Hsiu-I Liao

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Summary

I am Hsiu-I Liao, a third-year Computer Science student at National Yang Ming Chiao Tung University. I have been building a strong foundation in High-Frequency Trading through my participation in the Kronos Research program for one semester while excelling in various competitive programming contests. I have experience implementing backtesting strategies, including CTA and Pair Trading strategies on BTC spot, achieving positive returns within a single day using 1-second kline and trades data. Additionally, I have utilized APIs to subscribe to market data and order information, integrating them with my strategies to enable order execution in a simulated environment. I am eager to apply my skills as an intern to solve practical challenges.

Work Experience

Kronos Research
Hsinchu, Taiwan

Kronos Research x NYCU SDC Quant. Training Program Trainee — *Sep. 2024 - Jan. 2025*

- Utilized APIs and statistical methods to compute indicators, such as Moving Average (MA) and Mean Squared Deviation (MSD).
- Designed and implemented quantitative trading strategies, including CTA (Commodity Trading Advisor) models.

Institute of Information Science at Academia Sinica
Taipei, Taiwan

Summer Internship — *Jul. 2023 - Aug. 2023*

- Use a reduction method to demonstrate the lower bound of space complexity for a transitivity testing problem.
- Use a dynamic programming algorithm to prove that the space complexity is tight.

Honors & Awards

Domestic

2023	**Bronze Medal**, ICPC Asia Taiwan Regional Programming Contest	*Taoyuan, Taiwan*
2023	**Silver Medal**, ICPC Asia Taiwan Online Programming Contest	*Online*
2022	**Silver Medal, 19th**, ICPC Asia Taiwan Regional Programming Contest	*Taoyuan, Taiwan*
2022	**Silver Medal, 21th**, ICPC Asia Taiwan Online Programming Contest	*Online*

Education

National Yang Ming Chiao Tung University (NYCU)
Hsinchu, Taiwan

B.S. in Computer Science & Applied Mathematics — *Sep. 2022 – Jun. 2026*

- Mathematics Excellence Scholarship in Linear Algebra (I)

Side Project

Backtest

Backtest CTA and Pairs Trading Strategy

- Preprocessed data from Binance with pandas.
- Generated trading signals based on preprocessed data.
- Developed an order matching system for trade execution.
- Integrated signals and matching systems to track order states.
- Visualized PnL changes using matplotlib.

Simulator

Simulated Interaction Between WOO X Exchange and Client

- Preprocessed data from WooX using WooX API and pandas.
- Simulated websocket connections between exchange and clients using TCP sockets.
- Implemented asynchronous programming to simulate the subscribe API between exchange and a client.
- Developed an order matching system for trade execution.

Database

Database Homework

- Queried specific information from a database using SQL.
- Formulated hypotheses and defined variables to validate them, utilizing SQL queries for data extraction.
- Implemented a B+-tree to optimize query performance.

Optimization Algorithms

Optimization Algorithms SRG

- Implemented the SRG algorithm based on theoretical results presented in the research paper.
- Developed a optimizer class to support the SRG algorithm.