**Talk Algo To Me: Applying Algorithmic Trading and**

**Natural Language Processing for better Investment Decisions**

*Aparna Pooleri, Jacinta Odor, Ken Lindgren, Nigil Jeyashekar, Rawad Habib*

**Motivation:**

The motivation for the project stems from the need to supplement traditional trading decisions with machine learning and deep learning techniques to make better trading decisions for the investors.

**Description:**

* Apply Algorithmic Trading to determine buy/sell/hold trade decision on stocks.
* Apply Natural Language Processing (NLP) on news articles centered around the trading day to obtain sentiment scores.
* Combine NLP sentiment scores with Algorithmic Trading results to make better trading decisions for investors.

**Goal:**

Test the effectiveness of NLP in supplementing Algorithmic Trading Decisions.

**Data Sets:**

* Cryptocurrency - Bitcoin (BTC)
* Healthcare Stock - Moderna (MRNA)
* Tech Stock - Apple (AAPL)
* Bonds - 10-year Treasury Bond (TNX)

**Coding:**

* Algorithmic Trading is implemented by applying Moving Averages (MA) algorithm.
* NLP sentiment scores are evaluated using Long Short Term Memory (LSTM) Recurrent Neural Network (RNN) model.

***Technical Requirements*:**

2 out of 6 fulfilled.

* Tensorflow or Keras.
* Scikit Learn.

**Research Questions and Answers:**

* Apply at least 3 moving averages per stock to provide trading decision recommendations.
* Evaluate NLP sentiment scores for at least 3 different time-periods centered around trading day to determine the sentiment score that best correlates with the trading decision.

**Conclusions:**

Degree of correlation of NLP sentiment scores to Algorithmic Trading Decisions.

**Tentative Project Plan:**

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| **Date** | **Tasks** | **Team Member** |
| **6 Jan** | Project Plan (.doc and ReadMe.md) | Nigil |
| GitHub Repo – 1 Main and 1 Dev | Rawad |
| Data – Source, Cleanup before coding | Ken, Jacinta |
| Tentative elements of the final presentation | Aparna, Jacinta |
| **9 Jan** | First Iteration of Coding  Algorithmic Trading: Moving Averages  NLP: LSTM and RNN Model Architecture | Nigil |
| Review, Building Presentation from Project Plan, Results, and First Iteration of Coding (simultaneous task) | Aparna, Ken, Jacinta, Rawad |
| **11 Jan** | Final Coding: Build and Test Functions and Review | Nigil |
| Review, Building Presentation from Project Plan, Results, and First Iteration of Coding (simultaneous task) | Aparna, Ken, Jacinta, Rawad |
| **13 Jan** | Code formatting for Research Questions and Answers | Nigil |
| Research Questions and Answers: Moving Average and NLP Simulations and Optimization, Preliminary Results | Aparna, Ken, Jacinta, Rawad |
| Review and Building Presentation from Preliminary Results | Nigil |
| **16 Jan** | Research Questions and Answers: Moving Average and NLP Simulations and Optimization, Final Results | Aparna, Ken, Jacinta, Rawad |
| Review and Building Presentation from Final Results | Nigil |
| **18 Jan** | Final Code Push  Final Presentation  Project Summary.md with links to PNG/JPEG Files  Final push to main branch in GitHub | Nigil, Aparna, Ken, Jacinta, Rawad |