PROBLEM STATEMENT

Volatility in Financial Market is often unpredictable, leading to uncertainty and fear

Conventional approaches such as the Buy-and-Hold Strategy struggle to adjust to real-time market risks

Underutilisation of better strategies - such as making good use of trends

OUR SOLUTION

AIM

We aim to integrate these different AI-driven methodologies, to better predict future market trends and equip people with the knowledge required to make informed decisions in their trade.

SOLUTIONS

1. **LSTM (Long Short-Term Memory)**
- Predicting future market price through the analysis of historical market data

2. **LLMs (Large Language Models)**
- For financial news analysis, be it historical or recent

3. **Market Sentiment Analysis**
- To help identify trends
- Provides a clear indicator of whether to buy/sell
- Helps in votalitity prediction

TECHNOLOGY USED
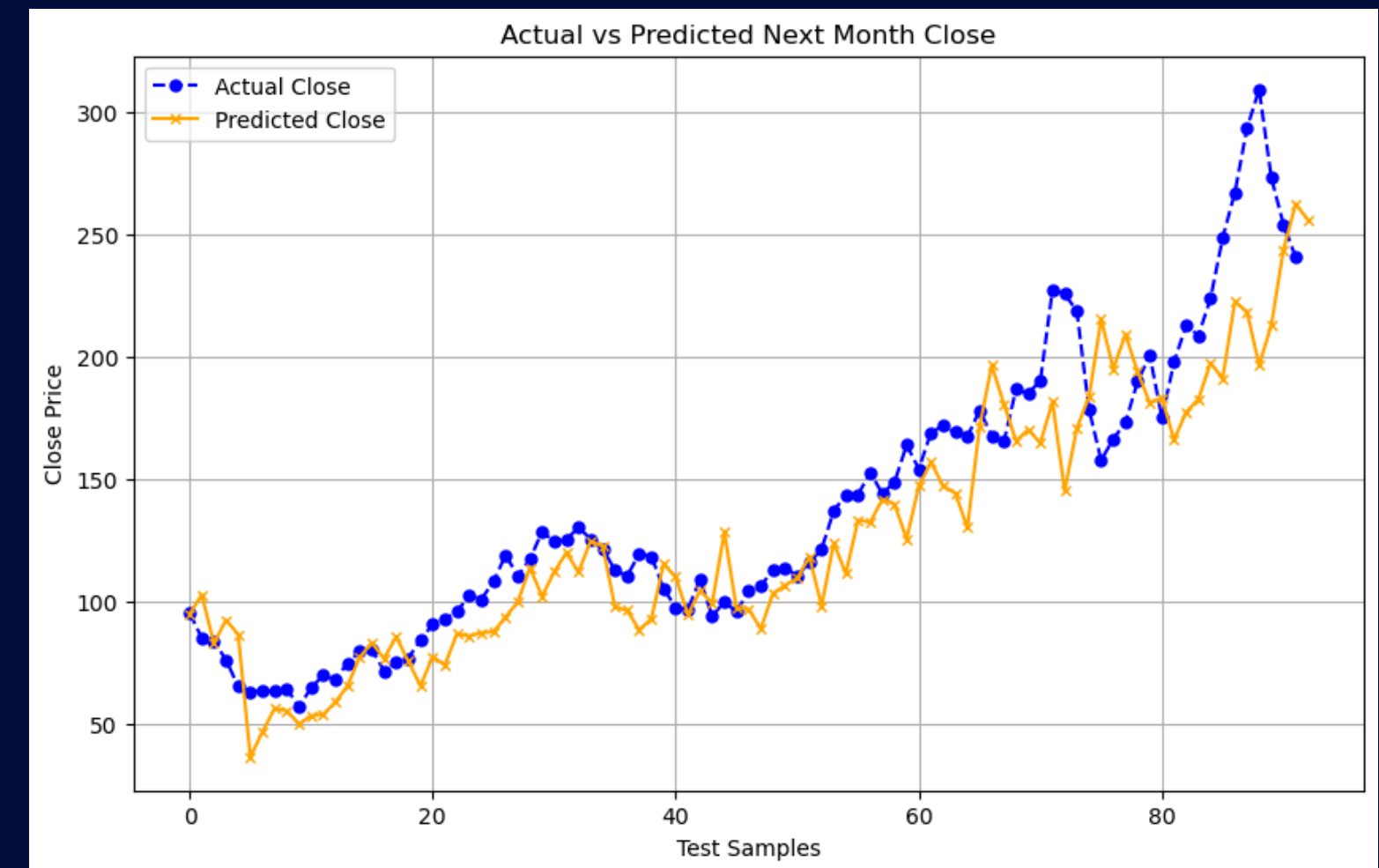
Front end:

LLM:

Streamlit

LangChain

LSTM MODEL

Using historical data to predict future trends

- Past 6 months of data features such as <u>High, Low, Open, Close, Volume</u> are utilised to train a LSTM model

- The next month's Close is predicted

- This determines the Buy/Sell position to be taken
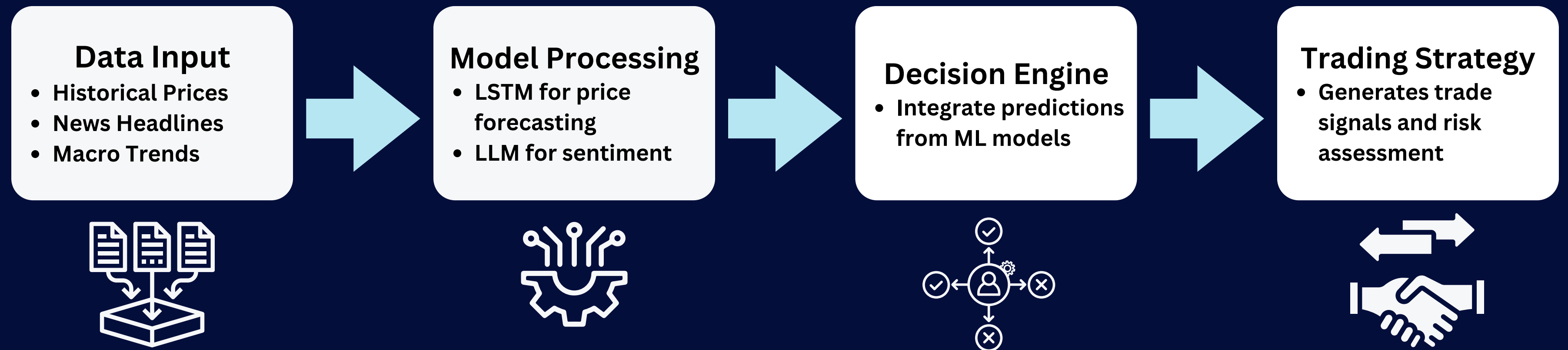
NEWS SENTIMENT

Using Natural Language Processing (NLP) to determine market sentiment

- Analyzed the sentiment of financial news headlines of different companies from 2010-2018
- Used Spacy en_core_web_lg pre-trained word embeddings with 300 dimensions, capturing semantic relationship between words
- Used SVM model to classify market sentiment as positive or negative based on financial news headlines with 84% test accuracy

MODEL WORKFLOW

HOW IT WORKS

Data Input
- Historical Prices
- News Headlines
- Macro Trends

Model Processing
- LSTM for price forecasting
- LLM for sentiment

Decision Engine
- Integrate predictions from ML models

Trading Strategy
- Generates trade signals and risk assessment

WHY WE ARE BETTER

1. **Future prices prediction along with market sentiment analysis**
   a. **Helps traders anticipate market movements that might not be captured by historical data alone**
2. **Use of LSTM**
   a. **LSTMs can adapt and improve over time with more data, enabling traders to refine their predictions as market conditions change.**

FUTURE WORK

1. **Implement real time data collection by using web-crawlers to provide up-to-minute insights**
2. **Ability to periodically re-calculate LSTM model weights based on the real-time market data**