Airlink Stock Price Prediction using Machine Learning

Adina Hira

June 25, 2025

Contents

1 Abstract

This project presents a machine learning-based approach to predict the stock prices of Airlink Communication Ltd, a company listed on the Pakistan Stock Exchange. By analyzing historical stock data, models such as Linear Regression, Support Vector Regressor, and Decision Tree Regressor were used to predict future stock trends. The project involves data preprocessing, visualization, model building, and performance evaluation. Results show that machine learning can effectively identify patterns in stock data to aid in decision-making.

2 Introduction

Stock price prediction is a vital task in financial analysis and investment strategy. This study focuses on Airlink Communication Ltd, aiming to forecast its stock price using historical trading data and machine learning algorithms. The purpose is to evaluate the accuracy of different regression models in predicting future values.

3 Data Description

The dataset contains historical stock data of Airlink with the following attributes:

- Date
- Open, High, Low, Close Prices
- Volume

After importing the CSV file, missing values were handled and the 'Date' column was converted to datetime format.

4 Methodology

4.1 Data Preprocessing

Data cleaning included handling null values and formatting the date. Features were engineered from the 'Date' column such as day, month, and year.

4.2 Exploratory Data Analysis

Visualizations like line plots and scatter plots were used to examine trends and correlations among variables.

4.3 Model Building

Three models were trained:

- Linear Regression

- Support Vector Regressor (SVR)
- Decision Tree Regressor

The dataset was split into training and test sets to evaluate model performance.

5 Results and Evaluation

The models were evaluated using:

- Mean Absolute Error (MAE)
- Mean Squared Error (MSE)
- R-squared (R^2) Score

Among all models, the Decision Tree Regressor gave the best performance in terms of prediction accuracy.

6 Conclusion

This project demonstrates how machine learning techniques can be used for stock price prediction. While the results are promising, future improvements can include hyperparameter tuning, incorporating more technical indicators, and using ensemble models.

7 References

- Scikit-learn Documentation: `https://scikit-learn.org/`
- Matplotlib Documentation: `https://matplotlib.org/`
- Stock Dataset: Pakistan Stock Exchange / Yahoo Finance