# ZHANG, HONGBAO

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## EDUCATION

**The Hong Kong University of Science and Technology** *September 2025 - Present*
Predoctoral Research Fellow, Department of Finance

**The Chinese University of Hong Kong, Shenzhen** *2023-2025*
Master of Science in Data Science, GPA: 3.75/4.0

**Xiamen University** *2019-2023*
Bachelor of Arts in Economics, GPA: 3.63/4.0

**The University of Hong Kong** *Janurary 2022 - May 2022*
BSc. Exchange, Faculty of Science

## RESEARCH EXPERIENCES

**To Think or Not to Think: Exploring the Unthinking Vulnerability in Large Reasoning Models**
*Coauthors: ZHU Zihao, WANG Ruotong, KE Xu, LYU Siwei, WU Baoyuan* *Link*

- Identified a critical *Unthinking Vulnerability* in Large Reasoning Models (LRMs) allowing reasoning bypass via delimiter manipulation.
- Proposed *Breaking of Thought* attacks (training-based and training-free), breaking reasoning reliability.
- Introduced *Monitoring of Thought*, a framework to enhance LRM efficiency and safety.

**HID: A Hierarchical Framework for Multi-Granularity Visual-Textual Inconsistency Detection**
*Coauthors: ZHU Zihao, WU Guanzong, LYU Siwei, WU Baoyuan* *Link*

- Proposed a novel hierarchical framework (HID) for detecting multi-granularity visual-textual inconsistencies in Vision-Language Models (VLMs).
- HID parses captions into semantic graphs and performs hierarchical, iterative evaluations to verify consistency at varying granularities.
- Constructed MVTID, the first benchmark for this task, and demonstrated HID's superior performance on public benchmarks, establishing it as a powerful tool for data quality assurance in VLMs.

**Adaptive Parameter Tuning of Evolutionary Computation Algorithms**
*Coauthors: Kwok Pui Choi, Tze Leung Lai, Xin T. Tong, Ka Wai Tsang, Weng Kee Wong* *Link*

- Consider the problem of adaptive parameter tuning and propose a novel approach, with optimal properties that achieve oracle bounds, to meet the challenges in new important applications in the big-data multi-cloud era.

**Analyzing Underlying Sentiment Discrepancies: Executives vs. AI in Earnings Calls**
*Capstone Project*

- Developed the Human-AI Sentiment Discrepancy Index to analyze sentiment discrepancies between corporate executives and LLMs and underscore the correlation between the index and company's financial and stock performances.
- Processed conference transcripts, called API setting LLMs and applied NLP to extract sentiment signals for financial analysis.

**A Quantitative Investment Strategy of ETFs based on Ensemble Learning of Technical Indicators**
*Undergraduate Thesis*

- Utilized Ensemble Learning to train models on 50+ manually calculated ETF technical indicators, creating portfolios based on predicted rising probabilities and comparing performance across return and risk metrics. Implemented dimension reduction, cross-validation, and back-testing across ETF pools of varying market values and industries to evaluate and refine strategies.

## PROJECT EXPERIENCE

**Decision-based Black-box Adversarial Attack Using PSO Optimization**

· Introduced AdvPSO, a PSO-based method for crafting effective adversarial examples in black-box adversarial attack.

**MULTIMODAL GENSHIN, LAUNCHED!**

· AI system integrating an aligned LLM with RAG, and a finetuned Diffusion Model to help Genshin Impact players.

## WORK EXPERIENCE

**Electricity and New Energy Group, ZHESHANG SECURITIES** Shanghai
*Daily Intern* *May 2022-September 2022*

· Conducted financial research on electricity and new energy industries, including authoring 3 industry research reports.

**CHINA EVERWIN ASSET** Shenzhen
*Daily Intern, Department of Financial Engineering* *June 2021-August 2021*

· Assisted in developing a long-term quantitative fund evaluation model using Python-processed 30 factors and model training.

## ACHIEVEMENTS

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|---|---|
| Outstanding Graduates, Duan Family College, CUHKSZ | *Spring 2025* |
| Academic Outstanding Scholarship (First Tier), CUHKSZ | *Spring 2025* |
| Fung Scholarship, HKU | *Spring 2022* |
| XMU Anniversary Sportsmanship Scholarship, XMU | *Spring 2022* |
| National Project in Innovation and Entrepreneurship Training Program for College Students, XMU | *Spring 2022* |
| Contemporary Undergraduate Mathematical Contest in Modeling, First Honor in Fujian Province | *Fall 2021* |
| Academic Excellent Scholarship, XMU | *Fall 2020* |
| Xiamen Universities Football League Tournament, Champion | *Fall 2020* |

## OTHER INFORMATION

Language skills: Chinese (native), English (fluent). IELTS: 7.5/9.0 (2020); GMAT: 680 (2021).
Computer skills: Proficient in Python, MS office and R. Intermediate user of STATA, SPSS, SAS and Matlab.
Interests: Football, Trekking