

Magnificent Seven Stocks Prediction Analysis

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Independent Study Project

ACENET Microcredential in Advanced Computing

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Outline

Introduction

Method

- ▶ “Magnificent Seven Stocks.”

- ▶ Microsoft
- ▶ Apple
- ▶ Nvidia
- ▶ Alphabet
- ▶ Amazon
- ▶ Meta
- ▶ Tesla

- ▶ Objective

- Method 1:* Predict stock closing price using the history of stock prices.

- Method 2:* Predict stock closing price using the history of **other** stock prices.

- ▶ Compare the prediction methods.

- ▶ ARIMA stands for AutoRegressive Integrated Moving Average.
- ▶ It's a widely used time series analysis technique.
- ▶ Components include AutoRegressive (AR), Integrated (I), and Moving Average (MA).

$$X_t = c + \phi_1 X_{t-1} + \dots + \phi_p X_{t-p} + \theta_1 \epsilon_{t-1} + \dots + \theta_q \epsilon_{t-q} + \epsilon_t \quad (1)$$

Where:

- ▶ X_t : Time series data at time t
 - ▶ c : Constant term
 - ▶ ϕ_1, \dots, ϕ_p : AutoRegressive parameters
 - ▶ $\theta_1, \dots, \theta_q$: Moving Average parameters
 - ▶ ϵ_t : Error term at time t
- ▶ For simplicity Auto Regressive models are considered in this project.
 - ▶ An AR(p) can be formulated as

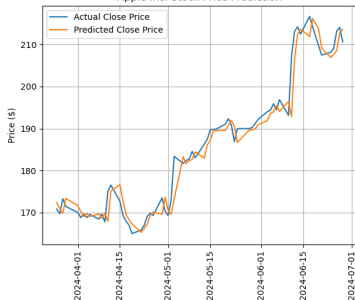
$$X_t = c + \phi_1 X_{t-1} + \dots + \phi_p X_{t-p} + \epsilon_t \quad (2)$$

- ▶ It can be extended to full ARIMA models.

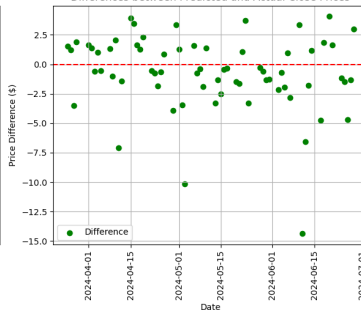
Apple Inc. Stock Price Prediction



Apple Inc. Stock Price Prediction



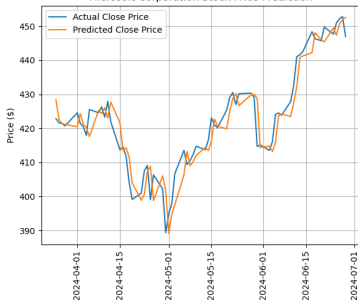
Differences between Predicted and Actual Close Prices



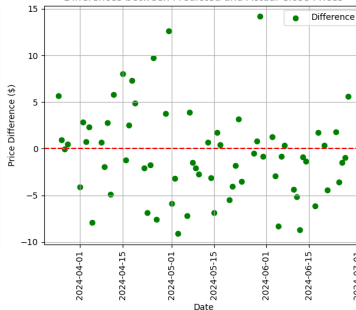
Microsoft Corporation Stock Price Prediction



Microsoft Corporation Stock Price Prediction



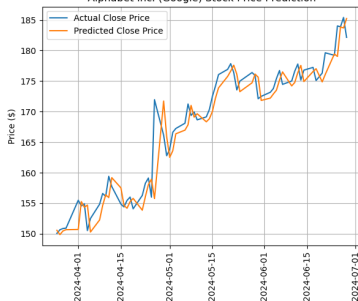
Differences between Predicted and Actual Close Prices



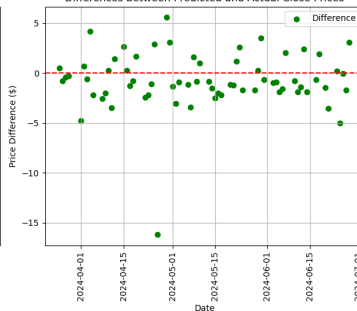
Alphabet Inc. (Google) Stock Price Prediction

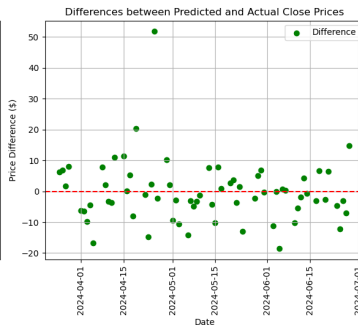
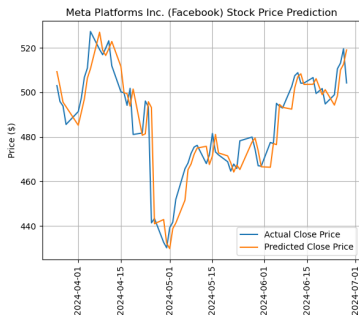
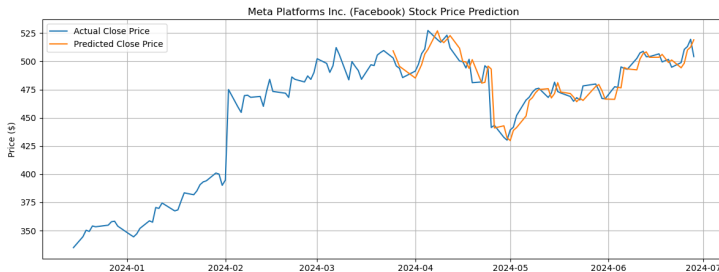


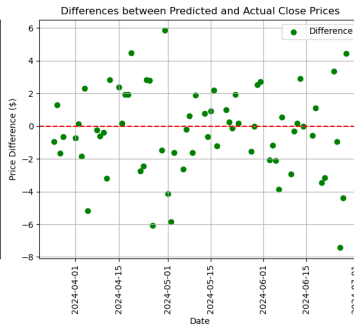
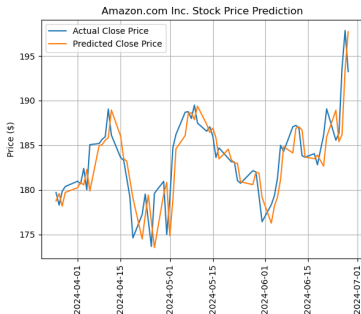
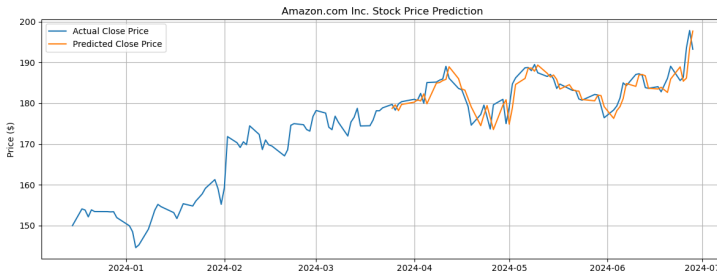
Alphabet Inc. (Google) Stock Price Prediction



Differences between Predicted and Actual Close Prices



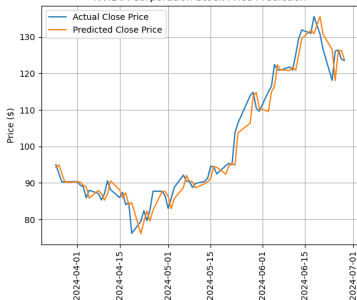




NVIDIA Corporation Stock Price Prediction



NVIDIA Corporation Stock Price Prediction



Differences between Predicted and Actual Close Prices

