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EDUCATION

COLUMBIA BUSINESS SCHOOL　　　　　　　　　　　　　　　　　New York, NY
MS, Financial Economics　　　　　　　　　　　　　　　　　　　08/2021 - 05/2023

Coursework (PhD-level): Foundations of Optimization, Econometric & Statistical Inference, Continuous Time Models and Methods
Programming: Python (PyTorch), Linux/Bash, C++, Java/C#, SQL, 50k+ lines programming experience

SUN YAT-SEN UNIVERSITY　　　　　　　　　　　　　　　　　Guangzhou, China
BS, Mathematics and Applied Mathematics　　　　　GPA: 3.9/4　　　08/2015 - 06/2020

Coursework: Neural Networks, Machine Learning, Probability & Statistics, Operations Research, Algebra, Real Analysis, ODE/PDE
Honors: Outstanding Graduate (highest distinct,Top 0.5%), Microsoft Stars of Tomorrow, JPMorgan Fellowship

EXPERIENCE

COLUMBIA UNIVERSITY　　　　　　　　　　　　　　　　　　　New York, NY
Research Assistant, MKT Science, Advisor: Prof. Ansari & Jedidi　09/2021 - Present

- **Impact Analysis (Ongoing)**: Analyzed similarity of nodes and distribution shift of music to understand music genealogy and impact, scrapped music information from Wikipedia and acoustic features from Spotify to construct topic model.

MICROSOFT RESEARCH　　　　　　　　　　　　　　　　　　　Beijing, China
Full-time Research Intern, Machine Learning Group, Advisor: Dr. Weiqing Liu & Dong Zhou　06/2020 - 09/2021

- **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 (ACM-ICAIF 2021):**
  - Formulated risk mining as a supervised learning task and 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 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 model and its baselines. ([github.com/microsoft/qlib](#))

SUNSHINE QUANT INVESTMENT CONSULTING (Prop Trading)　　Shenzhen, China
Research Intern, Quantitative Research　　　　　　　　　　　　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](#))
- **Adversarial Learning**: Constructed a GAN to empower LSTM's baseline by 2%, attained accuracy of 58% and MSE of 0.44%.
- **Numpy.NET**: Designed a data structure emulating Numpy in C# and allowed efficient functions in time series analysis model;
- **Hidden Markov Model**: Utilized the EM algorithm to estimate MSVAR's parameters. ([github.com/linhx25/MarkovSwitching](#))

MORGAN STANLEY HUAXIN FUNDS (Mutual Fund)　　　　　　Shenzhen, China
Quantitative Analyst, Risk Management　　　　　　　　　　　　05/2019 - 08/2019

- **Performance Attribution**: Cracked funds' return into security selection and industry allocation based on Brinson model, implemented 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.

PROJECTS

Undergraduate Thesis (Best Paper) – "*Readability, Opaqueness and Crash Risk*", Advisor: Prof. Keming Wang
- Developed a Python package to process firms' 10-K fillings (217G) and applied NLP methods for annual report textual analysis;
- Carried robustness test to eliminate endogeneity: searched alternative variables, tested fixed effect of panel data;
- Proved that 10-K fillings of high-risk firms are of low readability and high opaqueness. ([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](#) , Team SYSU).

ADDITIONAL INFORMATION

Languages: Cantonese (Fluent), Mandarin (Native)　　　　　| **Interests**: Hip-hop dance, Climbing (elevation 6,000 m), Cooking