

TRADING DATA ANALYSIS

Dissertation submitted in the partial fulfillment of the
requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

By

R. JAYA HARIKA CSINP327

Under the esteemed Guidance of

Er. Y V D CHANDRA SEKHAR

Founder & Chief Executive Officer

CS CODENZ



CS CODENZ

Learn Here , Lead Anywhere

GUDIVADA -521301, ANDHRA

PRADESH,INDIA 2022-2023

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CERTIFICATE

This is to certify that dissertation entitled **TRADING DATA ANALYSIS** submitted **RAMBA JAYA HARIKA**(CSINP327), for me in the partial fulfillment of the requirements for the award of the degree of **BACHELOR OF TECHNOLOGY** from **ADITYA COLLEGE OF ENGINEERING AND TECHNOLOGY** is a record of Bonafede work carried out by me under my guidance and supervision during the year 2022-2023 .The result embodied in this dissertation have not been submitted by any other university or Institution for the award of any degree.

Signature of Supervisor

Er. Y V D Chandra Sekhar
Founder & CEO
CS CODENZ

STUDENT DECLARATION

I **RAMBA JAYA HARIKA**(CSINP327) and **20P31A04G5** of the department of **Electrical Electronics Engineering** of College **Aditya college of engineering and technology** do that declared that the dissertation report entitled **TRADING DATA ANALYSIS**.(Trading data analysis involves examining financial market data to identify patterns, trends, and insights that can inform investment decisions and optimize trading strategies).I have completed the mandatory internship from 13.05.23 to 10.07.23 at CS CODENZ .This dissertation contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated this dissertation in our own work.

CSID NAME Signature CSINP327 R.JAYA HARIKA

Date:

Place:

OFFICIAL CERTIFICATION

This is to certify that **RAMBA .JAYA HARIKA** Regd.No **2OP31A04G5** and CSINP327 has completed his/her Internship in CS CODENZ on **TRADING DATA ANALYSIS** under my supervision as a part of partial fulfillment of the requirement for the Degree of B.Tech in **Aditya college of engineering and technology**

(Signature with Date and Seal)

Er. Y V D Chandra Sekhar

Founder & CEO , CS CODENZ

Endorsements

Faculty Guide Head of the Department Principal

CERTIFICATE FROM INTERN ORGANIZATION

This is to certify that **RAMBA.JAYA HARIKA** Regd.No **20P31A04G5** and CSID(**C S I N P 3 2 7**) of **Aditya college of engineering and technology** underwent internship in CS CODENZ from 05.03.2023 to 25.06.2023.

The Overall performance of the intern during his/her internship is found to be (
 Satisfactory / Not Satisfactory).

(Signature with Date and Seal)

Er. Y V D Chandra Sekhar

Founder & CEO , CS CODENZ



CS CODENZ
Regd No. 124/2021

Gudivada,
Dt. 25-06-2023

Internship Completion Certificate

This is to certify that

RAMBA JAYA HARIKA

During the Period of Internship Program with us, has been exposed to various concepts like Python , Neural Networks , Numpy and Pandas with Machine Learning Concepts on project **Trading Data Analysis**

At work, he/she had proven satisfactory results and highly dependable. This is to certify also that he has no pending assignment in relation to his work, and so he is therefore cleared. Done Internship from 05-03-2023 to 25-06-2023.

During the Period the contribution of him/his development of our company projects in Cloud Computing is " **Excellent** " with **92 %** .

CS-ID : CSINP327

Credits : 6



For Verification of this Certificate Scan the QR Code

Er. Y V D Chandra Sekhar
Founder & Chief Executive Officer, CS CODENZ

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This report dissertation could not have been written without the support of our guide **Er. Yalamarathi Vijaya Durga Chandra Sekhar, Founder & Chief Executive Officer, CS CODENZ**. Who not only served as our superior but also encouraged and challenged us throughout our academic program. Our foremost thanks goes to him. Without him this dissertation would not have been possible. We appreciate his vast knowledge in many areas, and her insights, suggestions and guidance that helped to shape our research skills.

It is needed with a great sense of pleasure and immense sense of gratitude that we acknowledge the help of these individuals. We owe many thanks to many people who helped and supported us during the writing of this report.

We are thankful to our project coordinator **Er . Y V D Chandra Sekhar** Founder & CEO, for his continuous support.

We express our sincere thanks to our respected **Er. Y V D Chandra Sekhar , Founder & CEO** of CS CODENZ , Gudivada for bet valuable suggestion and constant motivation that greatly helped us in successful completion of project .We also take the privilege to express our heartfelt gratitude to **Er . Y V D Chandra Sekhar** Founder & CEO, **CS CODENZ** Gudivada.

We are thankful to all faculty members for extending their kind cooperation and assistance. Finally, we are extremely thankful to our parents and friends for their constant helped moral support.

CSNP327 R.JAYA HARIKA



CS CODENZ

Subject Name: Project Final Stage Subject Code : PY32223 Academic Year: 2022 - 2023

Subject Code	Course Outcomes	
PR4204	C01	Formulate solutions to computing problems using latest technologies and tools
	C02	Work effectively in teams to design and implement solutions to computational problems and socially relevant issues
	C03	Recognize the social and ethical responsibilities of a professional working in the discipline
	C04	Apply advanced algorithmic and mathematical concepts to the design and analysis of software
	C05	Devise a communication strategy (language, content and medium) to deliver messages according to the situation and need of audience.
	C06	Deliver effective presentations, extemporaneous or impromptu oral presentations. Setting up technical reports using technical tools.

CO-PO Mapping

Project Outcomes		Program Outcomes (POs)														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
PY32223	C01	3	3	2	-	3	2	-	3	-	-	-	-	-	2	-
	C02	2	2	3	-	3	-	-	3	3	-	-	3	2	2	2
	C03	-	-	-	-	-	2	-	3	-	-	-	2	-	-	-
	C04	3	-	-	-	2	-	-	-	2	-	-	2	3	2	-
	C05	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	C06	2	-	1	-	3	-	3	-	-	-	-	-	2	3	-

Signature of Student Signature of Guide

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OVERVIEW OF THE ORGANIZATION

CS CODENZ aim is to provide the best technical knowledge at a low cost to all the students who are looking to get professional coding skills along with moral values. The institution will continue to build its strength by developing world-class teaching programmers at the postgraduate and undergraduate levels, in addition to pursuing research in cutting-edge technologies.

In 2018, Chandra Sekhar thought of excelling in teaching. He took his first steps towards it and began searching at many computer institutions, but nobody gave him an opportunity. Then, after plenty of hardships, he got the chance at Vaddadi Computers to teach the C language to students, and that's how his teaching career has begun.

He observed that a number of the scholars are willing to find out, but they step back because of the high price of the course. Then he decided to begin an establishment that may help many students who want to be told but can't afford it.

During his diploma's second year, he started teaching his juniors in college. In his third year, he taught ethical hacking in online mode. That's how CS CODENZ started. So CS Codenz's journey started with more courses, an excellent team, and plenty of aspirants. Seasons have passed, and now we are in our 5th season, continuously teaching all the scholars who have the zeal for coding. What we wish is that everyone who wants to learn should never quit due to a lack of money.

ABSTRACT

Trading data analysis is a critical component of modern financial markets, encompassing the examination and interpretation of various data sources to gain valuable insights and make informed trading decisions. This abstract provides an overview of the key aspects of trading data analysis, including its purpose, methodologies, and applications. The abstract highlights the use of statistical models, technical indicators, and quantitative techniques to analyze market data, identify patterns, and detect potential trading opportunities. It emphasizes the role of trading data analysis in risk management, portfolio optimization, and the development of effective trading strategies. Furthermore, the abstract emphasizes the importance of real-time market data, historical data analysis, and market sentiment indicators in facilitating accurate decision-making. Overall, trading data analysis plays a crucial role in empowering traders and investors to navigate financial markets with confidence and achieve favorable trading outcomes.

CHAPTER – 1

ANALYSIS

1.1 INTRODUCTION

Trading data analysis is a crucial practice in financial markets, involving the evaluation and interpretation of various data sources to gain insights and make informed trading decisions. Traders and investors rely on trading data analysis to identify patterns, trends, and potential opportunities in the market. By utilizing statistical models, technical indicators, and quantitative techniques, traders can analyze market data such as price movements, volume, and market indicators to uncover valuable information.

One of the primary purposes of trading data analysis is to optimize trading strategies. Traders can analyze historical data and backtest different strategies to determine their effectiveness and profitability. By identifying patterns and correlations in the data, traders can refine their strategies and make more accurate predictions about market movement.

Risk management is another critical aspect of trading data analysis. By assessing market volatility, liquidity conditions, and potential risks, traders can implement risk mitigation strategies to protect their investments. Trading data analysis helps traders set appropriate stop-loss levels, assess risk-reward ratios, and make risk-adjusted decisions.

Portfolio optimization is also facilitated through trading data analysis. By analyzing market data and performance metrics of different assets, traders can make informed decisions about asset allocation and diversification. This analysis helps optimize the risk-return profile of a portfolio and improve overall performance.

Real-time market data is of utmost importance in trading data analysis. Traders need up-to-date information on market movements, news, and events that may impact their trading decisions. Analyzing real-time data allows traders to respond quickly to changing market conditions and capitalize on timely opportunities.

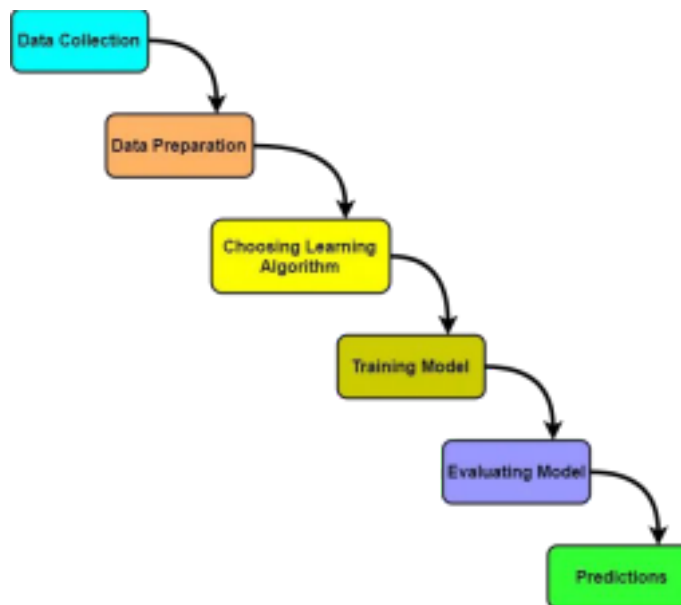
Market sentiment analysis is another aspect of trading data analysis. Traders can analyze sentiment indicators, such as social media sentiment or market sentiment surveys, to gauge the overall market sentiment and investor behavior. This analysis helps traders understand market psychology and make informed decisions based on market sentiment.

In conclusion, trading data analysis is a critical tool for traders and investors to gain insights, optimize strategies, manage risks, and make informed decisions in financial markets. By utilizing statistical models, technical indicators, and quantitative techniques, traders can leverage the power of data to enhance their trading performance and achieve favorable outcomes. With access to real-time market data and sentiment analysis, traders can stay ahead of the curve and adapt to dynamic market conditions. Trading data analysis is an essential component of successful trading strategies and plays a vital role in the ever-changing landscape of financial markets.

1.1.1 MACHINE LEARNING

WORKING PROCESS OF MACHINE LEARNING

The working process of machine learning involves several key steps to train a model and make predictions or decisions based on the trained model. Here is a general overview of the machine learning working process:



Machine Learning Workflow

Fig-1

Fig2: WORKING PROCESS OF MACHINE LEARNING

1. Define the problem: The first step is to clearly define the problem you want to solve or the task you want to accomplish using machine learning. This could be anything from image recognition to predicting stock prices.

2. Gather and preprocess the data: Next, you need to collect relevant data that will be used to train and evaluate your model. This data should be representative of the problem you're trying to solve. It may include features or inputs (e.g., images, text, numerical values) as well as the corresponding labels or targets (e.g., categories, numerical values). The data may also require preprocessing steps such as cleaning, normalization, or feature engineering to make it suitable

for the machine learning algorithms.

3.Split the data: The collected data is typically divided into two or three sets: the training set, the validation set, and the test set. The training set is used to train the model, the validation set is used to fine-tune the model and optimize hyperparameters, and the test set is used to evaluate the final performance of the model.

4.Select a machine learning algorithm: Choose an appropriate machine learning algorithm or model that suits your problem. This could include supervised learning algorithms (e.g., decision trees, support vector machines, neural networks) for labeled data, unsupervised learning algorithms (e.g., clustering, dimensionality reduction) for unlabeled data, or reinforcement learning algorithms for learning through interaction with an environment.

5.Train the model: Use the training data to train the selected machine learning model. During the training process, the model learns the underlying patterns and relationships in the data by adjusting its internal parameters based on the optimization algorithm used (e.g., gradient descent). The model iteratively updates its parameters until it converges to a state where it can make accurate predictions.

6.Evaluate the model: After training, the model needs to be evaluated using the validation set to assess its performance and generalization ability. Various evaluation metrics, such as accuracy, precision, recall, F1 score, or mean squared error, can be used depending on the problem type. The evaluation helps identify any potential issues, such as overfitting or underfitting, and guides further adjustments to the model or hyperparameters.

7.Fine-tune the model: Based on the evaluation results, you may need to fine-tune the model by adjusting its architecture, hyperparameters, or training process. This iterative process helps improve the model's performance and address any identified limitations.

8.Test the model: Once you are satisfied with the model's performance on the validation set, you can evaluate its final performance on the test set. This provides an unbiased estimate of how well the model is likely to perform in real-world scenarios.

9.Deploy and monitor: If the model meets the desired performance criteria, it can be deployed to make predictions or decisions on new, unseen data. Monitoring the model's performance in production is crucial to ensure it continues to perform well over time. Regular maintenance and retraining may be necessary to adapt to changing data distributions or to improve performance further.

It's important to note that the working process of machine learning may vary depending on the specific problem, dataset, and algorithms used. However, the above steps provide a general framework for building and deploying machine learning models.

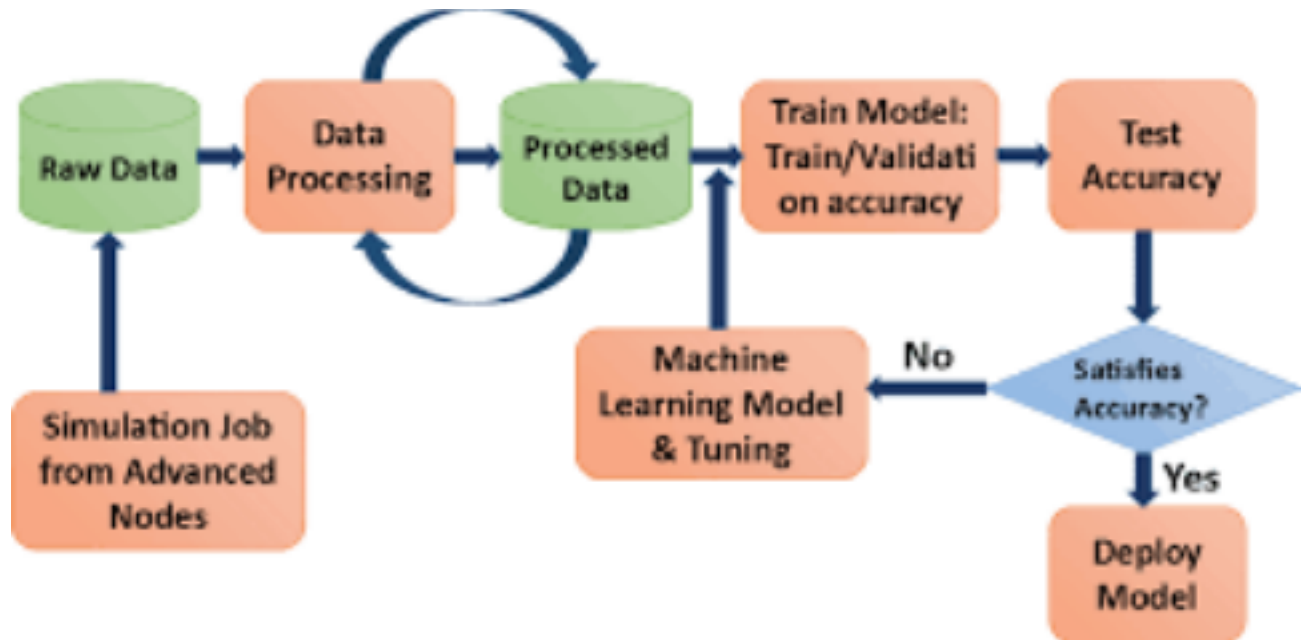


Fig-2

Advantages of Machine Learning

Machine learning offers several advantages that make it a powerful and valuable tool in various fields.

Here are some of the key advantages of machine learning:

- 1.Ability to handle large and complex datasets: Machine learning algorithms can effectively process and analyze large volumes of data, including structured and unstructured data. This enables organizations to leverage the vast amounts of data available to gain insights and make data-driven decisions.
- 2.Automation and efficiency: Machine learning automates repetitive tasks and processes, reducing the need for manual intervention. This leads to increased efficiency, faster decision making, and reduced human error. Tasks such as data entry, pattern recognition, and anomaly detection can be performed accurately and at scale.
- 3.Improved accuracy and predictive power: Machine learning models can discover patterns and relationships in data that may not be easily identifiable by humans. By learning from historical data, machine learning algorithms can make accurate predictions and generate valuable insights. This can be particularly useful in fields such as finance, healthcare, and marketing.
- 4.Adaptability and scalability: Machine learning models can adapt and improve their performance over time as they receive new data. They can learn from new examples and adjust their parameters to better fit the data distribution. Additionally, machine learning models can be scaled up or down to handle varying workloads and accommodate growing datasets.

5. Handling complex and non-linear relationships: Machine learning algorithms are capable of capturing complex and non-linear relationships between variables. They can identify intricate patterns, dependencies, and interactions in the data, leading to more accurate predictions and insights.

6. Personalization and recommendation systems: Machine learning algorithms can analyze user behavior, preferences, and historical data to provide personalized recommendations and experiences. This is commonly seen in applications such as product recommendations, movie suggestions, and targeted advertising.

7. Extraction of valuable insights: Machine learning can extract valuable insights and knowledge from vast amounts of data, even in cases where the underlying patterns are not explicitly known. This can uncover hidden patterns, correlations, and trends that can be leveraged for business intelligence and decision-making.

8. Automation of complex tasks: Machine learning can automate complex tasks that traditionally require human expertise. For example, natural language processing algorithms can automatically analyze and classify text, enabling applications like chatbots and sentiment analysis.

9. Continuous learning and improvement: Machine learning models can be continuously updated and improved as new data becomes available. This allows the models to adapt to changing conditions and maintain their accuracy and relevance over time.

10. Exploration of uncharted territories: Machine learning can be applied to explore and analyze new domains and data types. It can uncover insights and patterns that were previously unknown, leading to discoveries and advancements in various scientific and research fields.

These advantages of machine learning make it a powerful tool with wide-ranging applications across industries, enabling organizations to make better decisions, automate processes, and gain valuable insights from data.

1.1.2 TRANSFER LEARNING

Transfer learning is a machine learning technique that allows knowledge learned from one task to be transferred and applied to a different but related task. Instead of training a model from scratch on a new task, transfer learning leverages pre-trained models that have already been trained on large amounts of data and have learned useful feature representations.

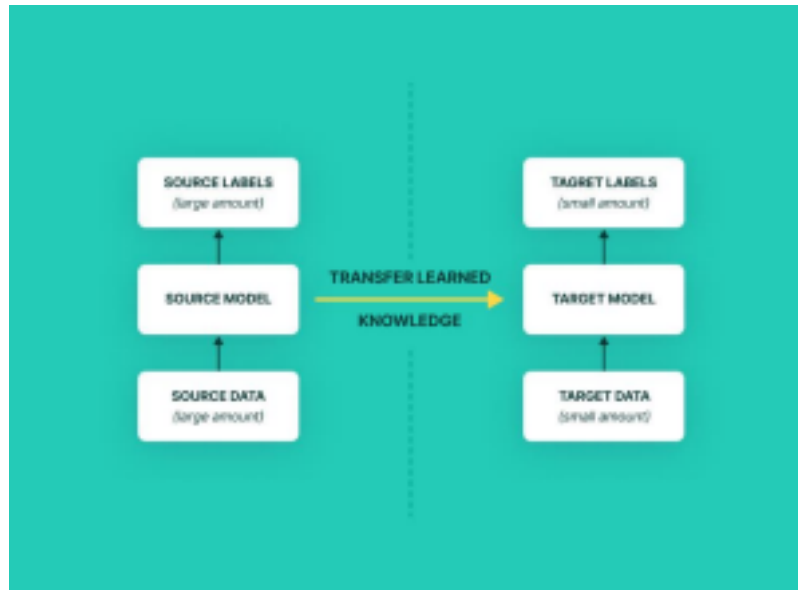


Fig3: Working process of Transfer Learning

Here's how transfer learning typically works:

1.Pre-training: A model, often a deep neural network, is trained on a large dataset and a specific task. This initial training is typically done on a source task that is related to the target task for which transfer learning is intended. For example, a model trained on a large dataset for image classification may have learned to recognize various low-level features, shapes, or textures.

2.Feature extraction: After pre-training, the learned model contains feature extraction layers that have captured meaningful and generic features from the source task. These layers serve as a feature extractor for the target task. The input data is passed through these layers to extract relevant features, which can be seen as a high-level representation of the input data.

3.Fine-tuning: The extracted features are then used as input to train a new set of layers, called the task-specific layers or the classifier layers. These layers are added on top of the pre-trained model, and their parameters are initialized randomly. The entire model, including the pre-trained layers and the new task-specific layers, is then fine-tuned or trained using the labeled data specific to the target task.

1.1.3 TECHNIQUES

Data analysis techniques are methodologies and approaches used to analyze and interpret data to uncover insights, patterns, and trends. Here are some common data analysis techniques: **Descriptive Statistics:** Descriptive statistics involve summarizing and describing the main characteristics of a dataset, such as measures of central tendency (mean, median, mode) and measures of variability (standard deviation, range).

Inferential Statistics: Inferential statistics are used to make inferences and draw conclusions about a population based on a sample. Techniques such as hypothesis testing, confidence intervals, and regression analysis are commonly used in inferential statistics.

Exploratory Data Analysis (EDA): EDA is an approach to analyze and visualize data to understand its underlying patterns, distributions, and relationships. It involves techniques such as data visualization, summary statistics, and data mining to gain insights and generate hypotheses.

Data Mining: Data mining refers to the process of discovering patterns and relationships in large datasets. It involves techniques such as association rule mining, classification, clustering, and anomaly detection to extract valuable information from the data.

Machine Learning: Machine learning algorithms are used to build predictive models that can learn from data and make predictions or decisions without being explicitly programmed. Techniques such as regression, decision trees, random forests, support vector machines, and neural networks are commonly used in machine learning.

Time Series Analysis: Time series analysis is used to analyze data points collected over time to identify patterns, trends, and seasonality. Techniques such as moving averages, autoregressive integrated moving average (ARIMA) models, and exponential smoothing are used to forecast future values based on historical data.

Text Mining: Text mining techniques are used to extract meaningful information and insights from unstructured text data. Natural Language Processing (NLP) algorithms are applied to tasks such as sentiment analysis, topic modeling, text categorization, and named entity recognition.

Predictive Analytics: Predictive analytics uses historical data and statistical modeling techniques to make predictions about future outcomes. It involves techniques such as regression analysis, time series forecasting, and machine learning algorithms to forecast trends and make informed decisions.

Data Visualization: Data visualization techniques are used to present data visually through charts, graphs, maps, and dashboards. Effective data visualization helps to communicate patterns, trends, and insights in a more understandable and compelling way.

Spatial Analysis: Spatial analysis techniques are used to analyze data with a geographic component. It involves mapping, spatial statistics, and spatial modeling to uncover patterns and relationships in spatial data.

1.2 Existing System

In data analysis, there are several existing systems and tools that are widely used to process, analyze, and visualize data. Here are some of the prominent existing systems in data analysis: **1. Spreadsheet**

Software: Spreadsheet software such as Microsoft Excel, Google Sheets, and LibreOffice Calc are commonly used for basic data analysis tasks. They provide functionalities like sorting, filtering, and performing calculations on data.

2.Relational Database Management Systems (RDBMS): RDBMS systems like MySQL, PostgreSQL, and Oracle are widely used to store and manage structured data. They provide SQL (Structured Query Language) interfaces to perform data querying, aggregation, and manipulation operations. **3.Statistical Software:** Statistical software packages like R, SAS, and SPSS are extensively used in data analysis and statistical modeling. These tools offer a wide range of statistical techniques, data visualization capabilities, and data manipulation functions.

4.Business Intelligence (BI) Tools: BI tools like Tableau, Power BI, and QlikView are used to explore, visualize, and analyze data to gain insights and make data-driven decisions. These tools often have interactive dashboards, data visualization capabilities, and advanced analytics features. **5.Data Mining Tools:** Data mining tools such as RapidMiner, KNIME, and Weka are used for discovering patterns, relationships, and insights from large datasets. These tools employ various data mining techniques, including classification, clustering, association rule mining, and predictive modeling. **6.Machine Learning Libraries and Frameworks:** Libraries and frameworks like scikit-learn, TensorFlow, and PyTorch provide a wide range of machine learning algorithms and tools for building and deploying machine learning models. These tools offer functionalities for data preprocessing, feature selection, model training, and evaluation.

1.2.1 Drawbacks of Existing System

While existing systems in data analysis provide valuable functionalities, they also have certain drawbacks that can impact their effectiveness and efficiency. Here are some common drawbacks of the existing systems:

1.Limited Scalability: Some existing systems may have limitations in handling large-scale datasets or processing data in real-time. As data volumes continue to grow, scalability becomes a significant concern, and traditional systems may struggle to handle the increasing data sizes and processing demands.

2.Complexity and Learning Curve: Certain data analysis systems, particularly those that involve programming or advanced statistical techniques, can have a steep learning curve. Users without a strong technical background may find it challenging to utilize the full potential of these systems and may require additional training or expertise.

3.Lack of Flexibility and Customization: Off-the-shelf data analysis systems may not always meet the specific needs and requirements of every organization or individual user. Customization options might be limited, leading to constraints in tailoring the system to unique use cases or specific data analysis workflows.

4.High Cost: Some advanced data analysis systems, such as commercial statistical software or business intelligence tools, can be expensive, especially for small businesses or individuals. The cost of licenses, subscriptions, and additional modules can be a barrier to access and utilization.

5.Maintenance and Updates: Managing and maintaining existing data analysis systems can be time-consuming and resource-intensive. Software updates, bug fixes, and compatibility issues may require dedicated efforts from IT teams or users, impacting the overall productivity and stability of the system.

6.Integration Challenges: Integrating different data analysis systems or tools with existing infrastructure or data sources can be complex and may require additional technical expertise. Incompatibilities between systems or difficulties in data interoperability can hinder the seamless flow of data and insights across different platforms.

1.3 Motivation & Objectives

1.3.1 Motivation

Motivating your staff or team is a great way to drive performance results and improve workplace morale. With continued motivation, you can also help foster continued productivity and ensure the output of high-quality work in the long-term. Understanding how to motivate you and those around you can help ensure the future success of your company and allow everyone to feel a sense of job satisfaction. In this article, we define motivational skills, outline the importance of motivation in the workplace, list the steps for choosing a motivational technique.

Objectives:

1. Gain insights into market trends and patterns.
2. Identify profitable trading opportunities.
3. Assess and manage risks associated with trades.
4. Improve decision-making and optimize trading strategies.
5. Enhance overall trading performance and profitability'.

Problem Statement

The project is to track and analyze financial data to determine the profitability or loss of a business over a specified period. By examining key financial metrics and performance indicators, we aim to provide insights and actionable recommendations to optimize business operations and improve financial outcomes

CHAPTER – 2

2. SOFTWARE AND HARDWARE REQUIREMENTS

2.1 SOFTWARE REQUIREMENTS

Operating System: Windows

Programming Language: Python

Modules Required: Latest version of Numpy, Pandas, Excel, Matplotlib.

Datasets: Dataset is being created using the pandas and

IDE's: Google Collab

2.2 HARDWARE REQUIREMENTS

Processor: Corei3 or higher / Ryzen-3 or higher

RAM: Minimum 4GB or higher

Hard disc: Minimum of 512GB

GPU SIZE: Minimum 4GB

CHAPTER– 3

DESIGN

3.1 METHODOLOGY

3.1.1 DATA SET GENERATION

Test data is the documented form which is to be used to check the functioning of a software program. It is the collection of data that affects or is affected due to the implementation of a specific module. Test data can be categorized into two categories that include positive and negative test data. Positive test data is used to validate whether a specific input for a given function leads to an expected result. Negative testing is done to check a program's ability to handle unusual and unexpected inputs.

Test data generation is another essential part of software testing. It is a process in which a set of data is created to test the competence of new and revised software applications. This can either be the actual data that has been taken from the previous operations or a set of artificial data designed specifically for this purpose. Generally, test data is generated in sync with the test case for which it is intended to be used. There are multiple ways in which test data can be generated.

3.1.2 Attributes in Trading Data Analysis

- ❖ **Date:-** In trading data analysis, a date represents a timestamp when a particular market event or transaction occurred.
- ❖ **Script_Id:-** Script ID is a unique identifier assigned to individual financial instruments or securities, enabling their identification and tracking throughout the analysis process.
- ❖ **Sector:-** The sector represents the classification of companies or financial instruments into distinct industry groups, aiding in comparative analysis and identifying sector-specific trends.
- ❖ **Exchange:-** It represents the marketplace where financial instruments are bought and sold, providing the foundation for trading data analysis.
- ❖ **Type:-** It represents the classification of trading data, enabling analysis based on different attributes such as buy or sell
- ❖ **Quantity:-** It represents the numerical amount or volume of financial instruments traded within a given time period, providing insights into market liquidity and trading activity.
- ❖ **Broker Name:-** Brokername, allowing for the identification and analysis of trading activities conducted by different brokers in the market.
- ❖ **Brokerage_fee:-** It represents the transaction cost incurred by traders for executing trades, influencing profitability and trade analysis.

- ❖ **Gst:-** GST (Goods and Services Tax) represents the value-added tax applied to trading transactions, impacting the overall cost structure and financial analysis of trades.
- ❖ **STT:-** STT (Securities Transaction Tax) represents a tax imposed on securities transactions, impacting trading costs and influencing trading data analysis and profitability assessments.
- ❖ **SEBI:-** SEBI (Securities and Exchange Board of India) represents the regulatory authority overseeing securities markets in India.
- ❖ **Stamp duty:-** Stamp duty specifies the tax levied on certain types of transactions, such as the purchase or transfer of securities.
- ❖ **Order number:-** Order number (order number) specifies a unique identifier assigned to each trading order.
- ❖ **Trade_Name:-** Trade name excels in trading data analysis, leveraging insights and patterns to inform strategic trading decisions.
- ❖ **Buy price:-** It specializes in trading data analysis, providing insights on optimal buying prices for profitable trading decisions.
- ❖ **Sell price:-** It specializes in trading data analysis, delivering insights on optimal selling prices to maximize trading profitability.
- ❖ **Day high:-** It represents the highest price reached by a security or asset within a specific trading day in trading data analysis.
- ❖ **Day low:-** It represents the lowest price reached by a security or asset within a specific trading day in trading data analysis.
- ❖ **Open price:-** It represents the initial price at which a security is traded at the beginning of a trading session in trading data analysis.
- ❖ **Person Name:-** It specifies the name of the person.
- ❖ **PAN Card:-** A permanent account number is a ten-character alphanumeric identifier, issued in the form of a laminated "PAN card", by the Indian Income Tax Department, to any person who applies for it or to whom the department allots the number without an application.
- ❖ **Account number:-** It is a unique number. The account number is different for every account holder; no two banks will have the same account number.

These Attributes are used to determine the profitability are loss of a business over a specified period.

3.1.3 STEPS IN DATA ANALYSIS

Steps Followed in Trading Data Analysis

- Data Collection
- Data Pre Processing
- Data Analysis
- Data Visualization

Data preprocessing is an important step in the data mining process. It refers to the cleaning, transforming, and integrating of data in order to make it ready for analysis. The goal of data preprocessing is to improve the quality of the data and to make it more suitable for the specific data mining task.

Data preprocessing is an important step in the data mining process that involves cleaning and transforming raw data to make it suitable for analysis. Some common steps in data preprocessing include:

Data Cleaning: This involves identifying and correcting errors or inconsistencies in the data, such as missing values, outliers, and duplicates. Various techniques can be used for data cleaning, such as imputation, removal, and transformation.

Data Integration: This involves combining data from multiple sources to create a unified dataset. Data integration can be challenging as it requires handling data with different formats, structures, and semantics. Techniques such as record linkage and data fusion can be used for data integration.

Data Transformation: This involves converting the data into a suitable format for analysis. Common techniques used in data transformation include normalization, standardization, and discretization. Normalization is used to scale the data to a common range, while standardization is used to transform the data to have zero mean and unit variance. Discretization is used to convert continuous data into discrete categories.

Data Reduction: This involves reducing the size of the dataset while preserving the important information. Data reduction can be achieved through techniques such as feature selection and feature extraction. Feature selection involves selecting a subset of relevant features from the dataset, while feature extraction involves transforming the data into a lower-dimensional space while preserving the important information.

Data Discretization: This involves dividing continuous data into discrete categories or intervals. Discretization is often used in data mining and machine learning algorithms that require categorical data. Discretization can be achieved through techniques such as equal width binning, equal frequency binning, and clustering.

Data Normalization: This involves scaling the data to a common range, such as between 0 and 1 or -1 and 1. Normalization is often used to handle data with different units and scales. Common normalization techniques include min-max normalization, z-score normalization, and decimal scaling.

Data preprocessing plays a crucial role in ensuring the quality of data and the accuracy of the analysis results. The specific steps involved in data preprocessing may vary depending on the nature of the data and the analysis goals.

3.2 ARCHITECTURE

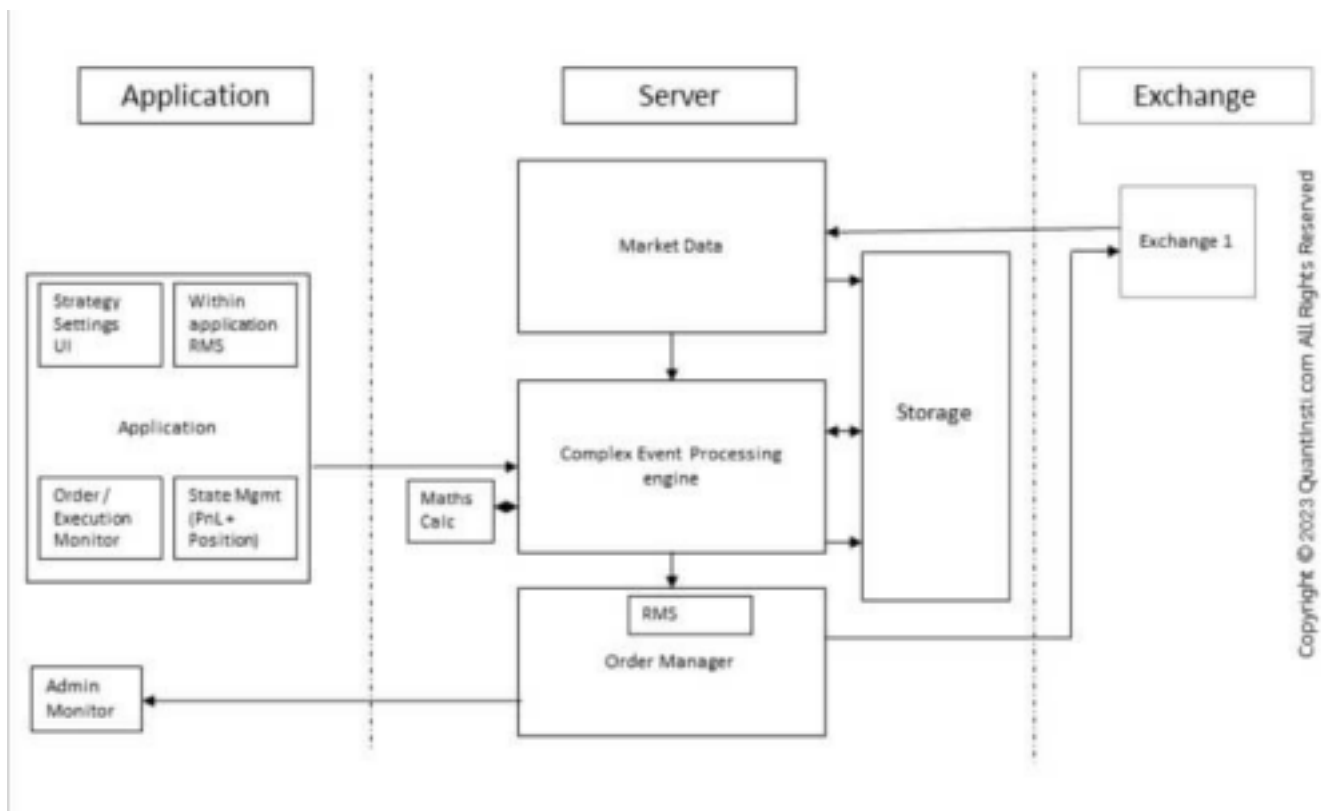


Figure 3.2 Architecture

CHAPTER – 4

4.TESTING AND EVALUATION

TESTING:-

Testing refers to the evaluation process of a machine learning model or data analysis pipeline to assess its performance, accuracy, and reliability. The main goal is to validate the model's predictions or analysis results by comparing them against known or labeled data. This comparison helps measure the effectiveness of the model and identify areas that require improvement.

During testing, a separate dataset called the testing dataset is used. This dataset should accurately represent real-world scenarios and ideally be independent of the data used for training the model. To prepare for testing, the original dataset is typically split into training and testing datasets using machine learning algorithms. The training data is used to train the model on specific features, enabling it to learn patterns and make predictions based on historical data.

Once the model is trained, it can be used to predict values for the testing dataset. The predicted values are then compared to the actual values present in the testing dataset. This comparison can be visualized using libraries such as seaborn or matplotlib to analyze the relationship between the actual and predicted values.

EVALUATION :-

Testing involves evaluating a model's performance using various metrics such as F-score, accuracy, mean square error, and root mean square error. These metrics are commonly available in libraries like sklearn. By assessing the model's performance, we can determine the effectiveness of the dataset in addressing real-time problems. Additionally, testing helps us understand the relationships and dependencies between variables and independent attributes present in the dataset. In summary, testing allows us to measure the efficiency of the dataset and analyze the impact of different variables on the model's predictions.

CHAPTER- 5

CHALLENGES FACED

Trading analysis projects can face various challenges, depending on the specific context and objectives of the project. Here are some common challenges faced in trading analysis projects: **Data Quality and Availability:** Obtaining high-quality and reliable data is crucial for accurate trading analysis. However, sourcing and cleaning the data can be challenging, as financial data can be fragmented, inconsistent, or contain errors. Moreover, historical data availability may vary across different markets and instruments.

Data Volume and Complexity: Financial markets generate massive amounts of data, including price data, order book data, news feeds, and social media sentiment. Dealing with large volumes of data requires robust infrastructure and efficient data processing techniques. Moreover, integrating diverse data sources and handling complex data structures can be challenging.

Strategy Development and Validation: Developing profitable trading strategies requires domain expertise, statistical analysis skills, and an understanding of market dynamics. Designing effective trading algorithms and validating them against historical and real-time data is a complex task. Strategy development often involves back testing, parameter optimization, and risk management considerations.

Market Dynamics and Volatility: Financial markets are influenced by various factors such as economic indicators, geopolitical events, and investor sentiment. Market conditions can change rapidly, leading to increased volatility and unpredictable behavior. Incorporating these dynamics into trading models and managing risk in volatile markets pose significant challenges.

Overfitting and Model Complexity: When designing trading models, there is a risk of overfitting, where the model performs well on historical data but fails to generalize to new data. It is crucial to strike a balance between model complexity and robustness to avoid overfitting. Simplifying models while maintaining predictive power is a challenge in trading analysis.

CHAPTER – 6

Exploratory Data Analysis on Data Set

EDA is a crucial step in the data analysis process, as it allows you to understand the structure, patterns, and relationships within your data. To perform EDA, we'll follow a series of steps

Step 1: Import Libraries

First, we need to import the necessary libraries for data analysis and visualization. Some commonly used libraries are Pandas, NumPy, and Matplotlib/Seaborn for plotting.

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

Step 2: Load the Dataset

Next, we'll load the dataset into a Pandas DataFrame. Make sure the dataset file is in the same directory as your Python script or notebook.

```
# Load the dataset
df = pd.read_csv('your_dataset.csv')
```

Step 3: Explore the Data

Now that the dataset is loaded, let's explore its contents and gain some initial insights.

```
# Display the first few rows of the dataset
print(df.head())
# Check the dimensions of the dataset
print(df.shape)
```

Step 4: Handle Missing Data

If there are missing values in the dataset, it's essential to handle them appropriately. Here's how you can check for missing data and handle it:

```
# Check for missing values
print(df.isnull().sum())
# Handle missing values (e.g., fill with mean, median, or drop rows/columns)
df.fillna(df.mean(), inplace=True) # Replace missing values with mean
# Alternatively, you can drop rows or columns with missing values
df.dropna(inplace=True) # Drop rows with missing values
```

Step 5: Data Visualization

Visualizations help us understand the data better and identify patterns or outliers. Here are a few common types of plots to create.

Step 6: Correlation

the statistical relationship between two variables, aiding in understanding their mutual influence and potential predictive power. It helps identify patterns and dependencies, supporting feature selection and model performance assessment.

Syntax:-`dat.corr()`

Step 7 : covariance

Covariance is a statistical measure that quantifies the relationship between two variables **Syntax:-**`dat.cov()`

DATA SET

```
dataset=pd.DataFrame(data,columns=['DATE','SCRIPT ID','SECTOR','EXCHANGE','QUANTITY','TYPE','BROKER_NAME','ORDERNO','TRADE ','_NAME','PERSON_NAME','PAN_NO','UCC_NO'])
```

```
dataset1=pd.DataFrame(Data,columns=['OPENPRICE','DAYHIGH','DAYLOW','BUYPRICE','SELLPRICE','GOVERNMENT_SERVICE_TAX(GST)','SECURITIES_TRANSCATION_TAX(STT)','SECURITIES_AND_EXCHANGE_BOARD_OF_INDIA(SEBI)','STAMPDUTY','BROKERAGE_FEE','empty'])
```

BARGRAPH

CODE:

```
w=0.1985
x=dfy
bar1=np.arange(len(dfy))
bar2=[i+w for i in bar1]
bar3=[i+w for i in bar2]
plt.bar(bar1,dfx,width=w,label='total_buy_price')
plt.bar(bar2,df3,width=w,label='total_sell_price')
plt.bar(bar3,df4,width=w,label='net')
plt.xticks(bar1+w,x,size=10,rotation=90)
plt.xlabel('traders',fontsize=20,color='red',alpha=0.6)
plt.ylabel('stocks predicted',fontsize=20,color='red',alpha=0.6)
plt.title('traders stock predition',pad=10)
plt.legend(edgecolor='black')
plt.show()
```

OUTPUT:

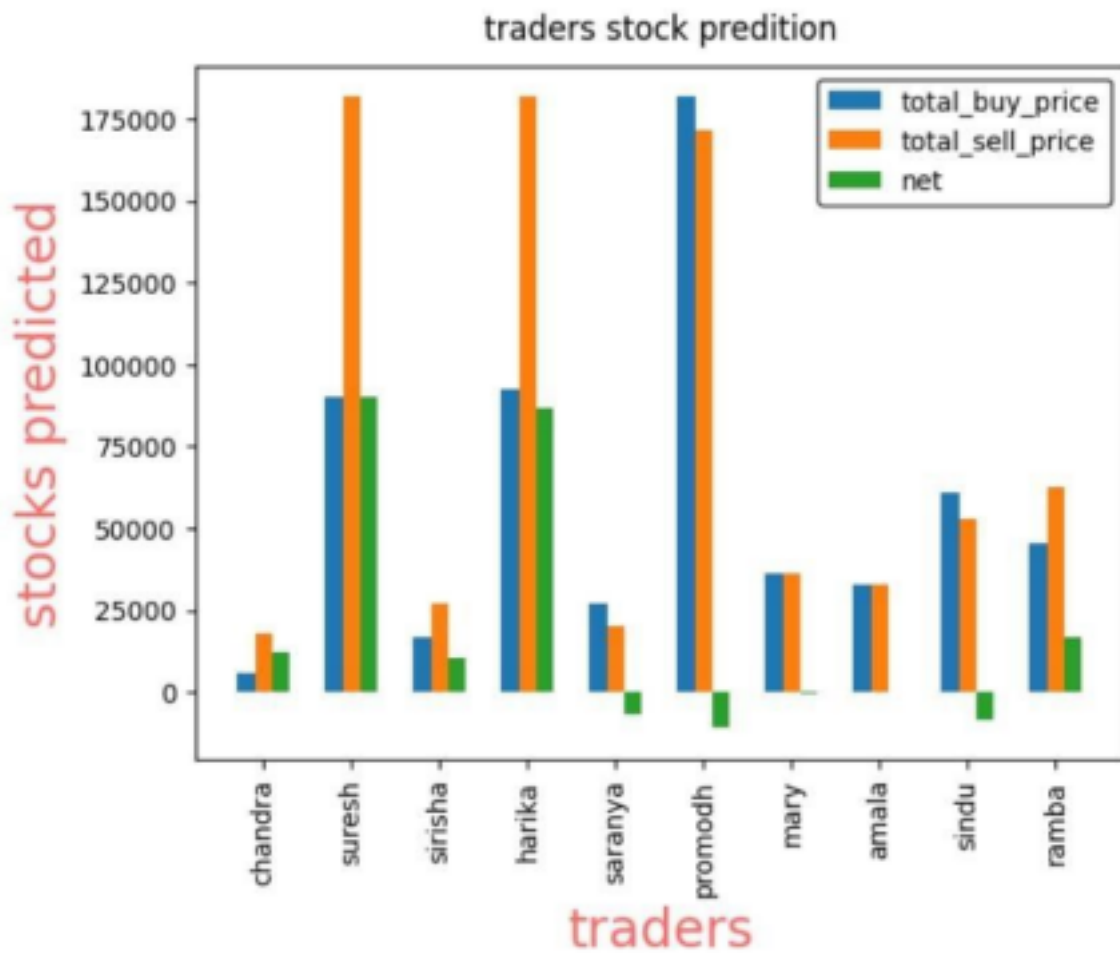


Fig-5:-Trade stock predection

The above bar graph determines the profitability or loss of a particular person in a business over a specified period

CORRELATION

```
sns.heatmap(Dft.corr())  
plt.plot()
```

OUTPUT:

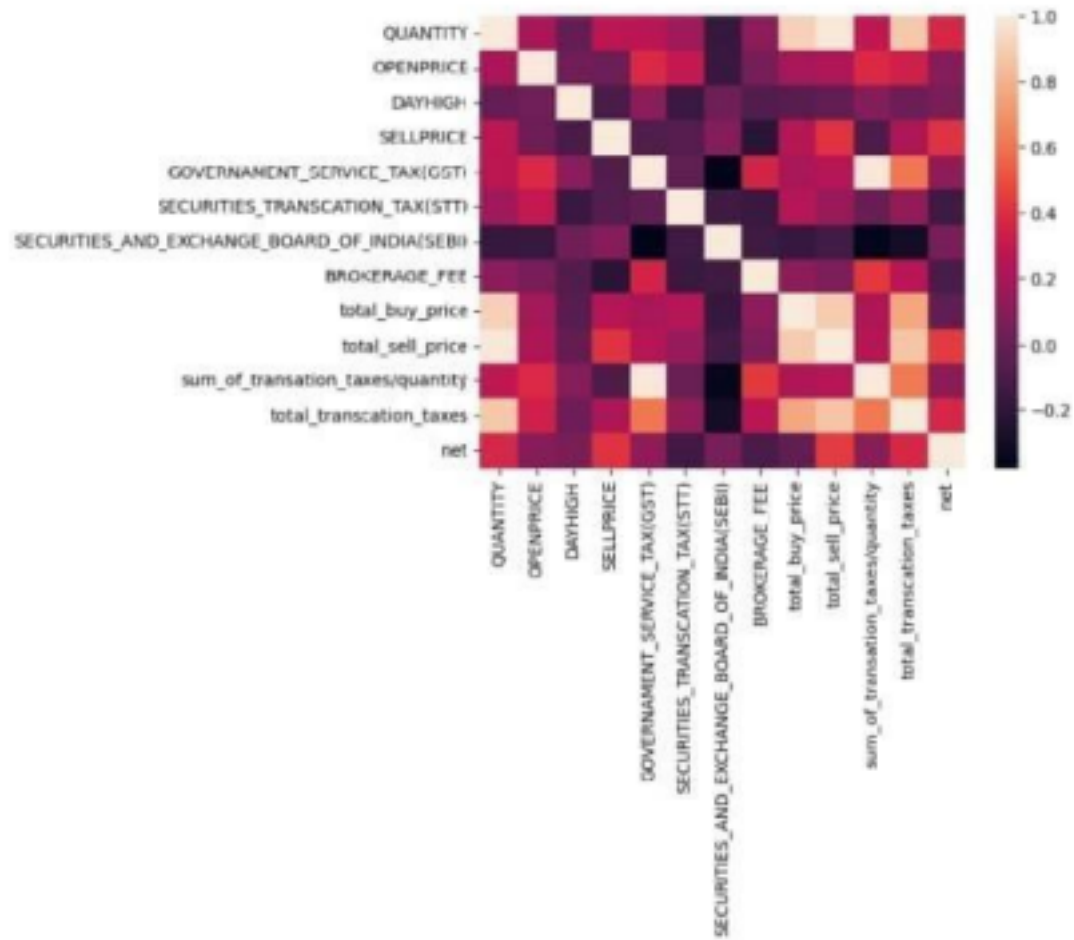


Fig-6:-correlation of Dataset

COVARIANCE

```
ns.heatmap(Dft.cov())  
plt.plot()
```

OUTPUT:

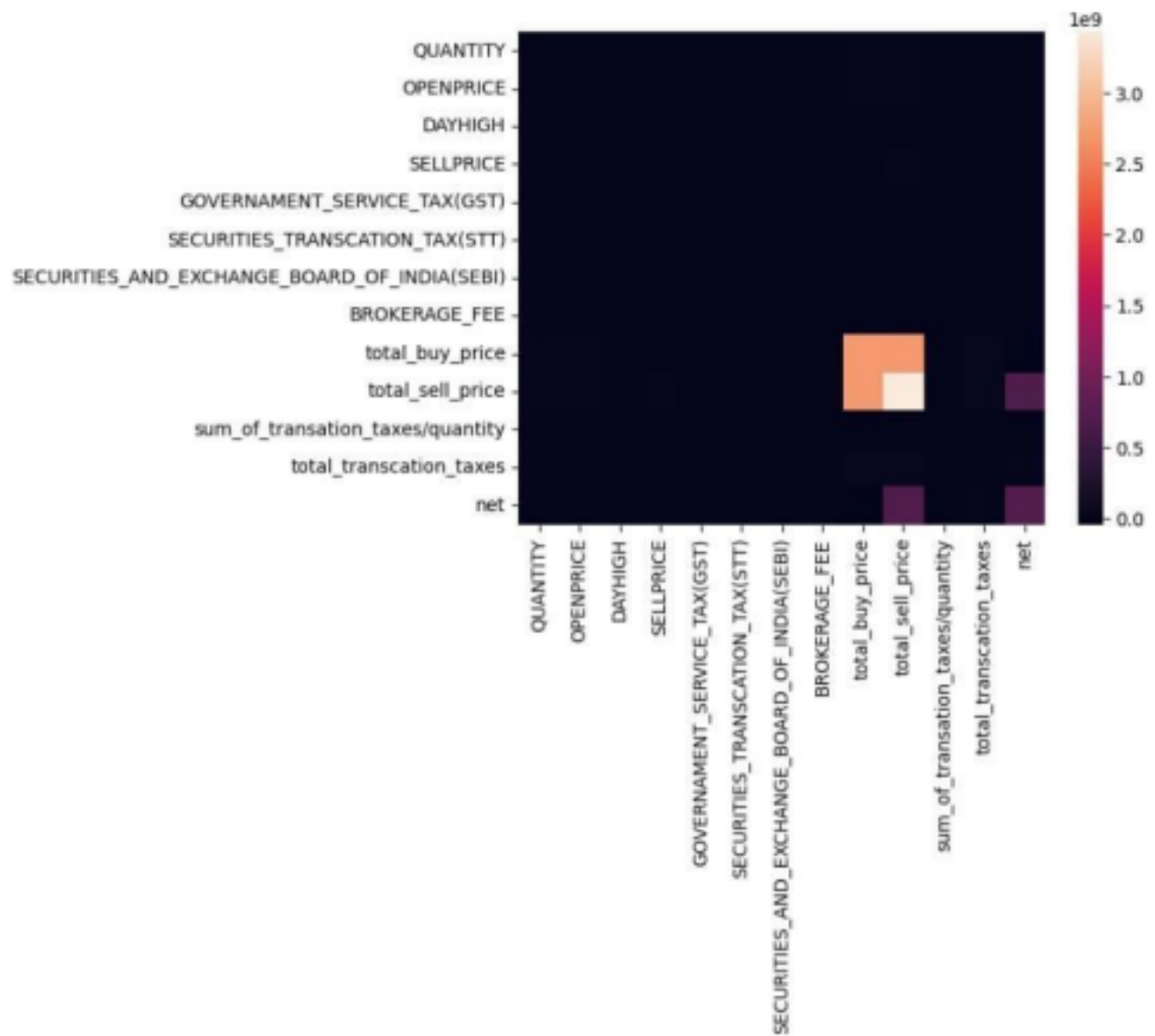


Fig:-Covariation of Dataset

CHAPTER – 7

7. CONCLUSION

In conclusion, the project on trading data analysis with the objective of tracking profit or loss in trading has successfully utilized data analysis techniques to gain insights into market trends, evaluate trading strategies, and measure financial performance. Through a well-defined methodology, including data collection, preprocessing, exploratory data analysis, statistical modeling, and performance evaluation, the project has provided valuable information for traders and investors to make informed decisions and optimize their trading activities.

By employing software tools and technologies specifically tailored for data analysis, such as programming languages (Python or R), data analysis libraries (Pandas, NumPy, etc.), visualization tools, and possibly algorithmic trading platforms or APIs, the project has effectively processed and analyzed trading data to calculate profit or loss.

The methodology involved collecting relevant trading data, cleaning and preprocessing it to ensure data quality, and conducting exploratory data analysis to identify patterns, trends, and anomalies. Statistical modeling techniques, such as regression analysis or time series analysis, were applied to model the relationship between trading variables and financial outcomes. Trading strategies were developed and back tested using historical data to assess their profitability and risk.

The project's outcome provides traders with a comprehensive view of their trading performance, including key metrics such as overall profit or loss, risk-adjusted returns, win/loss ratios, and drawdowns. These insights allow traders to evaluate the effectiveness of their strategies, identify areas for improvement, and make informed adjustments to their trading approach.

It is important to note that the project's success is contingent upon the availability of accurate and reliable trading data, the utilization of appropriate analytical techniques, and the proper interpretation of the results. Additionally, continuous monitoring and analysis of trading performance over time enable traders to adapt to changing market conditions and refine their strategies.

In summary, the project on trading data analysis to track profit or loss has provided traders with valuable insights into their trading activities. By leveraging data analysis techniques and methodologies, traders can make informed decisions, optimize their trading strategies, and ultimately improve their financial performance in the dynamic and competitive world of trading.

CHAPTER – 8

8. REFERENCES

THIS IS OUR GOOGLE COLAB LINK:

<https://colab.research.google.com/drive/1eVy3L93zeMLsZbDbozwjpM7vzqTYjBXJ?usp=sharing>

Based on below links we gather information in order to understand the insight of the problem

<https://www.geeksforgeeks.org/python-programming-language>

https://www.w3schools.com/python/python_ml_train_test.asp

CHAPTER – 9

9.ACTIVITY LOG

ACTIVITY LOG FOR THE FIRST WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Introduction about programming		
Day - 2	Introduction to python		
Day – 3	Features of python		
Day – 4	Data types-pre defined, text type, numeric type, sequence type, mapping type, set type, Boolean type, binary type, none type.		
Day – 5	Operators, arithmetic, operators, assignment operators, comparison operators, logical operators, identity operators, membership operators, bit wise operators,		
Day –6	Conditional statements		

WEEKLY REPORT

WEEK – 1 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE SECOND WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	simple if, if else, elif, ladder		
Day - 2	Looping statements		
Day – 3	While loop, for loop		
Day – 4	Functions- definition, declaration, call		
Day – 5	types of functions, function with parameters		
Day –6	Lambda		

WEEKLY REPORT

WEEK – 2 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE THIRD WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Arrays, creation of an array		
Day - 2	modules, format specifications		
Day – 3	Numpy, uses of numpy		
Day – 4	creating a numpy array,dimensions of arrays		
Day – 5	Numpy array- indexing, slicing, reshaping		
Day –6	Numpy array- splitting, sorting, join, filtering		

WEEKLY REPORT

WEEK – 3 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE FOURTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Pandas-main uses of pandas		
Day - 2	pandas package, pandas applications		
Day – 3	Creating a pandas		
Day – 4	operations-accessing the elements, indexing, selecting		
Day – 5	Data frames, syntax of data frames		
Day –6	creation of data frames		

WEEKLY REPORT

WEEK – 4 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE FIFTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Data frames with dictionary		
Day - 2	column and row operation		
Day – 3	re indexing for columns and row		
Day – 4	Head and tails in pandas		
Day – 5	sorting in pandas		
Day –6	indexing and selecting data with pandas		

WEEKLY REPORT

WEEK – 5 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE SIXTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Computational and statical tools		
Day - 2	correlation, covariance		
Day – 3	Average, working on missing data		
Day – 4	Mining Day		
Day – 5	knowledge discovery of data base		
Day –6	Data preprocessing- data cleaning, data transformation, data reduction		

WEEKLY REPORT

WEEK – 6 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE SEVENTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Data transformation, normalization		
Day - 2	Attribute selection, discretization		
Day – 3	Concept of hierarchy, data reduction, data correct\not		
Day – 4	Multidimensional data modelling, prediction		
Day – 5	Classification, clustering		
Day –6	Analyzing data, viewing data, information about data		

WEEKLY REPORT

WEEK – 7 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE EIGHTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Data munging		
Day - 2	Data filtering		
Day – 3	Missing data		
Day – 4	Aggregation		
Day – 5	Grouping data		
Day –6	Empty cell,wrong format remove duplicates		

WEEKLY REPORT

WEEK – 8 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE NINE WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	What is machine learning, well posed learning problem		
Day - 2	Design a learning system, step to design learning system		
Day – 3	Perspective & issues in machine learning		
Day – 4	Inadequate training data		
Day – 5	Poor qualifying data		
Day –6	Non representation training data		

WEEKLY REPORT

WEEK – 9 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE TENTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Over fitting or under fitting data		
Day - 2	Monitering & maintenance data		
Day – 3	Data bias		
Day – 4	Fitting		
Day – 5	Concept of learning task		
Day –6	Find “s” algorithms		

WEEKLY REPORT

WEEK – 10 (From Dt..... to Dt : Dt)

[illegible]

ACTIVITY LOG FOR THE ELEVEN WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Understanding the key term used for trading data analysis		
Day - 2	Studied the some previous data in some companies and some product		
Day – 3	Data set generation		
Day – 4	Writing coding		
Day – 5	Writing coding		
Day –6	Executing the program & check the errors		

WEEKLY REPORT

WEEK – 11 (From Dt..... to Dt : Dt)

Objective of the Activity Done:

Detailed Report:

[illegible]

ACTIVITY LOG FOR THE TWELVE WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In Charge Signature
Day – 1	Preparing the heat map		
Day - 2	Preparing the power point presentation		
Day – 3	Started documentation		
Day – 4	Searching the information required our project [trading data analysis]		
Day – 5	Attached the all the required videos, bar graph ,& heat map		
Day –6	Editing the documentation		

WEEKLY REPORT

WEEK – 12 (From Dt..... to Dt : Dt)

[illegible]

CHAPTER – 13

Student Self Evaluation of the Short-Term Internship

Student Name: Registration No: Term of Internship: From:

05.03.23 To : 25.06.23

Date of Evaluation:

Organization Name & Address:

Please rate your performance in the following areas:

Rating Scale: Letter grade of CGPA calculation to be provided

1 Oral communication 1 2 3 4 5 2 Written communication 1 2 3 4 5 3 Proactiveness 1 2 3 4 5 4 Interaction ability with community 1 2 3 4 5 5 Positive Attitude 1 2 3 4 5 6 Self-confidence 1 2 3 4 5 7 Ability to learn 1 2 3 4 5 8 Work Plan and organization 1 2 3 4 5 9 Professionalism 1 2 3 4 5 10 Creativity 1 2 3 4 5 11 Quality of work done 1 2 3 4 5 12 Time Management 1 2 3 4 5 13 Understanding the Community 1 2 3 4 5 14 Achievement of Desired Outcomes 1 2 3 4 5 **15 OVERALL PERFORMANCE 1 2 3 4 5**

Date: Signature of the Student

Evaluation by the Supervisor of the Intern Organization

Student Name:

Registration No:

Term of Internship: From: 05.03.23 To :
25.06.23



Date of Evaluation:

Organization Name & Address:

Name & Address of the Supervisor
with Mobile Number

Please rate the student's performance in the following areas:

Please note that your evaluation shall be done independent of the
Student's self-evaluation

Rating Scale: 1 is lowest and 5 is highest rank

1 Oral communication 1 2 3 4 5 2 Written communication 1 2 3 4 5 3 Proactiveness 1 2
3 4 5 4 Interaction ability with community 1 2 3 4 5 5 Positive Attitude 1 2 3 4 5 6
Self-confidence 1 2 3 4 5 7 Ability to learn 1 2 3 4 5 8 Work Plan and organization 1 2 3
4 5 9 Professionalism 1 2 3 4 5 10 Creativity 1 2 3 4 5 11 Quality of work done 1 2 3 4
5 12 Time Management 1 2 3 4 5 13 Understanding the Community 1 2 3 4 5 14
Achievement of Desired Outcomes 1 2 3 4 5 **15 OVERALL PERFORMANCE 1 2 3 4
5**

Date: Signature of the Supervisor

PHOTOS & VIDEO LINKS EVALUATION

Internal & External Evaluation for Semester Internship

Objectives:

- Explore career alternatives prior to graduation.
 - To assess interests and abilities in the field of study.
 - To develop communication, interpersonal and other critical skills in the future job. •
- To acquire additional skills required for the world of work.
- To acquire employment contacts leading directly to a full-time job following graduation from college.

Assessment Model:

- There shall be both internal evaluation and external evaluation
- The Faculty Guide assigned is in-charge of the learning activities of the students and for the comprehensive and continuous assessment of the students.
- The assessment is to be conducted for 200 marks. Internal Evaluation for 50 marks and External Evaluation for 150 marks
- The number of credits assigned is 12. Later the marks shall be converted into grades and grade points to include finally in the SGPA and CGPA.
- The weightings for Internal Evaluation shall be:
 - Activity Log 10 marks
 - Internship Evaluation 30 marks
 - Oral Presentation 10 marks
- The weightings for External Evaluation shall be:
 - Internship Evaluation 100 marks
 - Viva-Voce 50 marks
- The External Evaluation shall be conducted by an Evaluation Committee comprising of the Principal, Faculty Guide, Internal Expert and External Expert nominated by the affiliating

University. The Evaluation Committee shall also consider the grading given by the Supervisor of the Intern Organization.

- Activity Log is the record of the day-to-day activities. The Activity Log is assessed on an individual basis, thus allowing for individual members within groups to be assessed this way. The assessment will take into consideration the individual student's involvement in the assigned work.
- While evaluating the student's Activity Log, the following shall be considered -
 - a. The individual student's effort and commitment.
 - b. The originality and quality of the work produced by the individual student.
 - c. The student's integration and co-operation with the work assigned.
 - d. The completeness of the Activity Log.
- The Internship Evaluation shall include the following components and based on Weekly Reports and Outcomes Description
 - a. Description of the Work Environment.
 - b. Real Time Technical Skills acquired.
 - c. Managerial Skills acquired.
 - d. Improvement of Communication Skills.
 - e. Team Dynamics
 - f. Technological Developments recorded.

MARKS STATEMENT
(To be used by the
Examiners)
INTERNAL ASSESSMENT STATEMENT

Name Of the Student :

Programme of Study :

Year of Study :

Group :

Register No/H.T. No :

Name of the College :

University :

<i>Sl.No</i>	<i>Evaluation Criterion</i>	<i>Maximum Marks</i>	<i>Marks Awarded</i>
1.	Activity Log	10	
2.	Internship Evaluation	30	
3.	Oral Presentation	10	
	GRAND TOTAL	50	

Date: Signature of the Faculty Guide

EXTERNAL ASSESSMENT STATEMENT

Name Of the Student :

Programme of Study :

Year of Study :

Group :

Register No/H.T. No :

Name of the College :

University :

<i>Sl.No</i>	<i>Evaluation Criterion</i>	<i>Maximum Marks</i>	<i>Marks Awarded</i>
1.	Internship Evaluation	80	
2.	For the grading giving by the Supervisor of the Intern Organization	20	
3.	Viva-Voce	50	
	TOTAL	150	
GRAND TOTAL (EXT. 150 M + INT. 50M)		200	

Faculty Guide Internal Expert External Expert Principal (With Seal) (With Seal)