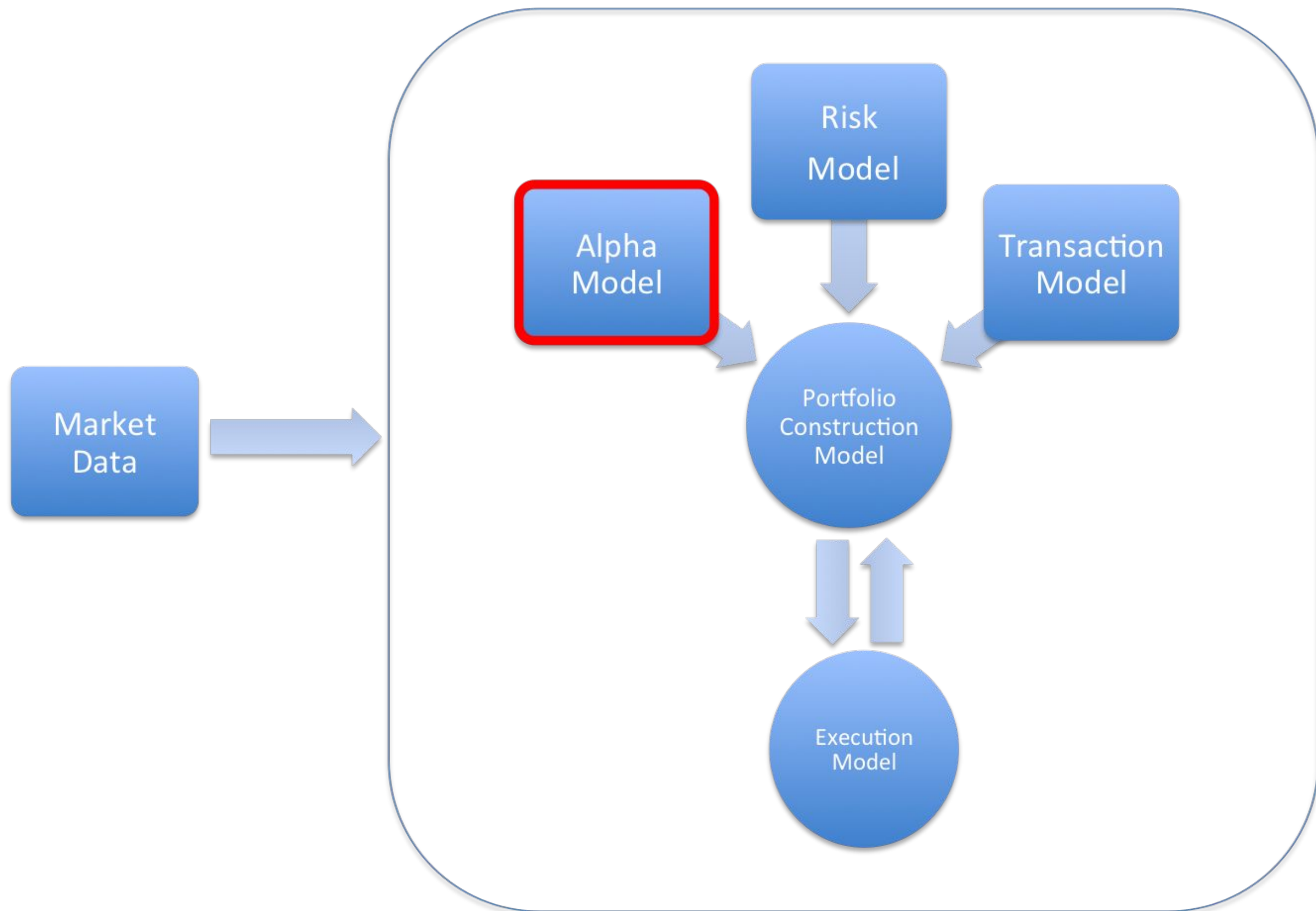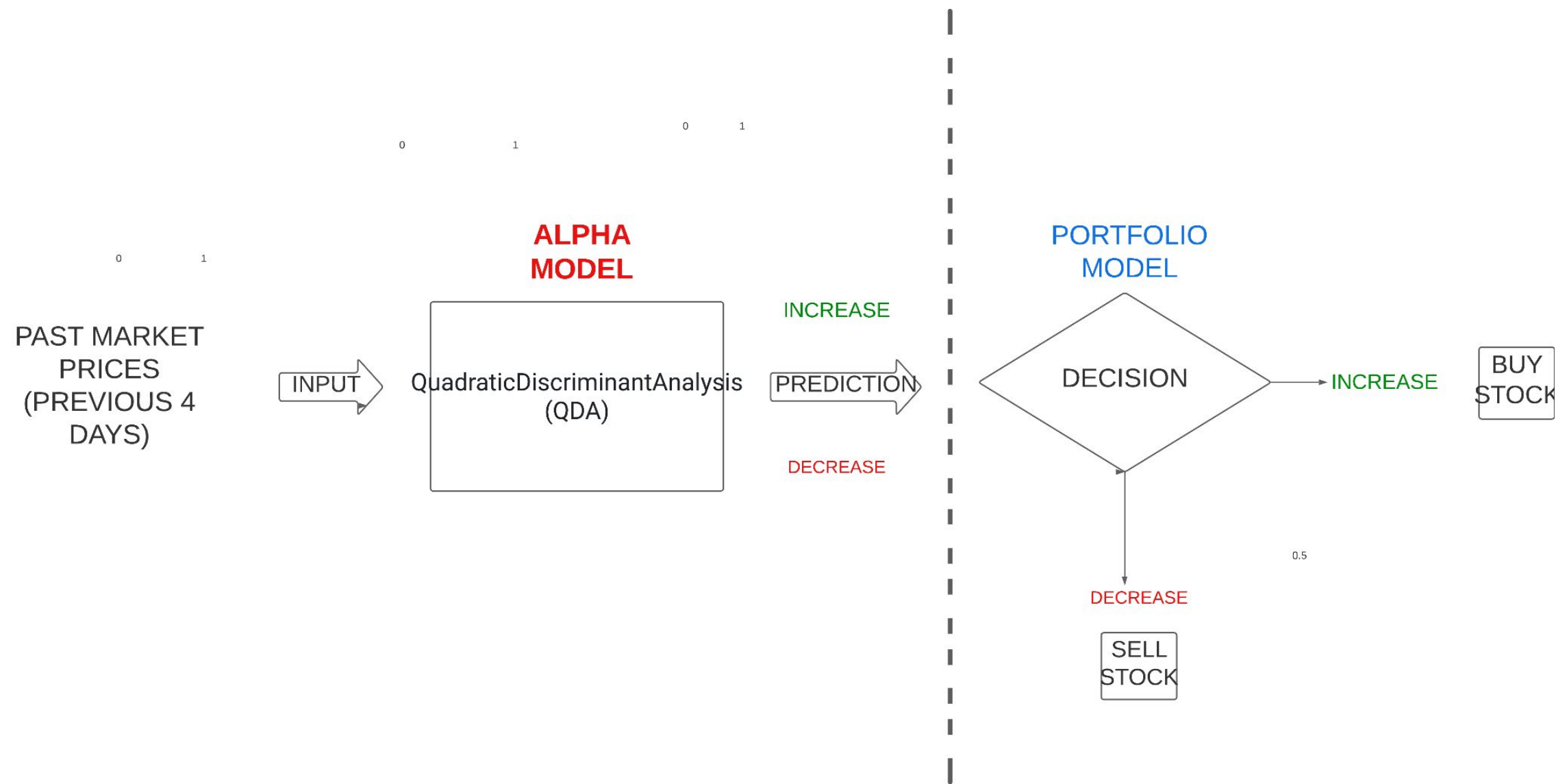# FINHACKS

KEREM BOZGAN

Alpha Model: Predicts future price of a stock (e.g., apple stock)

Transaction cost model: cost incurred from buying stock, e.g., brokerage fee.
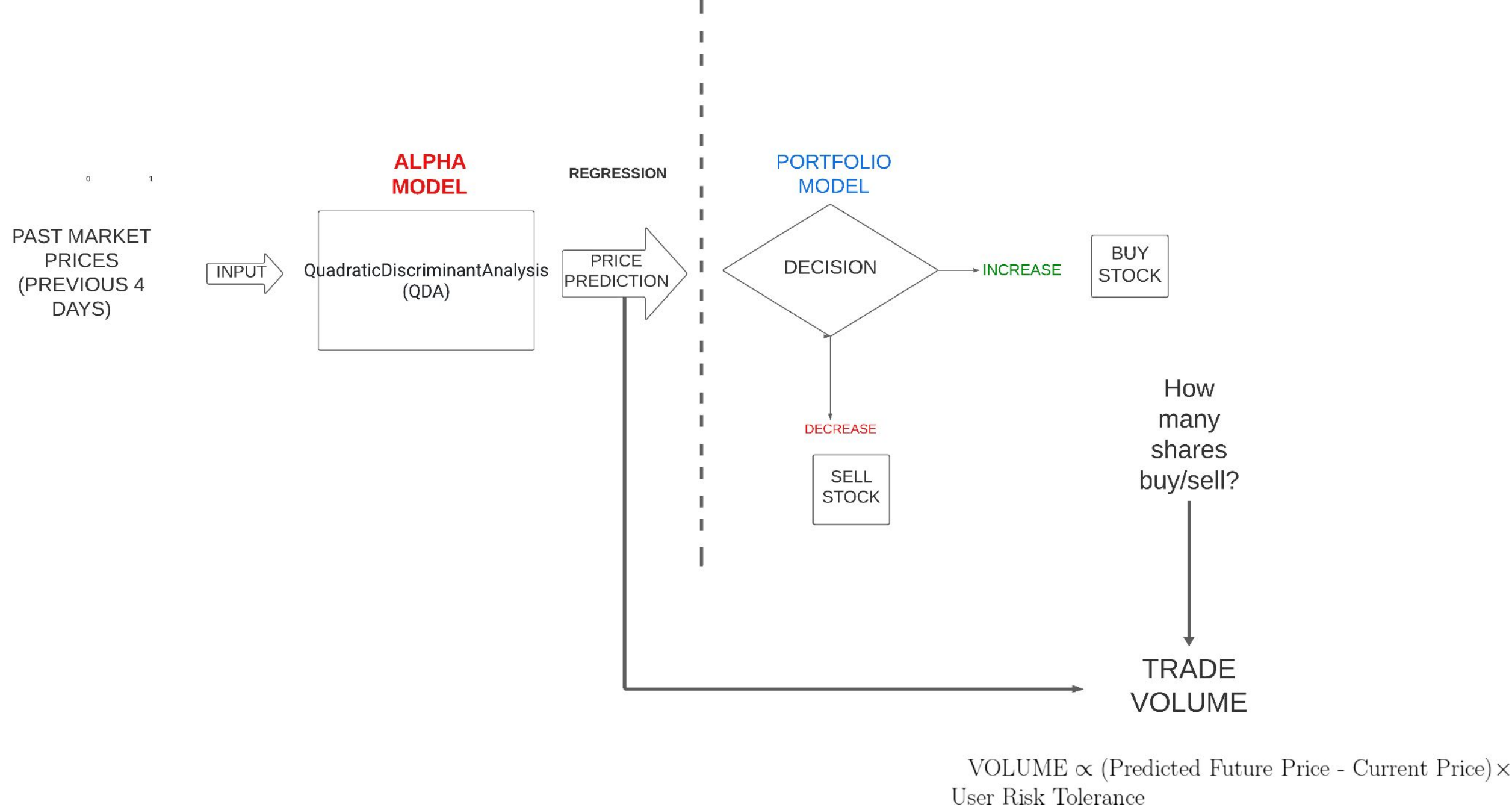
Portfolio model: How many shares should be bought based on inputs from 3 model above

Execution model: Talk with the brokerage account using their API. For this project, we will not need one since we will only test on historical data.
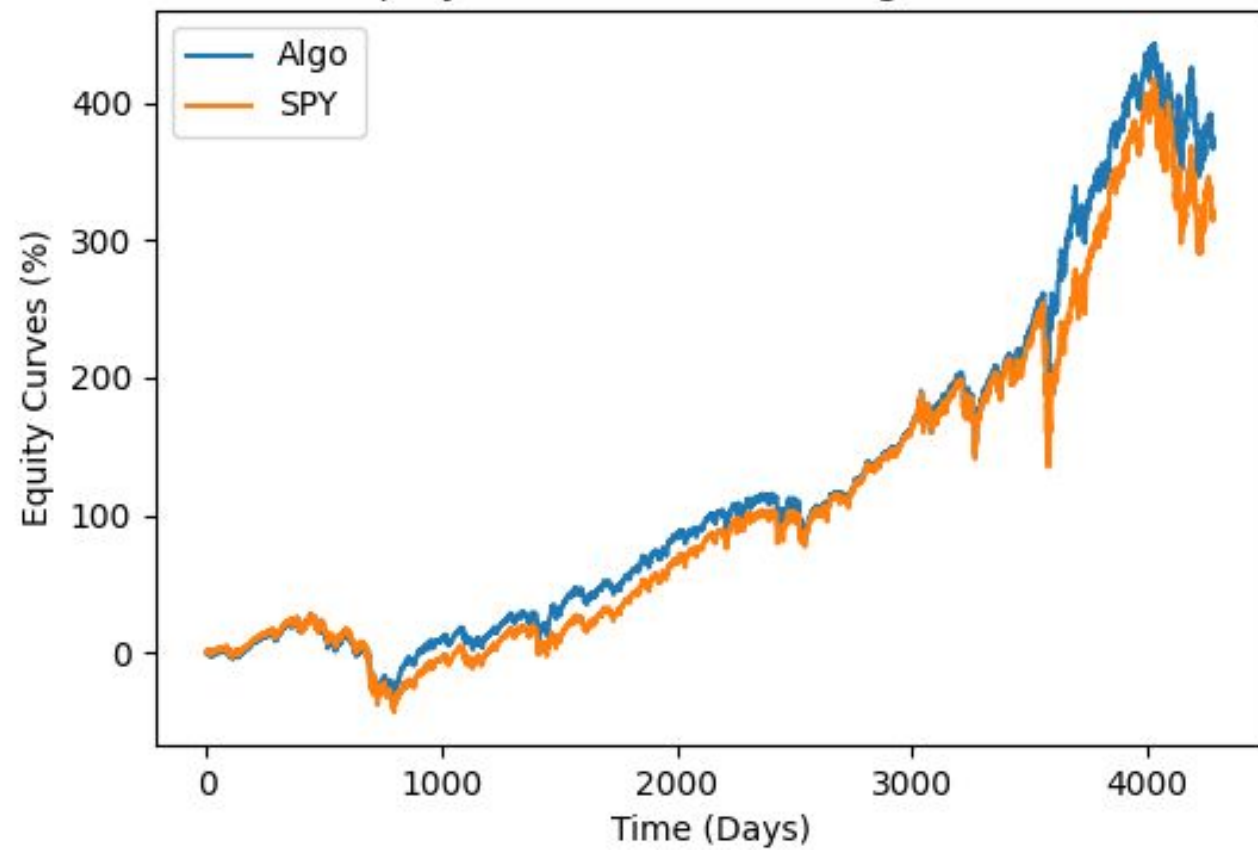
WHAT IS

PAST MARKET PRICES (PREVIOUS 4 DAYS)

INPUT →

ALPHA MODEL

QuadraticDiscriminantAnalysis (QDA)

INCREASE

PREDICTION →

DECREASE

PORTFOLIO MODEL

DECISION

→ INCREASE

BUY STOCK

DECREASE

SELL STOCK

0.5

WHAT SHOULD BE

PAST MARKET PRICES (PREVIOUS 4 DAYS)

INPUT →

ALPHA MODEL

QuadraticDiscriminantAnalysis (QDA)

REGRESSION

PRICE PREDICTION →

PORTFOLIO MODEL

DECISION

→ INCREASE

BUY STOCK

DECREASE

SELL STOCK

How many shares buy/sell?

↓

TRADE VOLUME

$$\text{VOLUME} \propto (\text{Predicted Future Price - Current Price}) \times \text{User Risk Tolerance}$$

moderate risk

Equity Curve Over Time: Algo vs. SPY

RiskLevel

Risk Level:

Enter Stock Symbols (comma-separated):

spy

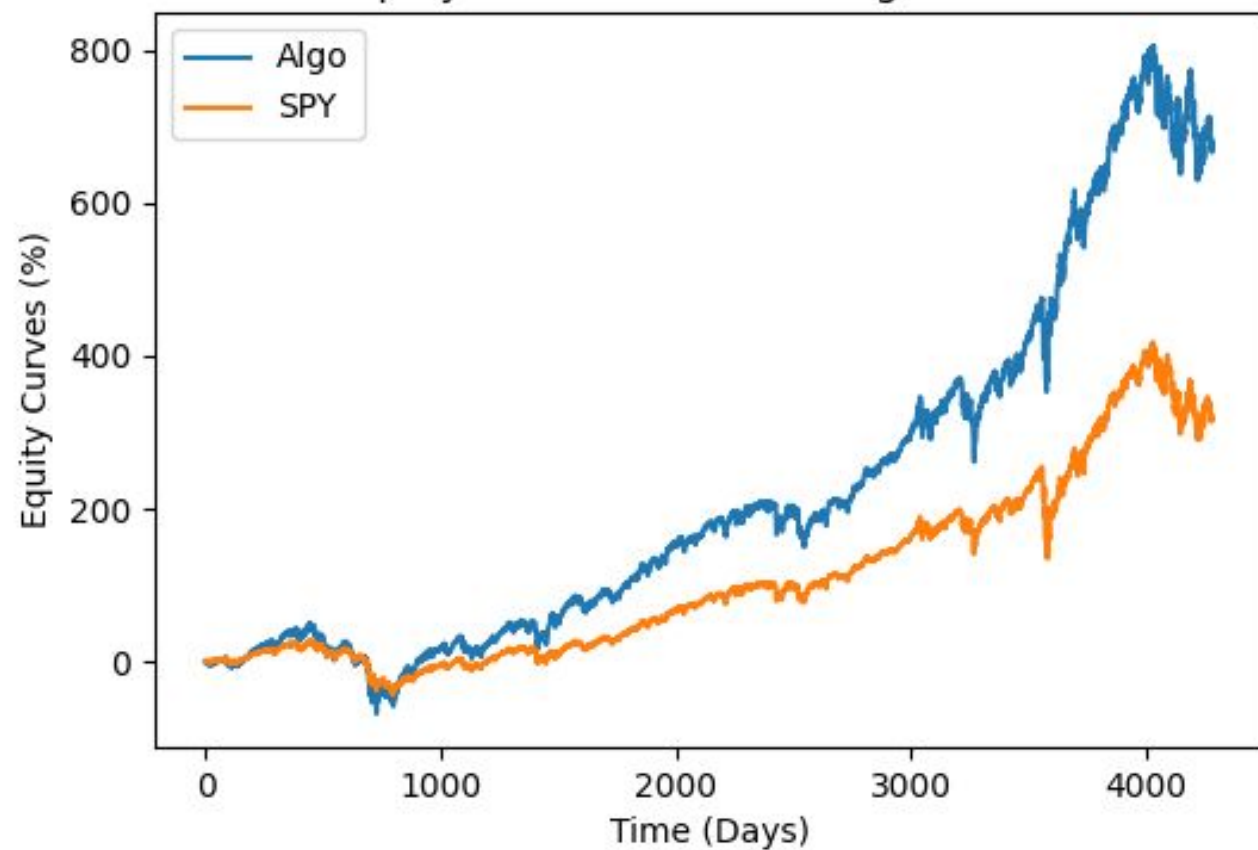Enter Initial Capital:

50000

Submit

Total Gain: 372.57%

Drawdown: 96.56%

Trade Volume: 550

Lowest Equity: -37%

high risk

Equity Curve Over Time: Algo vs. SPY

RiskLevel

Risk Level:

Enter Stock Symbols (comma-separated):

spy

Enter Initial Capital:

50000

Submit

Total Gain: 677.40%

Drawdown: 175.56%

Trade Volume: 1000

Lowest Equity: -68%

ADAPTIVITY WITH SHORT TERM PREDICTIONS

OUR HYPOTHESIS

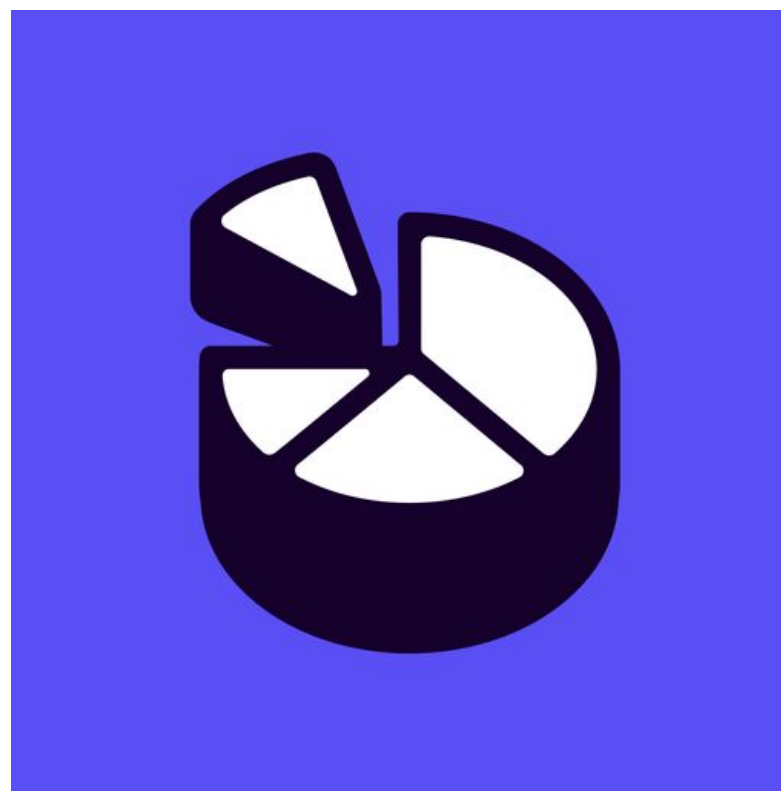NOT LONG TERM, ACCURATE VALUATIONS (HARD TO DO FROM NOISY MARKET DATA- NOT EVERYONE IS WARREN BUFFET)

WHAT IS LEFT TO DO?

1) IMPROVEMENT IS POSSIBLE FOR PREDICTION MODEL + MORE SOPHISTICATED PORTFOLIO MODEL

2) CONVERT INTO A SOCIAL APP

INSPRATION:

HARJAS SINGH

Add automated trading feature to make it more accessible especially for people who has no day-trading experience.