**Joint-University Algo Trading Challenge 2020/21**

**Trading Proposal**

**Team Profile**

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**Executive Summary**

dollar index, the federal funds rate, CPI, exchange rate, oil price and S&P500

1. trading idea: predict the future price of CNY and USD, sell USD when difference is large, buy when difference is small.

2. trading philosophy

3. which market

4. what kind of datainput

eg. High level description of your trading idea. Any trading philosophy/hypothesis behind your strategy? What financial market/ instruments your strategy apply to? What kind of data/ inputs your strategy use?

**Implementation Details**

The exact trading logic is to first predict the exchange rate between CNY and USD (CNY/USD), then buy in USD when the rate is low and sell USD when the rate is high. We will set an threshold for the rate change. When the rising or falling exceeds the threshold, we will tigger a trade. The threshold havem’t been set yet, but we will use 0.001 as the initial value and tune this hyperparameter in the machine learning algorithm.

The trading logic is quite simple, and the most challenge part lies in precisely predicting the future exchange rate. We first find the influenatial factors to the exchange rate. We red from papers to find some potential factors that influence the exchange rate such as the dollar insex, the federal funds rate, CPI, exchange rate, oil price and S&P500. We will also try to calculate covariance between other variables to find some potential factors. Secondly, we will try to train a LSTM model on the selected variable to predict the future exchange rate. Thirdly, we will implement a simple traiding algorithm that takes in output of the LSTM model (future exchange rate) and then tigger trades. These three steps are integrated and called as a pipeline. Finally we will keep inproving the whole pipeline by improving inference speed etc.

We used theories of statistics in fitting the prediction model.

The greatest assumption is that the market remains static in the near future. We assume no events will cause sharpe change in exchange rate. We also assume that the influence news have on the exchange rate is not severe (i.e. case a increase or decrease exceeds 20% in a few days).

eg. What is the exact trading logics? What conditions will trigger trades? How do you derive the trading model/ logic? What theories/ methodologies you applied? Any assumptions made?

**Risk Management**

Constrain is what?

Risk: uncatched the loss of USD

Worst scenario:

eg. What are the risk factors? What is the worst scenario? How do you manage the risks?

**Capital Management**

When to stop the algorithm

eg. Does your strategy utilize the investment capital? How do you manage the funding liquidity? Is your strategy scalable? What is the minimum capital required to execute your strategy? Can your strategy still work if the investment size become very large?

**Expectations for real-life implementation**

Arbitary policy by Trump. Twitter related,

The most unfavorable situation is that the Exchange market is frequently influenced by news such as policy. Idealy, our stategy works automagically, but requires human interference when unprecedented situation such as sudden policy change. Human need to adjust an parameter by hand.

The frequence of trading is highly dependent on the threshold we set. Under default setting, it is expected that the trading tiggers every a few hours.

The ideal investment size?

Potential issue such as new rule for exchange trading market?

eg. What market situation(s) would be (un)favorable to you? Can your strategy fully automate, or need human interference? How frequent your strategy trades? What is an ideal investment size to execute your strategy? Any potential issues for real trading?