National College of Ireland

Configuration Manual

MSc Research Project
Master's in Data Analytics

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School of Computing
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MSc Project Submission Sheet

School of Computing

Student Name:	Samara Simha Reddy Devireddy
Student ID:	X23116242
Programme:	MSc in Data Analytics **Year:** 2023-2024
Module:	MSc Research Project (MSCDAD_C)
Lecturer:	Hamilton Niculescu
Submission Due Date:	16-09-2024
Project Title:	Cryptocurrency Price Prediction Using Ensemble Methods and Sentiment Analysis

Word Count: 301 **Page Count:** 5

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.
ALL internet material must be referenced in the bibliography section. Students are required to use the Referencing Standard specified in the report template. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action.

Signature: Samara Simha Reddy Devireddy

Date: 16-09-2024

PLEASE READ THE FOLLOWING INSTRUCTIONS AND CHECKLIST

Attach a completed copy of this sheet to each project (including multiple copies)	Y
Attach a Moodle submission receipt of the online project submission, to each project (including multiple copies).	Y
You must ensure that you retain a HARD COPY of the project, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer.	Y

Assignments that are submitted to the Programme Coordinator Office must be placed into the assignment box located outside the office.

Office Use Only	
Signature:	
Date:	
Penalty Applied (if applicable):	

Configuration Manual

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Student ID: x23116242

1 ENVIRONMENT SETUP

- Go to colab.google.coms
- Select new notebook upload
- Upload the notebook

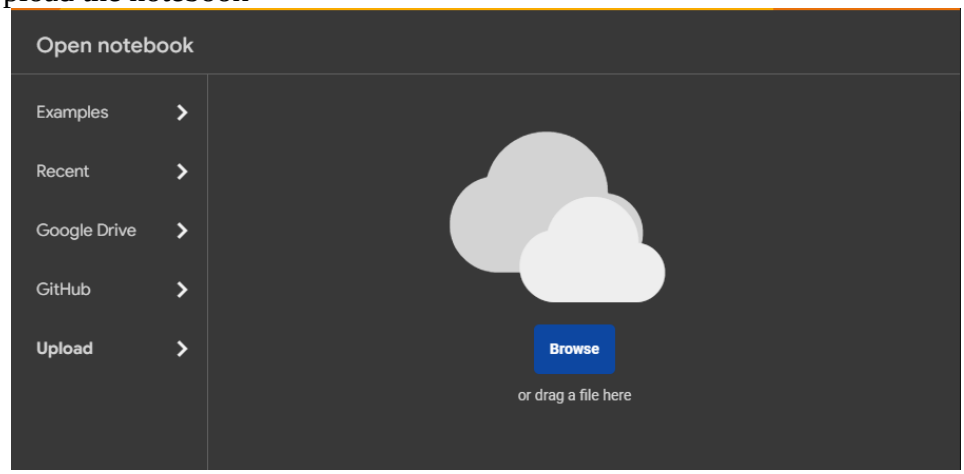


Figure 1 Upload notebook to google colab

Connect to the session

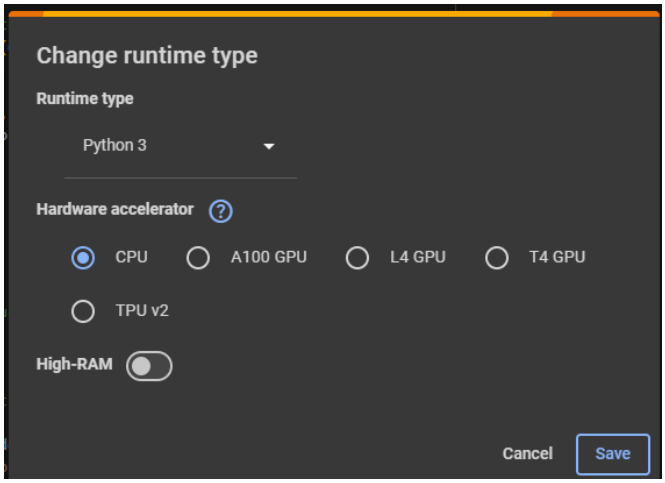


Figure 2 Connect to the session

Upload the datasets into the session, one data set with without sentiment features and another with sentiment features

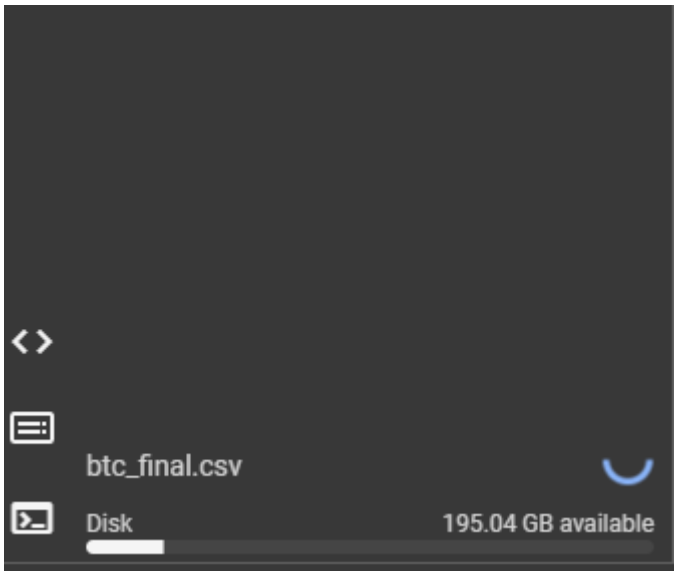


Figure 3 uploading the dataset

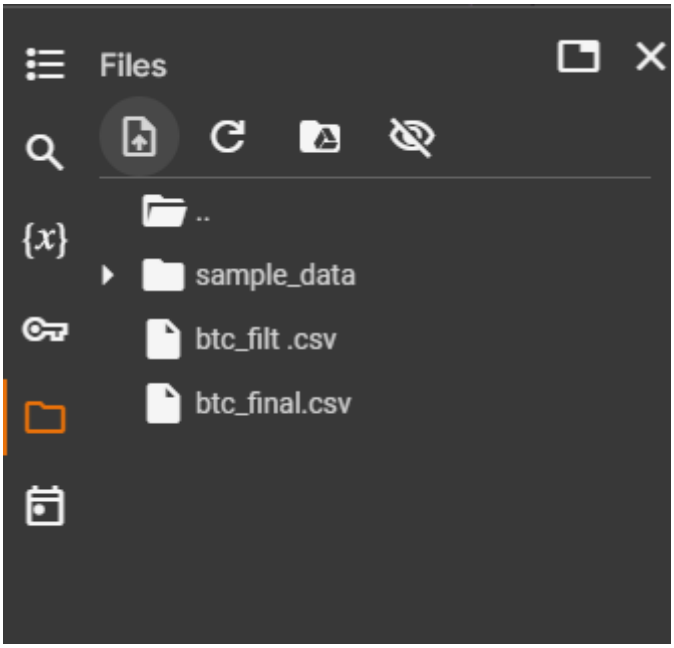
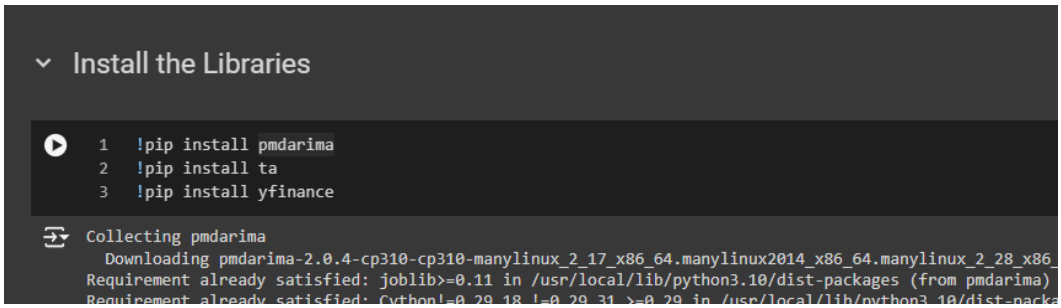


Figure 4 Uploaded 2 datasets

Install the following Libraries



Next run the code till the sections without sentiment score

Figure 5 Models without sentiment scores

Below is for the model with sentiment score

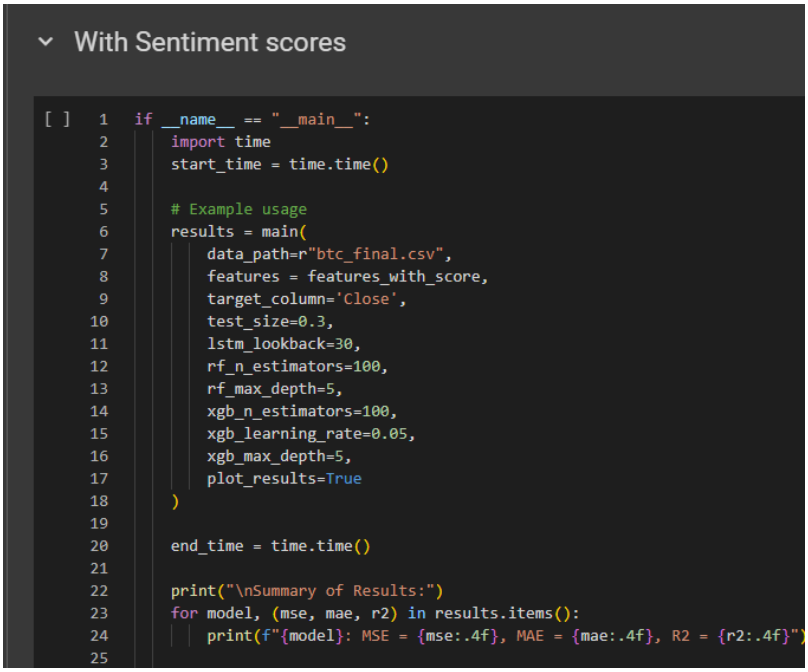
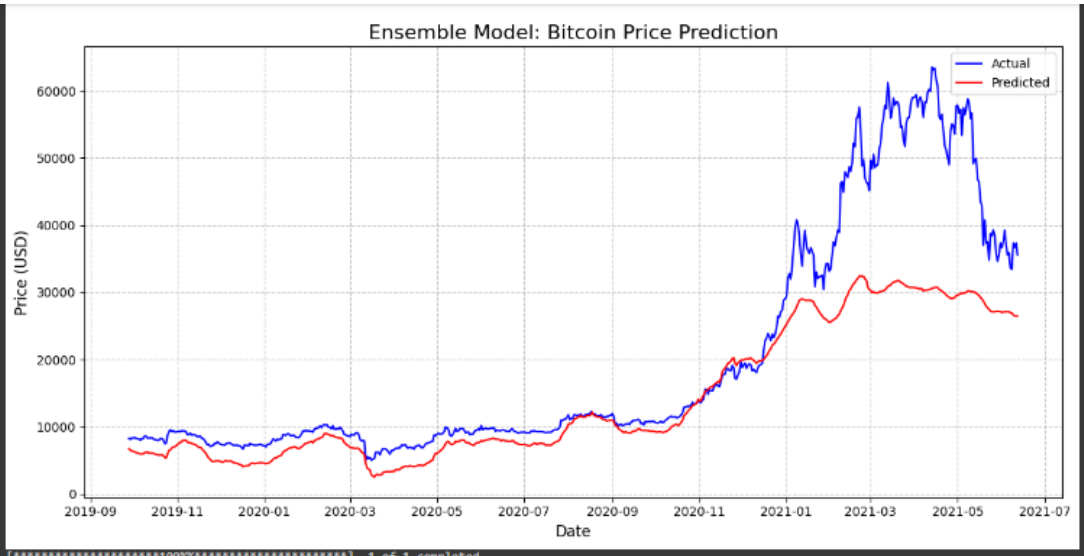


Figure 6 Without sentiment scores

2 Outputs

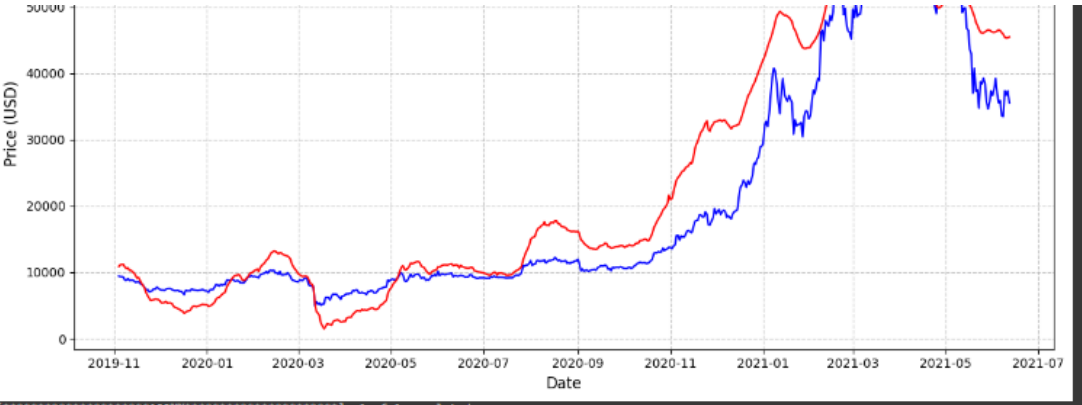



```
[**********100%**********]  1 of 1 completed
Yesterday's actual Bitcoin price: $60880.11
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 47ms/step

Predictions for yesterday:
LSTM: $22220.78
Random Forest: $18465.86
XGBoost: $16614.96
ARIMA: $10583.96
Ensemble: $26452.66

Summary of Results:
LSTM: MSE = 0.0441, MAE = 0.1179, R2 = 0.4891
Random Forest: MSE = 0.0693, MAE = 0.1317, R2 = 0.1969
XGBoost: MSE = 0.0759, MAE = 0.1386, R2 = 0.1208
ARIMA: MSE = 0.1125, MAE = 0.1979, R2 = -0.3044
Ensemble: MSE = 0.0306, MAE = 0.1021, R2 = 0.6454

Total execution time: 39.24 seconds
```




```
[**********100%**********]  1 of 1 completed
Yesterday's actual Bitcoin price: $60880.11
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 51ms/step

Predictions for yesterday:
LSTM: $23294.82
Random Forest: $18468.77
XGBoost: $16918.46
ARIMA: $8387.27
Ensemble: $45471.31

Summary of Results:
LSTM: MSE = 0.0437, MAE = 0.1149, R2 = 0.5098
Random Forest: MSE = 0.0737, MAE = 0.1398, R2 = 0.1727
XGBoost: MSE = 0.0795, MAE = 0.1460, R2 = 0.1075
ARIMA: MSE = 0.1347, MAE = 0.2209, R2 = -0.5123
Ensemble: MSE = 0.0104, MAE = 0.0767, R2 = 0.8830

Total execution time: 80.14 seconds
```

References

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Mohammed, A., & Kora, R. (2023). A comprehensive review on ensemble deep learning: Opportunities and challenges. *Journal of King Saud University - Computer and Information Sciences*, *35*(2), 757–774. https://doi.org/10.1016/j.jksuci.2023.01.014

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