TONGQIAN (CARLO) SUN
+1 (617) 201-6306 | carlosun@mit.edu

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — Cambridge, MA
Candidate for Master in Finance in Financial Engineering — Jul 2024 – Feb 2026

- **GPA**: 5.0/5.0
- **SELECTED COURSES**: Advanced Mathematics for Financial Engineering, Deep Learning, Algorithm Design and Analysis, Reinforcement Learning, Natural Language Processing in Finance

THE CHINESE UNIVERSITY OF HONG KONG — Shenzhen, China
Bachelor of Science. Major in Mathematics and Applied Mathematics — Aug 2020 – Jun 2024

- **GPA**: 3.928/4.0 (Ranked 1/262), Graduated with First Class Honors
- **HONORS**: Outstanding Graduates - Dean's Award, Nobel Class Honor (top 0.1%), Academic Performance Scholarship Tier 1 (top 0.5%), Dean's List Award, Bowen Scholarship, Entrance Scholarship
- **SELECTED COURSES**: Advanced Machine Learning, C++, Data Structures and Algorithms, Time Series, Numerical Analysis, Monte-Carlo and Trees, Stochastic Process, Measure Theoretic Probability, Partial Differential Equations, Real Analysis

WORK EXPERIENCE

ZADS FUNDS (High-Frequency Quantitative Hedge Fund) — Shenzhen, China
Quantitative Research Intern; Convertible Bonds — Jun 2023 – Aug 2023

- **Project 1: Overnight Trading Strategies of Convertible Bonds Based on Premium Analysis**
  - Evaluated pure-bond and pure-stock values of convertible bonds to develop a premium measure
  - Grouped convertible bonds into stock-like, hybrid, and bond-like categories based on premiums
  - Integrated market segmentation and momentum/reversion analysis to select convertible bonds from different categories to construct overnight trading strategies, achieving an annualized return of 15.7%
- **Project 2: Intraday High-Frequency Trading Strategies of Convertible Bonds Based on Deep Learning**
  - Preprocessed market order book data, including normalization, outlier elimination, and filtering
  - Set up deep learning models (e.g., RNN, LSTM, BiLSTM); tuned model layouts (e.g., dense layers, dropout layers, activation functions), and hyperparameters (e.g., number of units, learning schedule), using time series cross-validation
  - Applied deep learning models to market tick-level returns and auxiliary indicators (e.g., bid-ask spreads, volumes) to predict returns over the next 50 ticks; evaluated the profitability of current order placements
  - The final model passed out-of-sample tests with a winning rate of 61%, adopted as a risk indicator in order placement

CHENGQI FUNDS (Quantitative Hedge Fund with AUM over 6B USD) — Beijing, China
Quantitative Research & Data Analysis Intern; Equity — Feb 2023 – May 2023

- **Data Pre-processing:**
  - Processed null values using interpolation, selective dropping, and machine learning techniques
  - Implemented filtering techniques, including auto-encoders and Fourier transform denoising
  - Conducted dimensionality reduction using PCA and correlation mapping
- **Alpha Generation:**
  - Constructed daily alphas based on price-volume, fundamental, and alternative data such as recruitment information
  - Employed various techniques including machine learning models (e.g., SVM, XGBoost, LSTM, Bagging), mathematical and statistical models (e.g., ARIMA, GARCH, Monte Carlo simulations, numerical methods), and financial analysis methods (e.g., Dupont decomposition, behavioral finance)
  - Best alpha performance: Information ratio: 0.25, maximum correlation with alpha pools: 0.28, annualized returns: 18%, turnover rate: 17%, winning rate: 63%, maximum drawdown: 4.6%

RESEARCH EXPERIENCE

THE CHINESE UNIVERSITY OF HONG KONG — Shenzhen, China
Independent Research on Ambiguity Level of Chinese Stock Market — Jun 2022 – Sep 2022

- Constructed a daily ambiguity measure (predictability of market return distribution) based on Knightian uncertainty using CSI300 5-minute bar data; empirically demonstrated its varied effects on market returns across different market segments
- Regressed excess returns against the ambiguity measure and control variables to demonstrate that ambiguity is embedded in the standard deviation; separated ambiguity from standard deviation to derive a revised volatility measure

ADDITIONAL INFORMATION

- **LANGUAGES**: Mandarin (Native language), English (Professional Business), French (Elementary)
- **COMPUTER SKILLS**: Python, C++, Java, R, MATLAB, Stata, Microsoft Office
- **TEACHING EXPERIENCE:** Teaching assistant for courses Financial Management, Fixed Income Securities
- **INTERESTS**: Texas Hold'em, Cycling, Travelling, Archery, Sailing