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COS30018 – INTELLIGENT SYSTEMS

TASK B.1 SETUP (PROJECT OPTION-B STOCK-PREDICTION)

Task 1 Report: Project for analysis and prediction of the stock market.

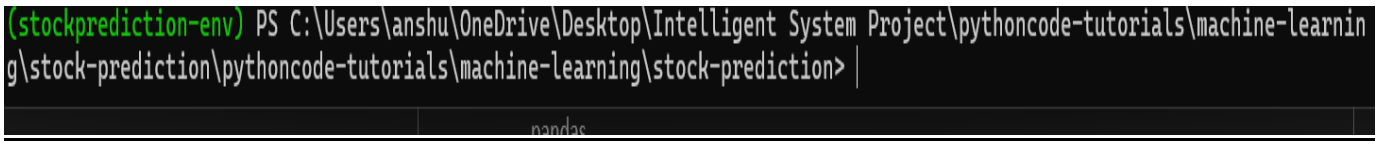
1. Environment Setup

1. 1. Virtual Environment Setup

To ensure a clean and isolated environment for the project, a virtual environment named stock prediction-env was created using the following command: To ensure a clean and isolated environment for the project, a virtual environment named stockprediction-env was created using the following command:

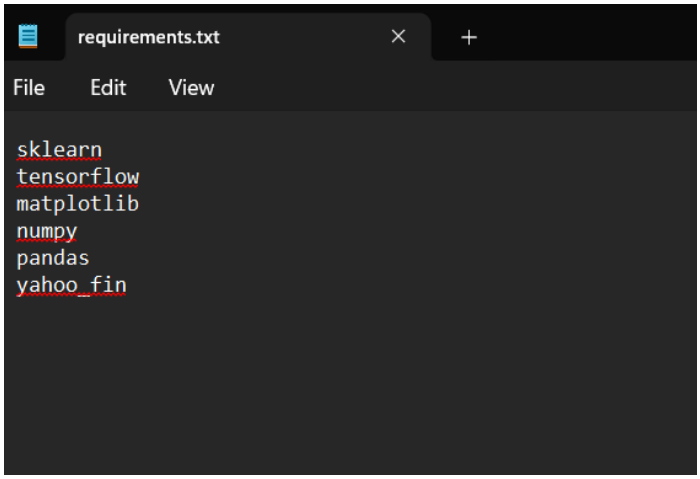
"python -m venv stockprediction-env"

Following the activation step, the virtual environment was confirmed by typing at the command prompt '(stockprediction-env).'



1. 2. Dependencies Installation

The requirements. txt file to add the required depencencies which were missing in previous versions of the file. The key package versions specified were:



2. Testing as well as Running of Code Bases

2. 1. Stock Prediction v0. 1

2. 1. 1. Download and Setup

The stock-prediction.py lint script was downloaded and kept in the working directory of the python file. All the data files that were needed were put in the right folders and all the model weights too.

Also, we encountered some of the error while running the test.py file but the issue we encountered was of the tensorflow library which was installed as version 2.17.0 but the file was supposed to be work on the versions below 2.15.0. And the version below 2.15.0 were not suitable for the latest python version which was 3.12.x.

Then in order to resolve this issue, we downloaded python version 3.10.x, which supports the tensorflow 2.14.0 , which was being downloaded in order to run the file.

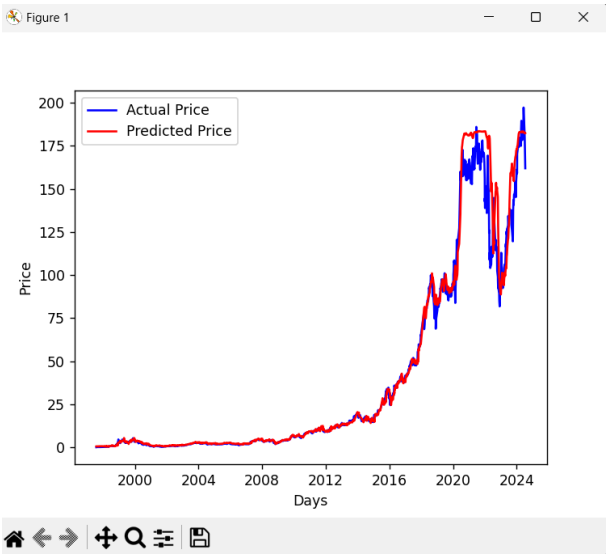
```
(stockprediction-env) PS C:\Users\anshu\OneDrive\Desktop\Intelligent System Project\pythoncode-tutorials\machi
g\stock-prediction\pythoncode-tutorials\machine-learning\stock-prediction> python --version
Python 3.10.0
```

Results:

Below is the terminal output for the file test.py –

```
Future price after 15 days is 183.59$
huber_loss loss: 0.0011150089558213 95
Mean Absolute Error: 3.9660708737645 98
Accuracy score: 0.5717439293598234
Total buy profit: 485.295185983181
Total sell profit: -44.798169434070 49
Total profit: 440.4970165491105
Profit per trade: 0.32413319834371634
```

And below is the graphical output –



Summary from the code v0.1 –

Summary of stock-prediction.py
The stock-prediction.py is a python script for predicting stock prices by using an LSTM model. It performs the following key tasks:

Data Loading and Preprocessing: Gets stock data from Yahoo Finance, normalizes it, and prepares it in the form of training and test data sets.

Model Creation: Allows to create an LSTM model with optional additional layers of LSTM, Dropout layer and Bidirectional LSTM layer on two separate directions.

Model Training: Fits the model on the training set and stores the saved model weights representing the best model at the end of training.

Evaluation and Prediction: Tests the model on the relevant test data; Predicts future price for the model; and lastly, measures performance metrics and profits.

Results: Prints out the predicted future price, the performance of the model and writes the results in a separate CSV file.