

# Optimizing Algorithmic Trading Strategies with Machine Learning

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Commitment Level: 10/10

## Description

The project endeavors to optimize algorithmic trading strategies by employing machine learning models that utilize historical trading data and various technical indicators. The financial market is influenced by numerous factors, making stock price prediction a complex task. By developing a model that can accurately predict stock price movements, traders can optimize their trading strategies, minimize losses, and maximize profits. The project will focus on predicting stock prices and potentially on determining optimal entry and exit points for trades, thereby providing a comprehensive trading strategy.

## Potential Data Set Features

The dataset will incorporate various features related to historical trading data and technical indicators. Features might include opening price, closing price, highest price, lowest price, trading volume, moving averages, Relative Strength Index (RSI), and Moving Average Convergence Divergence (MACD). An example instance of the dataset might look like:

Open Price	Close Price	High Price	Low Price	Volume	5day MA	10day MA	RSI	MAC D	Target Price Movement
150.00	152.50	153.00	149.50	5000	151.00	150.50	60	1.5	Up

\*All features except the target variable are continuous. The target variable "Price Movement" (indicating whether the price will move up or down) is nominal.

## Where Would the Data Set be Gathered and Labeled

Historical trading data can be gathered from various financial platforms and APIs that provide access to historical stock prices and trading volumes. Technical indicators like moving averages, RSI, and MACD will be calculated based on the historical trading data. The target variable, "Price Movement," will be labeled based on the comparison between consecutive closing prices (labeling as "Up" if the price increases and "Down" if it decreases). Data preprocessing will involve handling missing values, outliers, and ensuring data consistency. The dataset will be split into training and testing sets, ensuring that the model is validated on unseen data to evaluate its predictive performance accurately.