**Project 4 (Team 3)**

**Title:** Stock Price Prediction using Machine Learning/Neural Networks

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**Steps**:

1. **Selecting a dataset (Data Collection)**: Picking 3 Stocks (e.g, AAPL, MSFT, AMZON)
2. **Data Cleaning/Processing**: Cleaning data and prepping it for analysis using various tools
3. **Setting up back-end:** SQL Database, executing Machine learning model
4. **Front-end:** Deploying our tool/website

**Assumptions:**

* Stock data, crypto data, sentiment data for 2 years (2023 & 2024)
* Assume data is close to 100% accurate
* Target Variable being predicted:
  + Adjus. Close Price
  + Overall behavior/patterns/trends for the stock

**Research Questions:**

1. What features are needed to predict “historical” stock price with “high accuracy”?
2. How close our Machine Learning model to actual behavior of the stock (i.e., KPI: accuracy, confusion matrix, mean square error (MSE))

A number of mathematical equations

Description automatically generated

1. What is the Visualization of our prediction’s vs actual performance of a stock?
2. How accurate is the model to predict the “future price” of the stock (e.g., Feb 2024)?

**Final Production (for now):**

* A Jupyter notebook with our analysis and code, and graphs
* If possible, deploying our Machine learning model on a local host website (maybe create an API with our model on databricks to the website)

**Tools/Libraries:**

* Python Pandas, Python Matplotlib, SQL Database, scikit learn, Long Short-Term Memory (LSTM) neural network model, Keras, Tensor flow, Python API, FLASK, Numpy