Good afternoon, everyone! This is team AlphaBoom from HKUST. Without further ado, let me display our trading idea – a machine learning based trading algorithm in Forex market.

These are our team members. We are students from computer science, math, quantitative finance and accounting. This helps us to develop high performance algorithm.

Before diving into the real algorithm, it’s necessary to first have a look at the forex market that we have chosen. By industrial research, in 2019, around 92% of trading in the Forex market was performed by trading algorithms, partially owing to its high flexibility and low transaction cost. Another main advantage of this market is the temporal locality we discovered during feature engineering process. This helped us to develop a profitable algorithm.

Let’s have a closer look at our trading idea. Our trading process can be divided into 3 modules, namely prediction, decision, and trading. While the trading module is provided by algogene, let have a look at the first two modules.

Prediction module utilized current data to predict market price tomorrow. We also adopt a “model selection” method. This is a selection over a pre-trained saved model and a model trained on the go. We select a better model based on R2 score on the test set. If the R2 score is less than 0.6, we will prevent trading due to lack of confidence. The right-hand side displays a picture of our model fitting. As you can see, the error is less than 1%.

The decision module contains trading strategy and capital management. As for our trading strategy, we simply used the “buy low sell high” method. This tells us when to trigger a trade. This simple, but stable.

To decide the trading volume. We used the Risk model. In this model, total risk is divided into trade risk and account risk. The ideal trading volume can be calculated as their ratio. These two factors can be estimated by money at risk and cents at risk, which in our model, is estimated by risk ratio and difference between predicted price and actual price.

Now let’s look at the back test performance. Here are a few highlights:

1. Annual sharp ratio of 0.944. Considerably good performance.
2. Number of trades and Annual return. The trading frequency is about one trade every 4 days. But we still earn more than one-fold a year.
3. Capital curve. The model performs reasonably well over different time horizon under various market conditions, which indicated a high consistency score.
4. Average drawdown duration. This suggests common recovery period from the latest lost, reducing the liquidity pressure from potential margin calls.

Now let’s have a brief summary of our advantages.

1. First is the modular design. We can easily upgrade our prediction module to deal with market change.
2. Second is the accuracy. Our model gains R2 score more than 0.7/1.0 on test set. MSE is less than 0.001.
3. The Forex market is mature for algorithm trading.
4. And our algorithm is sharp and profitable.
5. The last thing I want to emphasis is the security. In both prediction module and decision module, we have techniques to prevent unconfident trades.

That’s all of our presentation, thanks for listening!