*COS30018*

# *Intelligent Systems*

# *Task B.1*

Saynab Ismail
103063323@student.swin.edu.au

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Github repository link: https://github.com/SaynabIsmail/Task-B1

## Introduction

This task aims to set up and evaluate a stock prediction project provided as a Python script, stock-prediction.py.
This report aims to document the steps taken to set up the required development environment, including creating a virtual environment and installing necessary dependencies. It also details the testing of both v0.1 and P1, with a focus on running the provided code and evaluating the results.

## Setting up the environment

1. As used within the linked YouTube video, I used PyCharm to work on this project and so I set up a new project and made sure that the new environment using virtualenv was selected.

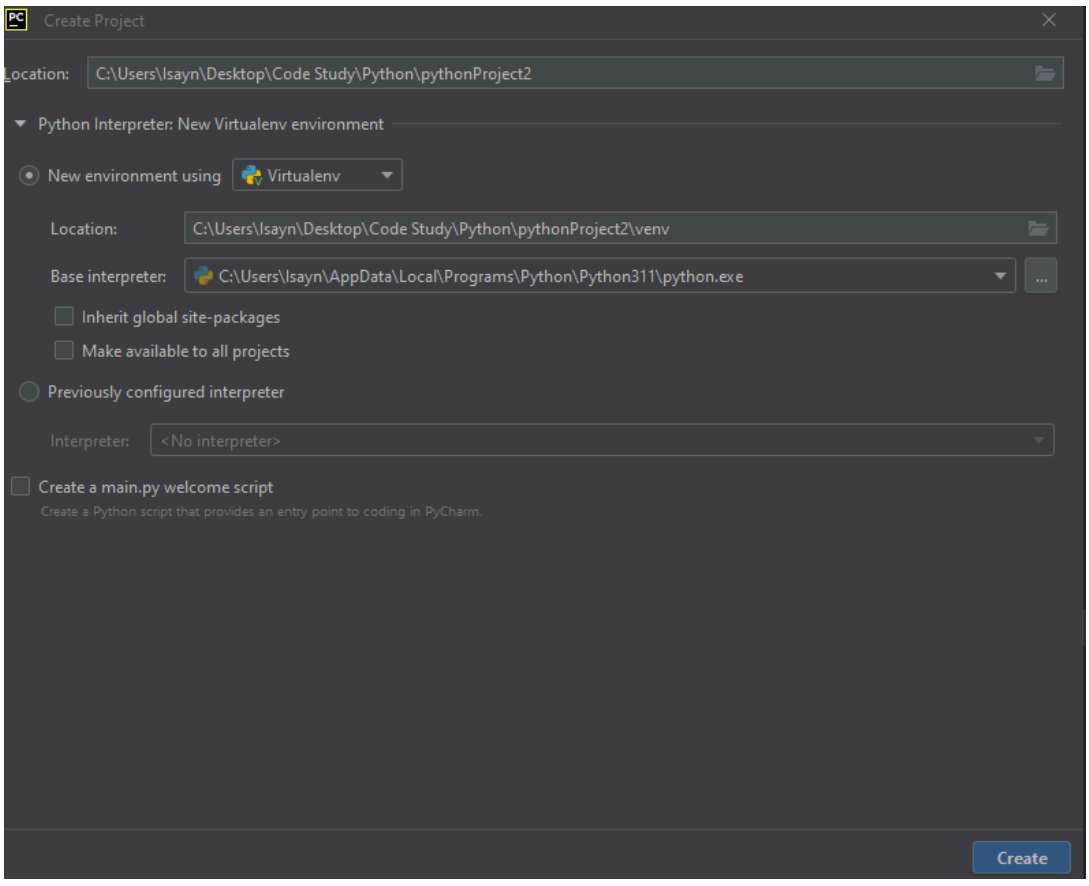


*Figure 1: Setting up the environment*

2. Once I had set up a new project in Pycharm, I then proceeded to install the requirements.txt as outlined in the setup document using the following command within the terminal

*Pip install -r requirements.txt*

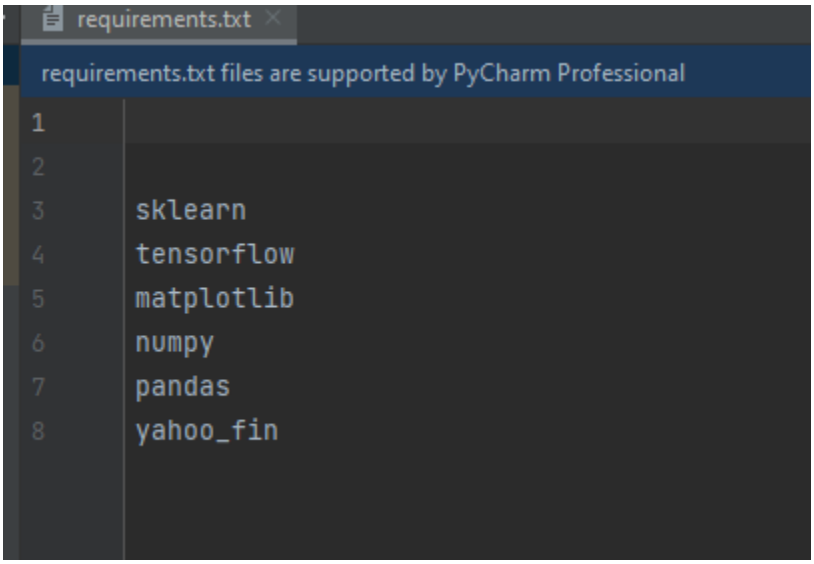


*Figure 2: Requirements.txt*


*Figure 3: Requirements for installing*

## Code testing

The following two sets of code(V0.1 and P.1) were downloaded and are required in order to successfully set up the environments so we could test the stock predicting scripts

## V0.1

1) I had first begun working on the v0.1 code base which I first activated and made sure all the requirements were properly downloaded.
2) Once that was all set, I ran the stock prediction script via the terminal using the following command:

   *python .\stock_prediction.py*

3) Once everything finally worked, the model was finally trained as seen in the diagram below

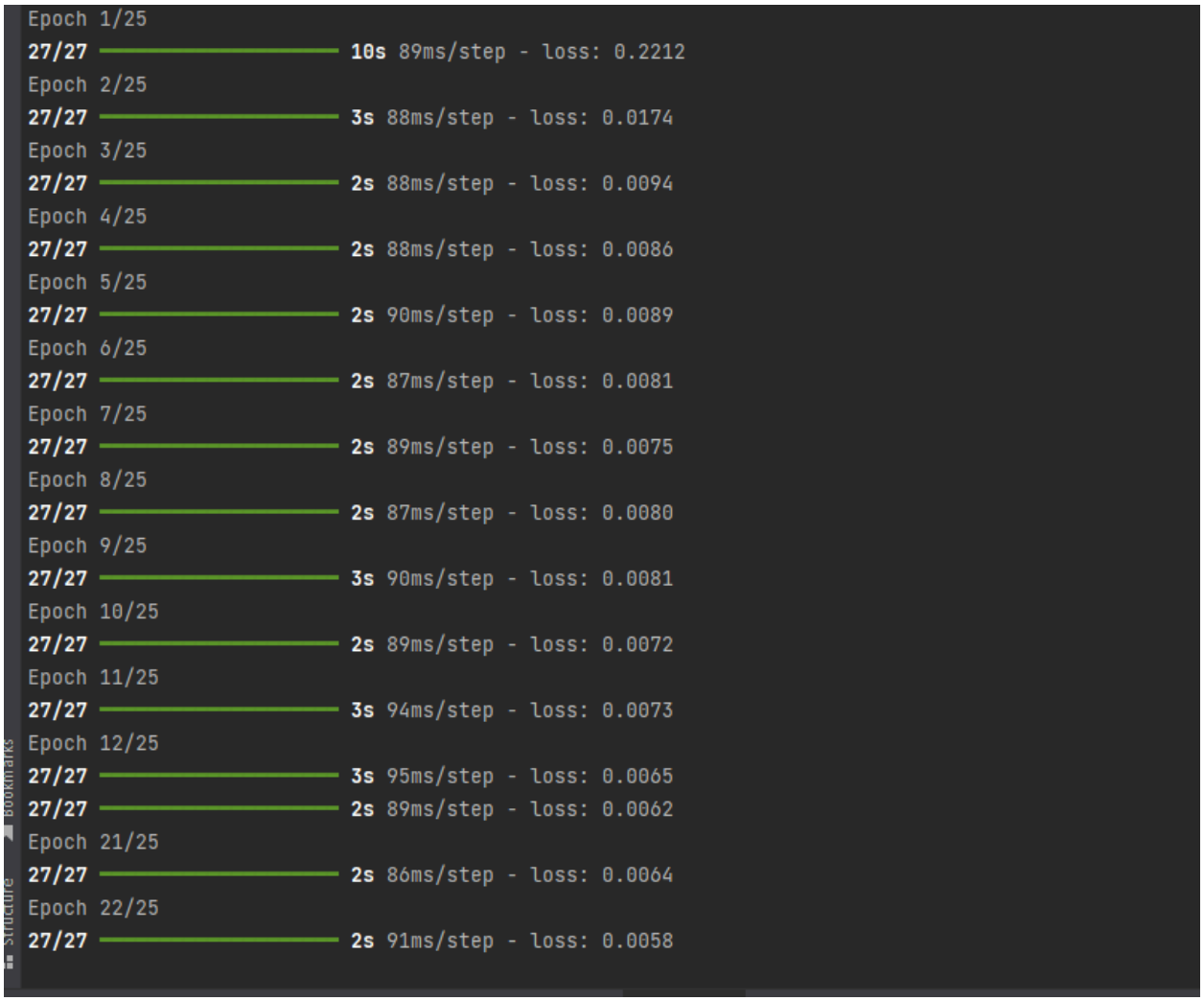


*Figure 4: Training*

4) *Finally we got the results as seen below which demonstrate potential future stock data*

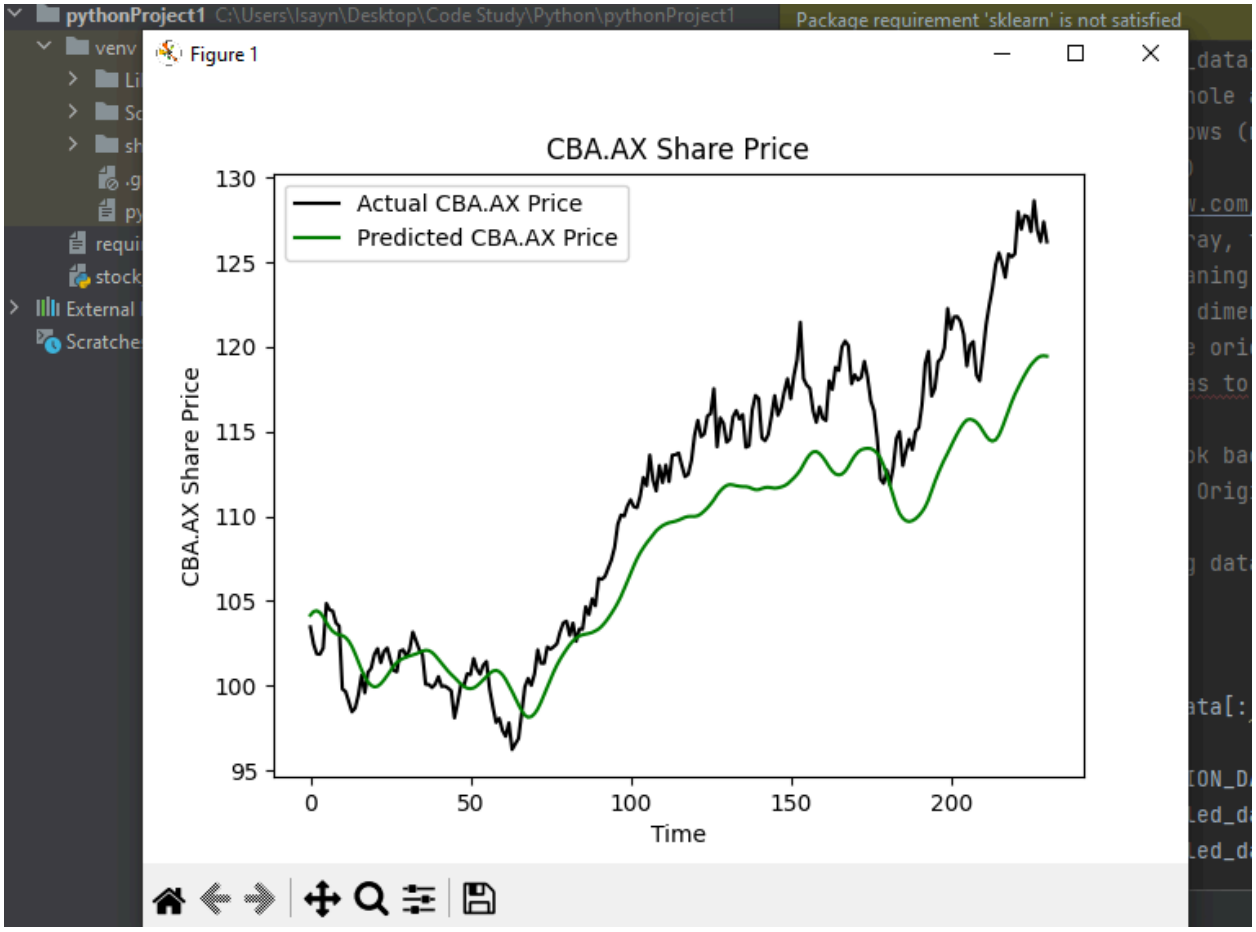


*Figure 5: Stock prediction results*

## P.1

1) The code base for P.1 was cloned from GitHub and added to the current folder
2) There were a few setbacks but eventually, after a few adjustments in train.py, test.py, parameters.py and installing dependencies, I could run the script successfully.

```
venv) PS C:\Users\Isayn\Desktop\Code Study\Python\pythonProject1\P.1> python test.py
ture price after 15 days is 183.30$
keras.src.losses.losses.Huber object at 0x00000193AFB42CD0> loss: 0.0009890625951811671
ean Absolute Error: 3.6219518241517448
ccuracy score: 0.575735294117647
otal buy profit: 469.96504932641983
otal sell profit: -72.68368941545485
otal profit: 397.28135991096497
rofit per trade: 0.2921186469933566
```

*Figure 6: Test results 1*

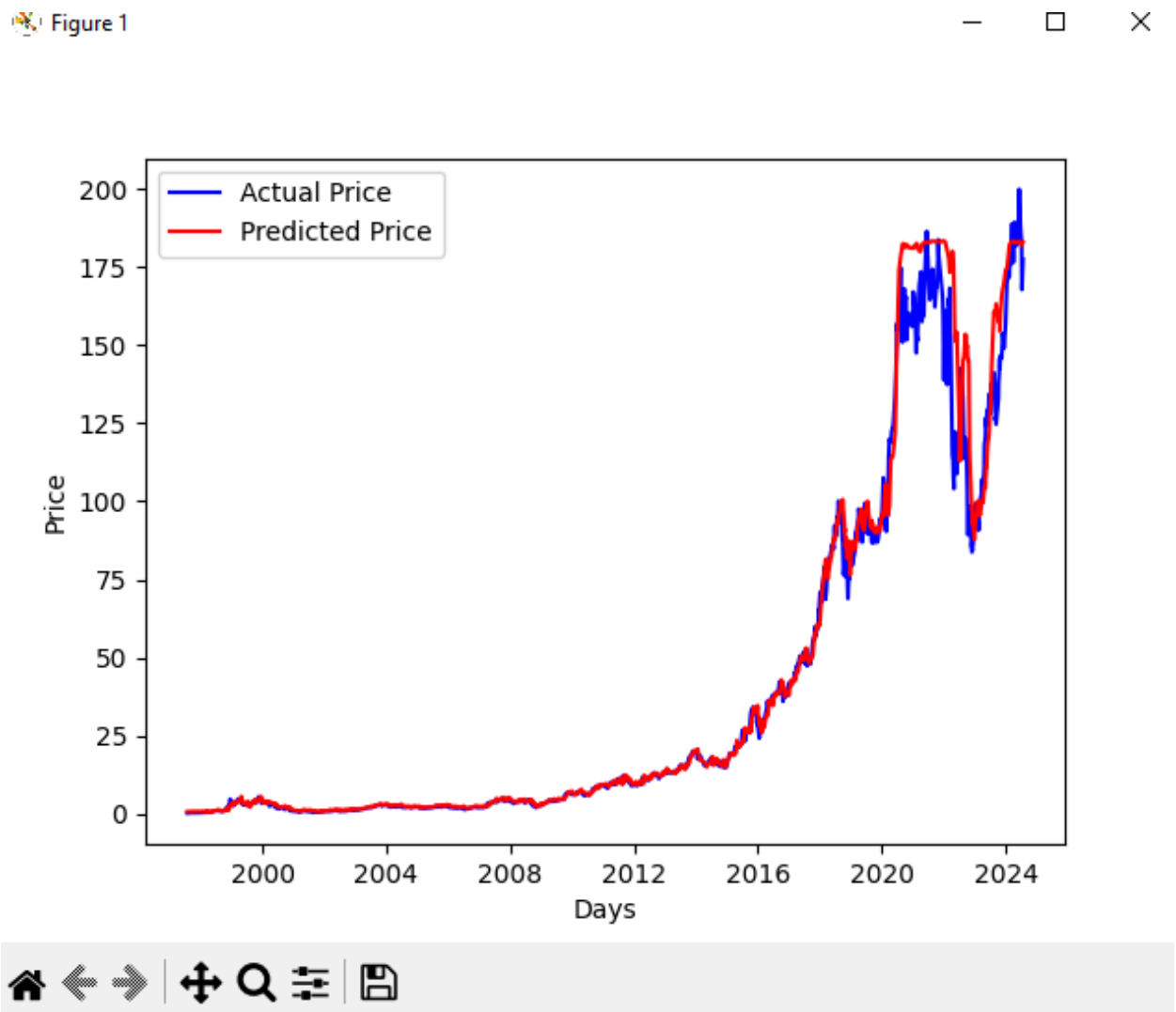


*Figure 7: Test results 2*

## Understanding of the initial code base v0.1

The v0.1 code base utilizes the train.py script, which is commonly used to train a machine learning model, specifically an LSTM (Long Short-Term Memory) network, for predicting stock values.

It loads and preprocesses historical stock data, creates an LSTM model, then compiles it using an Adam optimizer and a Huber loss function before fitting the model to training data over many epochs.

The test.py script tests the trained model's performance by loading the saved model weights and running the model on test data. It typically evaluates the model's accuracy using metrics such as Mean Absolute Error (MAE) and reports the findings for additional analysis.

## Issues:

Towards the end, I had issues uploading to GitHub, did not realise I needed the latest version of Pycharm and had to reinstall the newest version of Pycharm. I also had a few issues with downloading the dependencies but with some help from the discord channel and stack overflow I was able to figure it out