**Idea : Algorithmic Trading based on mix of Fundamental and Technical Analysis**

1. Fundamental data sources : Twitter, Reddit, NewsAPI, Wall Street bets, STSA
   Get data
   Clean
   Tokenize or process to all creation of  feature set

2. Technical data sources:
   a. What could we use SMA, EMA ?
   b. Window sizes
   c. We are informing buy/sell
   d. What can contribute to determining buy sell and where will it come from
   e. What plots could be shown/ saved as image
   f. Pass first pass data to Data Features

3. Data Features and Target
   a. Do we need to scale
   b. Do we need further cleaning
   c. Do we need to reduce dimensions with PCA, K-Means
   d. Clustering - dynamic clustering based on kmeans
   e. What plots could be shown/ saved as image
   f. Pass Data Features data to ML

4. Machine learning function
   a. Use multiple machine learning modules in function and select the best performing
   b. Show the predictions using a sample of new data. Compare the predictions if more than one model is used. (Select new library and use new metric )
   c. Model evaluation
   d. Model selection
   e. visualisations

5. Trading
   a. Based on machine learning output create trading function
   b. Interface to market api for buy sell
   c. Email and message when entering or exiting a trade
6. Analysis and reporting
   a. Generate daily summary Email
   b. Streamlit Dashboard showing metrics like
      i. Portfolio balance
      ii. Portfolio composition
      iii. Order history
7. Presentation
   a. Summary presentation
   b. Talk through narrative
   c. Talk through summary of metrics for
      i. Fundemental data
      ii. Technical data

iii. Machine learning data set
iv. Machine learning models
v. Trading engine
vi. Analysis and reporting

**Outputs vs Requirements**

| Requirement | Satisfied | How |
|---|---|---|
| Create a Jupyter Notebook, Google Colab Notebook, or Amazon SageMaker Notebook to prepare a training and testing dataset. | Yes | We will create jupyter notebooks containing required code for trading algo. |
| Optionally, apply a dimensionality reduction technique to reduce the input features, or perform feature engineering to generate new features to train the model | Yes | Investigate the use of PCA for feature data. |
| Create one or more machine learning models. | Yes | We are looking to create multiple models potentially 5-10 |
| Fit the model(s) to the training data. | Yes | Data will be fitted to each model to create predictions |
| Evaluate the trained model(s) using testing data. Include any calculations, metrics, or visualizations needed to evaluate the performance. | Yes | Data will be evaluated by several means including accuracy, precision, rmse etc. Visualisation created demonstrating potentially performance vs vs benchmark index. |
| Show the predictions using a sample of new data. Compare the predictions if more than one model is used. | Yes | Predictions created based on testing data. Visualisation created demonstrating potentially performance vs other models or just the worst performing model. |
| Save PNG images of your visualizations to distribute to the class and instructional team and for inclusion in your presentation and your repo's README.md file. | Yes | All visualisations will be added to the images folder of the repo. Readme file will contain a report summarising findings. |
| Use one new machine learning library, machine learning model, or evaluation metric that hasn't been covered in class. | Yes | We still need to investigate and select the model. But yes our intention is one of the models will be a new lib. |
| Create a README.md in your repo with a write-up summarizing your project. Be sure to include any usage instructions to set up and use | Yes | As per two above |

| | | |
|---|---|---|
| the model. | | |

**Roles and responsibilities**

| | |
|---|---|
| Section 1 - Fundamental data sources | **Aidan** |
| Section 2 - Technical data sources: | **Lincoln** |
| Section 3 - Data Features and Target | **Adam** |
| Section 4 - Machine learning function | **Jeryl** |
| Section 5 - Trading | **Adam** |
| Section 6 - Analysis and reporting | **All - dependant on completion of above** |
| Section 7 - Presentation | **Kim** |

**Next Class Objectives**

1. Check if everyone is ok with responsibilities and tweak if necessary
2. Potentially together or break into two teams and start gathering foundational and technical analysis data source options and determine how data is accessible.
3. Create some simple API or csv file connectors to retrieve information into data frames.
4. Fundamental Data - Start testing simple data cleaning process for tokenisation, evaluation and feature set creation
5. TechnicalData - Start testing simple data cleaning process and evaluation and feature set creation