

## EDUCATION

### COLUMBIA BUSINESS SCHOOL MS, Financial Economics

GRE: 329

New York, NY  
08/2021 - 05/2023

*A highly selective program (4% acc. rate) which combines PhD and MBA courses in quantitative econometrics and finance*

**Anticipated Coursework (PhD-level):** Optimization, Applied Multivariate Statistics, High Dimensional Statistics, Statistical Inference, Assets Pricing, Econometric & Time Series Analysis, Microeconomics Analysis

**Programming:** Python (Torch/Tensorflow), Linux/Bash, C++, Java/C#, SQL, 50k+ lines programming experience

### SUN YAT-SEN UNIVERSITY

BS, Mathematics and Applied Mathematics; BBA, Accounting

GPA: 3.9/4

Guangzhou, China  
08/2015 - 06/2020

**Coursework:** Neural Networks, Machine Learning, Probability & Statistics, Optimization, Calculus, Algebra, Real Analysis, ODE

**Honors:** Outstanding Graduate (highest distinct, Top 0.5%), First-place Scholarship, Microsoft Stars of Tomorrow

## EXPERIENCE

### MICROSOFT RESEARCH

Research Intern (Full-time), Machine Learning Group, Advisor: Dr. Weiqing Liu & Dong Zhou

Beijing, China  
06/2020 - Present

- **Learning Multiple Trading Patterns (ACM-SIGKDD 2021)**
  - ▶ Proposed a lightweight extensive module, temporal routing adaptor (TRA), to automatically dispatch samples into multiple domains and select a best predictor, applied optimal transport restrict balance assignments while keeping lowest overall loss;
  - ▶ Researched ablation studies on influence of number of domains, performance of hidden states and memory mapping combination, surpassed state-of-the-art baselines' RankIC by 1%, Annual Return by 3.1%.
- **Deep Risk Model (In processing of ACM-ICAIF 2021):**
  - ▶ Formulated risk mining as a supervised learning task, overcame fundamental and statistical risk models' s deficiency;
  - ▶ Put forward a deep learning solution (GAT-GRU) for mining risk latent factors to improve covariance matrix estimation;
  - ▶ Advanced cutting-edge performance in  $R^2$  by 1.9%, manifested stability and explainability in our model and objective design.
- **Representation Learning of Stock Data**
  - ▶ **Deep Clustering:** Plugged reconstruction loss in auto-encoder with clustering based pseudo labels, projected data into a linear separable hidden space, accomplished 3% enhancement to baseline (analogue to manifold clustering);
  - ▶ **Contrastive Learning:** Applied a contrastive method in representing learning with optimal transport, exceeded benchmarks on downstream with 1st online clustering algorithm, achieved oracle accuracy on synthetic data (99%).
- **Qlib (1st open-source AI platform for Quant Finance):** Released the TRA, DRM models and tests. ([github.com/microsoft/qlib](https://github.com/microsoft/qlib))

### SUNSHINE QUANT INVESTMENT CONSULTING (Prop Trading)

Research Intern, Quantitative Research

Shenzhen, China  
02/2020 - 05/2020

- **Portfolio Optimization:** Built Black-Litterman model with risk parity strategy as prior and adversarial learning predictions as posterior, enhanced index's return by approx. 4%, max drawdown by 30%. ([github.com/linhx25/BlackLittermanModel](https://github.com/linhx25/BlackLittermanModel))
- **Adversarial Learning:** Constructed a GAN to empower LSTM's baseline by 2%, attained accuracy of 58% and MSE of 0.44%.

### MORGAN STANLEY HUAXIN FUND (Mutual Fund)

Quantitative Analyst, Risk Management

Shenzhen, China  
05/2019 - 08/2019

- **Performance Attribution:** Cracked funds' return into security selection and industry allocation based on Brinson model, developed the program in C# hence improved attribution algorithm thereby hastening original process by 5 times;
- **Fair Trading Analysis:** Computed profit discrepancies in trading window according to regulations in analyzing unfair trades.

### SOUTHERN STATISTICAL SCIENCE LAB

Research Intern, Financial Engineering

Guangzhou, China  
09/2017 - 02/2019

- **Numpy.NET:** Developed data structure emulating Numpy in C#, allowing efficient functions in time series analysis model;
- **Hidden Markov Model:** Utilized the EM algorithm to estimate MSVAR's parameters. ([github.com/linhx25/MarkovSwitching](https://github.com/linhx25/MarkovSwitching))

## PROJECTS

### Undergraduate Thesis (Best Paper) – “Readability, Opaqueness and Crash Risk”, Advisor: Prof. Keming Wang

- Developed a package (Python) to process firms' 10-K fillings (217G), applied NLP method for annual report textual analysis;
- Conducted robustness test to eliminate endogeneity: searched alternative variables, tested fixed effect of panel data;
- Proved 10-K fillings of high-risk firms are of low readability and high opaqueness. ([github.com/linhx25/FReader](https://github.com/linhx25/FReader)).

### Kaggle's PUBG Machine Learning Prediction (Ranked Top 1%)

- Conducted feature engineering and tested linear/non-linear models with regularization in pre-experiment;
- Implemented Random Forest, Genetic Algorithm, Particle Swarm and GBDT in Python for prediction, with 1.95% MAE;
- Ranked Top 1% in Kaggle's Project competition. ([kaggle.com/pubg-prediction](https://kaggle.com/pubg-prediction) , Team SYSU).

## ADDITIONAL INFORMATION

**Languages:** Cantonese (Fluent), Mandarin (Native)

| **Interests:** Hip-hop dance, Climbing (elevation 6,000 m), Cooking