

Haochen Luo, Chester

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EDUCATION

The City University of Hong Kong

Master of Philosophy in Computer Science

Cumulative GPA: 3.50/4.30

Thesis Title: Large Language Model-Driven Alpha Factor Mining in Quantitative Investment

December 2024 — October 2026

Supervisor: Prof. Chen Liu, Prof. Yuan Zhang (SUFU)

Northeastern University (China)

Bachelor in Information Management and Information System

Cumulative GPA: 3.33/5.00

Thesis Title: Fraud Detection with Machine Learning

September 2020 — June 2024

RESEARCH EXPERIENCE

LLM Applications in Quantitative Finance

- Conducted research on applying large language models to quantitative finance, focusing on alpha factor mining, signal discovery, and structured trading strategy generation.
- Developed LLM-guided frameworks for generating interpretable financial factors, leveraging prompt design and evolutionary search to improve both performance and diversity.
- Designed structured intermediate representations (e.g., domain-specific languages) to bridge natural language reasoning and executable financial strategies.

Privacy and Robustness of Large Language Models

- Studied machine unlearning and privacy-preserving techniques, including differential privacy, for responsible deployment of large models.
- Investigated adversarial vulnerabilities in vision-language models and explored defense strategies to enhance model robustness and reliability.

RESEARCH OUTPUTS

Published Conference Proceedings:

Haochen Luo, Ho Tin Ko, Jiandong Chen, David Sun, Yuan Zhang, Chen Liu. "AlphaBench: Benchmarking Large Language Models in Formulaic Alpha Factor Mining" *International Conference on Learning Representations (ICLR) 2026*.

Zhong, Xuyang, **Haochen Luo**, and Chen Liu. "Dualoptim: Enhancing efficacy and stability in machine unlearning with dual optimizers." *Neural Information Processing Systems (NeurIPS) 2025*.

Conference Workshop and Preprints:

Haochen Luo, Zhengzhao Lai, Junjie Xu, Yuan Zhang, and Chen Liu. "From Natural Language to Executable Option Strategies via Large Language Models." *ICLR 2026 Workshop Advances in Financial AI*

Haochen Luo, Ho Tin Ko, David Sun, Yuan Zhang, and Chen Liu. "EvoAlpha: Evolutionary Alpha Factor Discovery with Large Language Models". *NeurIPS 2025 Workshop on Generative AI in Finance*

Haochen Luo, Yuan Zhang, and Chen Liu. "EFS: Evolutionary Factor Searching for Sparse Portfolio Optimization Using Large Language Models". <https://arxiv.org/abs/2507.17211>

Under Review:

Ding Chen, **Haochen Luo**, Xiaofei Wang, and Chen Liu. "Data-Weight Decoupling: A Paradigm Reconciling Deep Learning Utility with Differential Privacy." *Submitted to Journal of Machine Learning Research (under review)*.

Haochen Luo, Xiaolong Luo, Junjie Xu, Ho Tin Ko, Yuan Zhang, and Chen Liu. "EvoAlpha: An LLM-Guided Evolutionary Framework for Formulaic Alpha Factor Mining." *Submitted to IEEE Transactions on Emerging Topics in Computational Intelligence (under review)*.

Haochen Luo, Yifan Li, Ho Tin Ko, An Binh Minh, Junjie Xu, Tang Pok Hin, Wang Chak WONG, Gao Yuan, Zhengzhao Lai, Yuan Zhang, and Chen Liu. "QFinZero: A Unified Financial Toolchain for LLM-Based Trading Agents." *Submitted to ACL 2026 Demo (under review)*.

Jingning Xu, **Haochen Luo**, and Chen Liu. "PDA: Text-Augmented Defense Framework for Robust Vision-Language Models against Adversarial Image Attacks." *Submitted to IEEE Transactions on Image Processing (under review)*.

AWARDS and SERVICE

ICLR 2026 Travel Grant; Reviewer of AAAI, ICML, NeurIPS.

INDUSTRY EXPERIENCE

DJI

Intern: Machine Learning Algorithm Engineer

Shenzhen, China
May 2024 — January 2025

- Optimized low-light enhancement models for Osmo Action 5 Pro using Network Architecture Search (NAS) and Hyperparameter Optimization (HPO). Refined loss functions and explored efficient architectures to balance accuracy and real-time inference.
- Contributed to DJI's internal AutoML framework by developing a general NAS workflow for neural network templates. Rewrote and optimized key PyTorch operators, conducted performance profiling, and designed hardware-aware search algorithms for faster training and efficient deployment.

ASML Brion Technologies

Intern: Algorithm Engineer

Shenzhen, China
October 2023 — May 2024

- Designed and implemented a plugin for lithography defect detection and analysis using advanced graphics and image processing techniques. Enhanced performance by optimizing SQL query efficiency and disk I/O through multi-threaded C++ under Linux.
- Improved the defect review workflow by developing a Python-based visualization tool using Jinja, enabling intuitive inspection of defect patterns and reducing analysis time by 50%. Conducted preliminary research on applying machine learning for hotspot detection in the lithography process.

XGrids Innovation

Intern: AI Algorithm Engineer

Shenzhen, China
July 2023 — October 2023

- Developed a custom sparse convolution operator using CUDA to accelerate parallel computing and reduce GPU latency. Applied kernel-level optimizations and improved memory access patterns, resulting in notable performance gains through GPU bottleneck analysis.
- Optimized deep learning networks by integrating custom operators for desktop deployment and plugin compatibility in point cloud segmentation tasks. Enabled ONNX model export for cross-platform use and integrated models with a C++ Qt interface.