24	66685.187500	63866.980469	66685.187500
1	2024-04-25	66435.851562	63224.648438	66435.851562
1	2024-04-26	65907.335938	62585.398438	65907.335938
1	2024-04-27	65457.718750	61842.109375	65457.718750
1	2024-04-28	65218.996094	61341.378906	65218.996094
1	2024-04-29	64154.644531	60612.734375	64154.644531
1	2024-04-30	63718.511719	60151.699219	63718.511719
1	2024-05-01	63517.925781	60033.644531	63517.925781
1	2024-05-02	63195.582031	59968.523438	63195.582031

1	2024-05-02	63195.582031	59968.523438	63195.582031
1	2024-05-03	63362.882812	60384.527344	63362.882812
1	2024-05-04	63678.433594	60501.429688	63678.433594
1	2024-05-05	64487.253906	60508.675781	64487.253906

Next steps: Generate code with `y_hat_df`   🔘 View recommended plots

```python
import yfinance as yf
Real_Data =  yf.download("BTC-USD", start = "2024-04-20", end = "2024-05-05")
Real_Data.reset_index(inplace = True)
```

```
    [*********************100%%**********************]  1 of 1 completed
```

```python
from plotly.subplots import make_subplots
import plotly.graph_objs as go
fig = make_subplots(rows=1, cols=1, shared_xaxes=True, vertical_spacing=0.1)
data_df = data.iloc[-15:]
fig.add_trace(go.Scatter(x=data_df['ds'], y=data_df['y'], mode='lines', name='data'),row=1, col=1)

fig.add_trace(go.Scatter(x=Real_Data['Date'], y=Real_Data['Adj Close'], mode='lines', name="Real_Data"),row=1, col=1)
fig.add_trace(go.Scatter(x=y_hat_df['ds'], y=y_hat_df['NBEATS'], mode='lines', name='NBEATS_Prediction'),row=1, col=1)
fig.add_trace(go.Scatter(x=y_hat_df['ds'], y=y_hat_df['NHITS'], mode='lines', name='NHITS_Prediction'),row=1, col=1)
fig.add_trace(go.Scatter(x=y_hat_df['ds'], y=y_hat_df['NBEATSx'], mode='lines', name='NBEATSx_Prediction'),row=1, col=1)

fig.update_layout(title = 'Next 15 days Prediction Using NBEATS, NHITS and NBEATSx Algorithms',xaxis=dict(rangeslider=dict(visible=True)), he
fig.update_xaxes(
    rangeselector=dict(
        buttons=list([
            dict(count=1, label="1m", step="month", stepmode="backward"),
            dict(count=6, label="6m", step="month", stepmode="backward"),
            dict(count=1, label="YTD", step="year", stepmode="todate"),
            dict(count=1, label="1y", step="year", stepmode="backward"),
            dict(step="all")
        ])
    )
)
```

```
)
fig.show()
```

Next 15 days Prediction Using NBEATS, NHITS and NBEATSx Algorithms


```
nf.save(path = "/content/Model",
        model_index = None,
        overwrite = True,
        save_dataset = True)
```