BITCOIN FORECASTING

A DEEP LEARNING APPROACH

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OUTLINE

- Introduction
- Exploratory Data Analysis
- Feature Engineering
- Model Selection
- Model Summary
- Data Analytics
- Conclusion
- References

INTRODUCTION

Objective:

- Time series forecasting
- LSTM (Long Short-Term Memory) Model

Data Source:

- Daily trading data of Bitcoin between 2014 to 2021.

EDA

DATA SET:

Shape:

- 2663 Lines by 6 Columns.

Null Values:

- None.

Missing Values:

- None.

NaN Values:

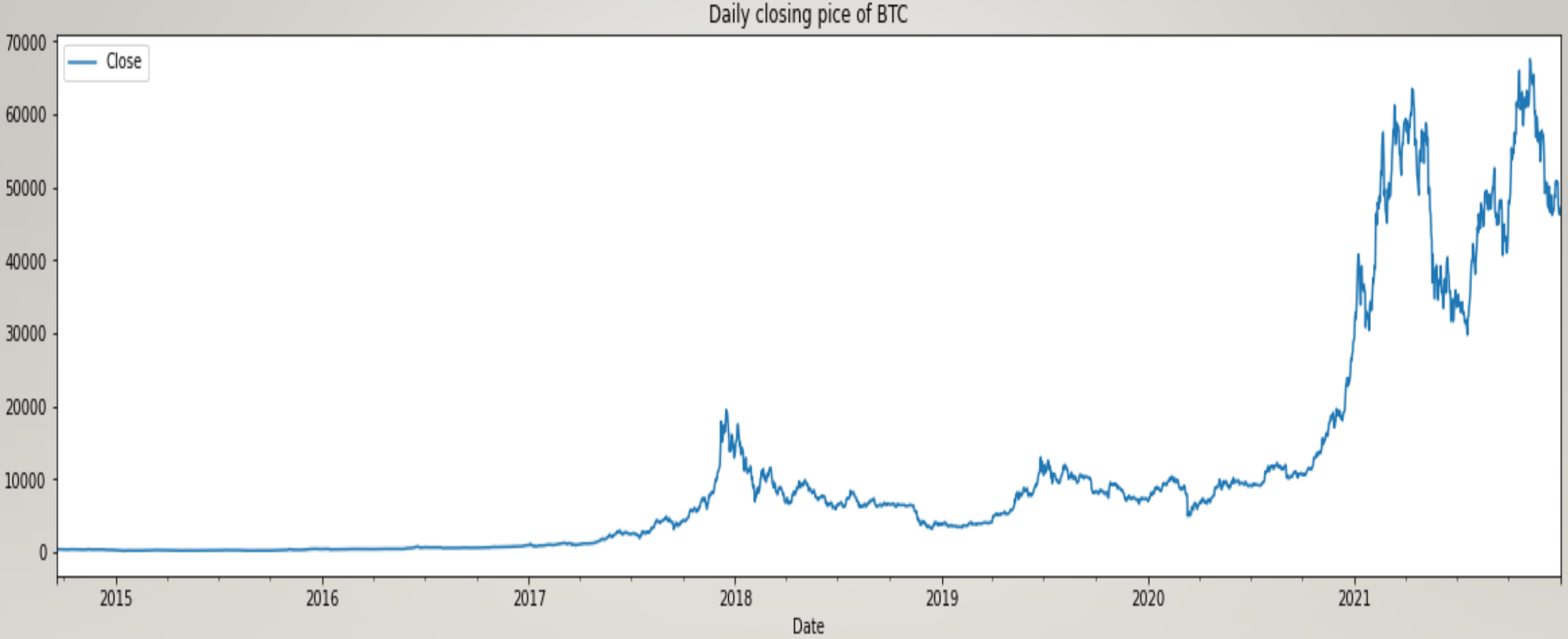
- None.

Independent Variables:

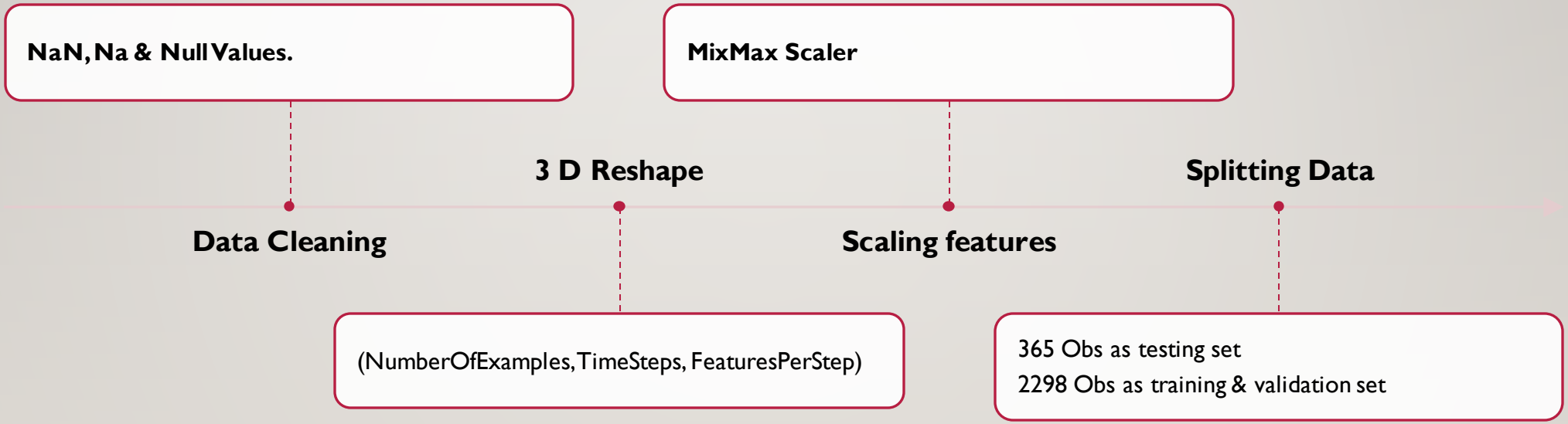
5 numerical features.

Dependent Variable:

'Close' Column with correspond to the daily closing price of BTC


Daily closing pice of BTC
Close
70000
60000
50000
40000
30000
20000
10000
0
2015
2016
2017
2018
2019
2020
2021
Date

FEATURE ENGINEERING



MODEL SELECTION

LSTM Model

Activation function: SWICH

Optimizer: ADAM

Very Hight predictive power

1.92% of MAPE

Results

MODEL SUMMARY

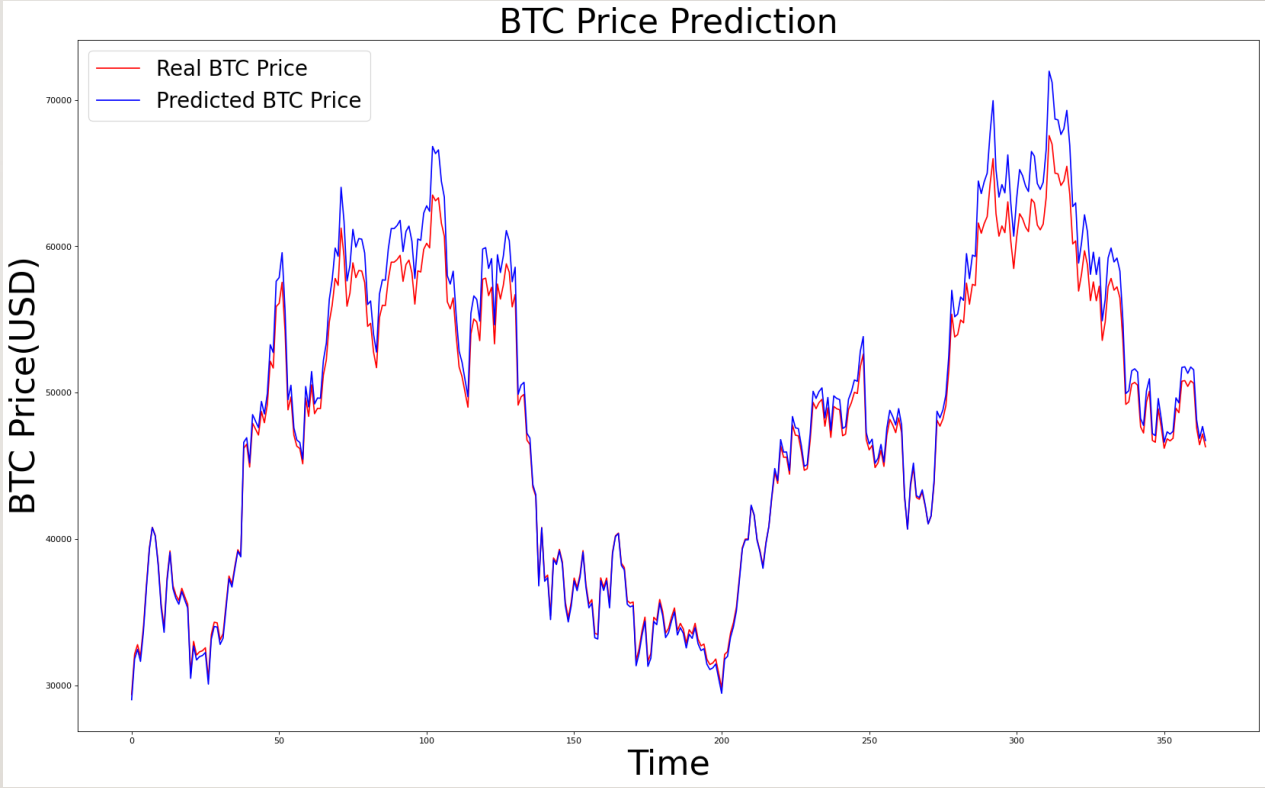
```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 lstm (LSTM)                 (None, 128)               66560

 dense (Dense)               (None, 1)                 129

=================================================================
Total params: 66,689
Trainable params: 66,689
Non-trainable params: 0
```

DATA ANALYTICS

Mean Absolute Percentage Error (MAPE) = 1.92%



CONCLUSION

LSTM success

- Swish Activation function

Future Improvement

- Online & Realtime focasting

REFERENCE

- The full approach is presented in the following ipynb:
- https://github.com/mzaoualim/Coursera_IBM_Machine_Learning_Professional_Certificate/blob/main/Deep%20Learning%20and%20Reinforcement%20Learning/Project_BTC_LSTM.ipynb