

~\OneDrive - Indian Institute of Technology Indian School of Mines Dhanbad\Desktop\assignment-main\Trainee\time-series-prediction\README.md

Theme: Building a stock price prediction model

Overview of the project

In this training, you will use NTT stock price data to build a time series data forecasting model. You will begin with exploratory data analysis (EDA) of the data, and ultimately evaluate the accuracy of the model. You will use machine learning to predict stock prices and verify their accuracy, aiming to apply it in practice.

Work Guidelines

- **Duration** : 1 week
- **Working time** : 12 hours ~ 20 hours
- **Timeline (estimated)** :
 - **2 Hours** : Data Understanding and EDA
 - **2 hours** : Data Preprocessing and Feature Engineering
 - **1 hour** : Model selection and training
 - **1 hour** : Evaluating the model and analyzing the results
 - **4-8 hours** : Consider improvements and retrain the model
 - **2-6 hours** : Summary of results and preparation of presentation materials

Task Content

1. Data Understanding and EDA

- **Summary** : Use NTT stock price data to check basic statistics, detect trends and seasonality over time, and check for outliers.
- **Goal** : Identify trends in data and extract answers for predictive modeling.

2. Data Preprocessing and Feature Engineering

- **Overview** : Perform preprocessing such as missing value handling, normalization, and scaling to create features that are useful for stock price prediction.
- **Goal** : Prepare data to improve model accuracy.

3. Model Selection and Training

- **Overview** : Select and implement a suitable predictive model. Examples could be ARIMA models, recurrent neural networks such as LSTM.
- **Goal** : Build a model that can maximize the accuracy of stock price predictions.
- **Note** : There is no requirement for which model you build, but you should be prepared to explain why you chose the model you did.

4. Evaluating the model and analyzing the results

- **Overview** : Validate the model's predictive accuracy and calculate evaluation metrics.
- **Goal** : To objectively evaluate the effectiveness of the model and analyze the results.
- **Note** : Please choose your own evaluation criteria, but be prepared to explain the reasons for your selection.

5. Consider improvements and retrain the model

- **Summary** : Find areas to improve your model and retrain it to reflect those improvements.
- **Goal** : Build a more accurate predictive model.
- **Note** : Please summarize in your presentation materials what hypothesis you used for your verification and what the results were.

6. Summary of results and preparation of presentation materials

- **Summary** : The results of the training will be compiled into materials, and the model building process and results will be reported in a presentation format.
- **Objective** : Develop the skills to communicate technical results in an understandable way.

Submissions

1. Implemented program :

- **How to submit** : Create a repository in your GitHub account and push your code to it.
- **README** : Describes how to run the program and provides an overview of the program.

2. Presentation slides :

- **Example configuration** :
 - **Background** : The importance and challenges of stock price forecasting
 - **Data analysis results** : EDA results and problem extraction
 - **Technical overview** : The model and feature engineering techniques used (explain why the model and features were chosen)
 - **Evaluation indicators** : The indicators used to evaluate the model and their results
 - **Verification content** : List the hypotheses behind the improvements and their results
 - **Test result 1** : Test results and considerations for hypothesis 1
 - **Verification result 2** : Verification results and considerations for hypothesis 2
 - **Conclusion** : Summary of results and future prospects

3. Evaluation items

- **Technical capabilities** :

- Is the data properly understood and pre-processed?
- Is there a good justification for the model you chose?
- Have appropriate evaluation indicators been designed?
- Are appropriate hypotheses derived from the results of EDA and model learning, and are they being verified?
- Code readability (code structuring, proper comments, etc.)

○ **From a business perspective :**

- Can you explain technical details to clients in an easy-to-understand way?
- Is there consistency throughout the entire story?
- Is the content (title, body, message) of each page of the document consistent?
- Is the presentation easy to understand?
- Are you able to produce output within the allotted time?

Supplementary Material

• **Slide Writing References :**

- [Slide Writing Basics](#)
- [Slide creation techniques](#)
- [Lecture on Slide Writing_\(Slideshare\)](#)