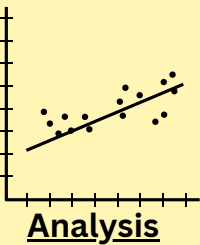


PROBLEM STATEMENT

To help Tiger Fund Management **detect anomalies** in stock data, focusing on companies listed in the **NASDAQ-100 index**. It aims to **identify breakouts and predict future stock price movements**, enhancing trading efficiency and decision-making.

METHODOLOGY



Utilise Machine Learning models like Long Short-Term Memory (LSTM) and ARIMA GARCH to predict stock price movement.

Create a Dashboard in PowerBI to present the analysis models, and to help with visualisation of the predictions.

RECOMMENDATIONS

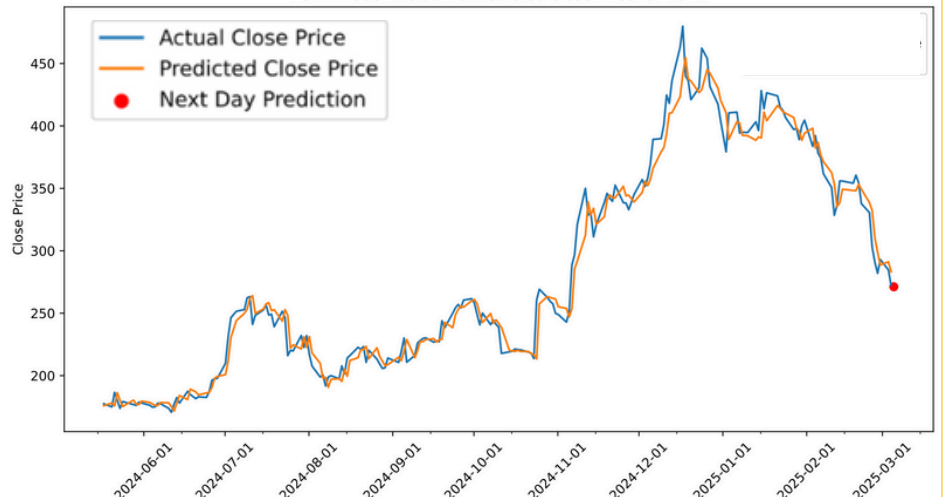
- Identify breakout/ breakdown stocks from buy/sell signals
- Do further fundamental analysis using financial ratios

FUTURE EXPANSION

Enhance ML model accuracy by adding additional factors besides price, such as interest rates, CPI, and more.

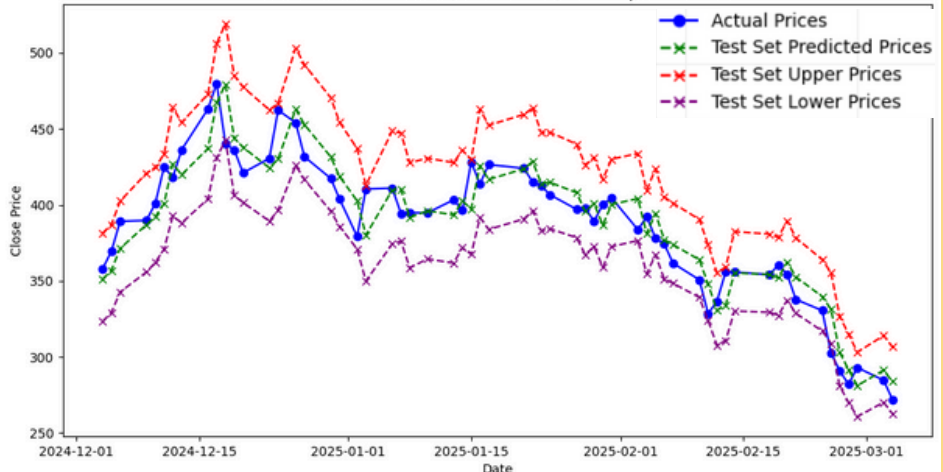
PREDICTION MODELS

LSTM MODEL



LSTM: A type of recurrent neural network (RNN) designed to predict stock price data using memory cells to store important historical data to identify trends.

ARIMA-GARCH MODEL



ARIMA: A statistical analysis model that leverages time series data to forecast future prices.

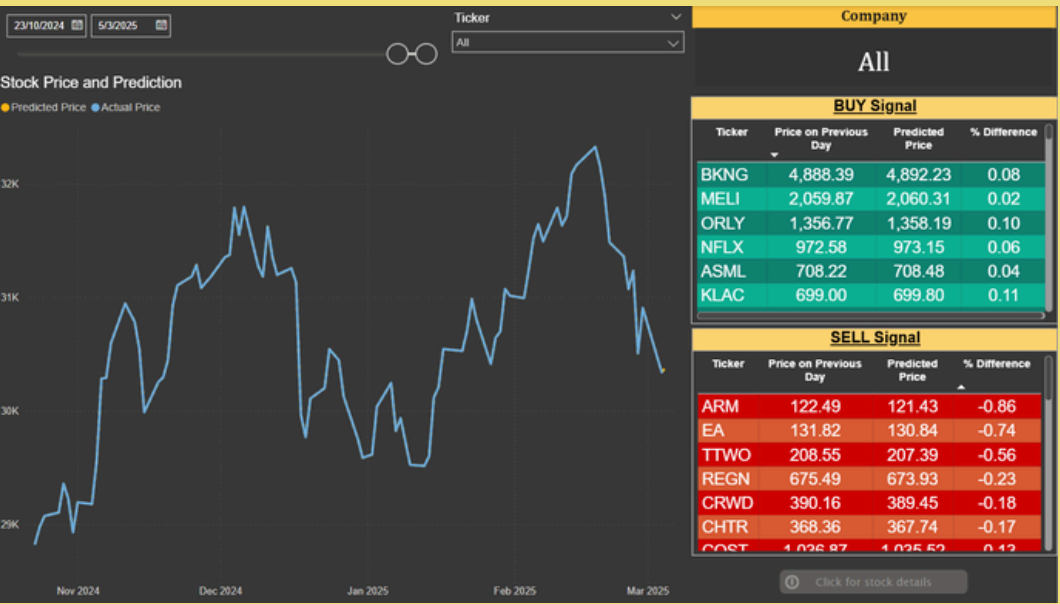
GARCH: A measure of past data volatility to determine the upper and lower bounds of predicted values.

COMPARISON OF MODELS' RMSE

Ticker	ARIMA-GARCH RMSE	LSTM RMSE	Chosen model's Predicted Price
REGN	1.98	3.17	673.93
ROP	1.2	1.63	585.30
ROST	1.3	2.88	136.14
SBUX	1.5	2.98	112.08
SNPS	3.26	3.59	445.71
TEAM	3.04	3.82	273.66
TSLA	5.64	4.4	283.17
TTD	8.58	9	67.59
TTWO	2.08	1.83	207.39
TXN	1.9	2.01	195.03
VRSK	1.16	1.3	299.66
VRTX	1.99	2.59	486.57
WBD	2.97	4.16	11.31
WDAY	2.3	3.6	253.65
XEL	1.15	1.5	70.17
ZS	2.41	3.76	193.82

The predicted price is obtained by selecting the model with the lowest RMSE from the **ARIMA-GARCH** and **LSTM** models.

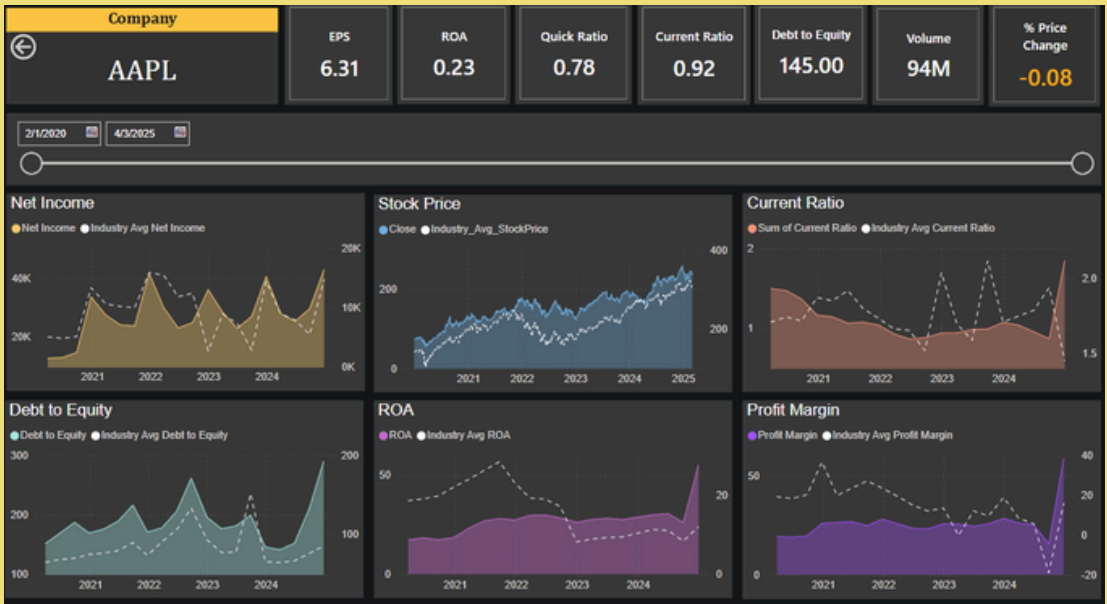
DASHBOARD



Pg 1 - Next-day Stock Price Prediction + Buy/Sell Signal
Buy (Upwards Trend), Sell (Downwards Trend)



Pg 2 - EMA Window + Buy/Sell Signal
Buy (Above EMA line), Sell (Below EMA line)



Pg 3 - Individ Cpy's Stock Data & Technical Indicators vs Industry Trend
Analysing whether trend of company follows the industry trend

- Select any cpy from buy/sell signal table
- It will bring you to Pg 3, filtered to that company's info