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Evaluating The Performance of Machine Learning Algorithms for Stock Forecasting

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Abstract

A variety of time-series statistical and machine learning based forecasting techniques have been developed over the years which can be used for predicted stock prices and trends. In this work, we compare and evaluate the performance of auto-regressive integrated moving average (ARIMA) and Facebook's Prophet time-series forecasting techniques to predict the future trends of eleven randomly selected stocks. The performance of the two methods was compared using the root-mean square error (RMSE) statistic. The results show that the ARIMA method provides more accurate predictions (average RMSE: 27.4) compared to the Prophet method (RMSE: 39.3). Additionally, we compared the predictions from ARIMA and Prophet with TipRanks, an AI based web application which gives future predictions for stocks. On average, the percent difference between ARIMA and TipRanks was 9.4% compared to 11.1% for Prophet vs TipRanks. We have implemented a Python-based tool for stock prediction and forecasting using the Prophet and ARIMA methods.

Keywords: Machine Learning, Forecasting Techniques, Stocks, Trends