**Project title:** Stock Price Prediction

**Abstract:**

Stock price prediction is a challenging task that involves using historical data andmachine learning techniques to forecast future stock prices. Through the analysis of various factors such as historical trends, volume, technical indicators, and market sentiment, predictive models are developed to estimate the future movement of stock prices. The goal is to provide investors and traders with valuable insights to make informed decisions in the dynamic and unpredictable stock market

**Problem Definition:**

The problem is to build a predictive model that forecasts stock prices based on historical market data. The goal is to create a tool that assists investors in making well-informed decisions and optimizing their investment strategies. This project involves data collection, data preprocessing, feature engineering, model selection, training, and evaluation.

1. Data Collection:

In these project , first step involves collecting historical

Financial market data , including features such as stock’s open high low close prices as well as volume….The more comprehensive and accurate the data, the better the predictions can be . It’s important to ensure the data is clean before using it for training the ml models.

1. Data Preprocessing:

Once the data is collected,it needs to be cleaned and preprocessed. Clean the data by handling missing values, removing outliers and normalizing the features (transforming the data into a suitable format for ml algorithms).Feature engineering techniques can also be applied to extract features from raw data.

1. Data Exploration:

Perform exploratory data analysis(EDA) to understand the characteristics of data. use charts and graphs to visualize the data and calculate statistical measures like averages and correlations. It helps understand the data better and make predictions about future stock prices.

1. Model Selection:

In these selecting a model, I selected a random forest algorithms,

Random forest :Random forest is an ensemble learning algorithm that combines multiple decision trees to make predictions.

It can be used in stock price prediction by utilize historical stock data as input and future stock price as the target variable

1. Model Training:

Split the data into training and testing sets. Train the model using the training data.

1. Model Evaluation:

Once trained the model is evaluated on the testing data to asses its performance

Evaluation metrics for stock price prediction include mean squared error(MSE) root mean squared error (RMSE) mean absolute error(MAE)..

1. Prediction and Validation:

After evaluating the model , it can be used to make predictions on unseen data. The predicted stock prices compared to actual values for validation.

1. Visualization:

Visualizing stock price predictions by plot the actual stock prices as a line graph and overlay the predicted prices as another line. This allows us to visually compare the predicted values with the real data, giving us insights into the accuracy of the model's predictions.

1. Model Deployment:

Deploy the model to a web application in a real-time

1. Monitoring and Maintainance:

Continuously monitor the model’s performance and retrain it periodically with fresh data.Updata the model with new data to keep predictions accurate.