# Jiachen Sun

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## EDUCATION

**The University of Chicago, Department of Mathematics** **Chicago, IL**
**Master of Science in Financial Mathematics** **Expected December 2024**

- Courses: Time Series Analysis and Forecasting, Machine Learning in Finance, Fixed Income Securities, Credit Markets, Numerical Methods, Option Pricing, Quant Trading Strategies, Probability & Stochastic Processes, Numerical Methods

**University of Macau** **Macau S.A.R.**
**Bachelor of Science in Financial Engineering** **Aug 2019 - May 2023**

- Courses: Probability Theory, Fixed Income Securities, Data Structures and Algorithms, Financial Econometrics, Portfolio Management, Linear Algebra, Statistics and Data Analysis, Derivative Securities
- GPA and Awards: 3.72/4.0, CFA Research Challenge Asia Pacific Semifinalist, S&P 500 Corporate Valuation Challenge 2nd Runner-up, Bank of China Scholarship (Top 1%), RC Foundation Scholarship, Tai Fung Bank Scholarship

## SKILLS

**Computing:** Python (*Pandas, Tensorflow, scikit, sklearn, PyTorch, lightgbm*), C++, SQL, MATLAB, Tableau, Stata, R, LaTex
**Knowledge:** Machine Learning, Fixed Income Securities, Statistical and Time Series Modeling, Data Analysis, Option Pricing

## EXPERIENCE

**Exponential Technology** **Chicago, IL (Hybrid)**
*Quantitative Research Intern, **Macro** Quant Research* **Jun 2024 – Present**

- Developing a CPI nowcasting model with machine learning tools like Elastic Net, Random Forest, and XGBoost, integrating monthly, weekly and daily macroeconomic data to provide quality daily CPI forecasts and directional predictions.
- Designing an early warning framework of core CPI and PCE, based on XGBoost, ElasticNet and logistics regression to deliver predictive insights up to three months in advance.

**Neuberger Berman** **Chicago, IL**
*Quantitative Research Intern, **Fixed Income** Quant Research* **Jan 2024 – Mar 2024**

- Engineered a generative AI system trained with macroeconomic terminology to extract viewpoints from sell-side reports, subsequently generating trading suggestions by analyzing these macroeconomic factors.
- Created a dynamic dashboard that tracks and visualizes changes in viewpoints across different analysts and over time.

**China Securities** **Shanghai, China**
Quantitative Research Intern, ***Macro** and **Sector Rotation** Quant Research* **May 2023 – Aug 2023**

- Constructed leading economic indicators to forecast Chinese economy performance utilizing macro data. Adopted Bry-Boschan algorithm for turning point recognition; composite index and PCA for index construction.
- Formulated Chinese A-share sector rotation strategies based on the change of analyst sentiment, achieving 8.11% eight-year annual excess return. Developed sector rotation backtest platform in Python and Matlab.

**Shenwan Hongyuan Securities** **Shanghai, China**
*Quantitative Trading Intern, Proprietary **Equity** Trading Team* **May 2022 – May 2023**

- Conducted Genetic Programming-based multifactor research, integrated custom time series functions and factor evaluation frameworks into the gplearn package. Engineered 20+ composite factors, improving average Sharpe Ratio by 108%.
- Crafted an equity trading strategy based on time-weighted sell-side analyst consensus, achieving a Sharpe ratio of 3.13.
- Utilized minute-, tick-, and bid-level data with DolphinDB to examine large order impacts on stock reversals.

**University of Macau** **Macau S.A.R.**
*Research Assistant on **Fixed Income** Pricing* (*for* Prof. Rose Lai) **Dec 2021 – Mar 2023**

- Researched a convertible bond two-factor pricing model to enhance the assessment of corporate credit risks in mainstream pricing frameworks. Quantified the effects of policy revisions on bond overpricing with econometrics in Python and Stata.

## RESEARCH AND PROJECTS

**Ensemble Models for PII Detection in Education Data (**Kaggle Bronze Medal**)** **Feb 2024 – Apr 2024**

- Created an ensemble of Deberta architectures, enhancing model performance through multi-sample dropout, BiLSTM layers, and knowledge distillation, improving cross-validation (CV) and leaderboard (LB) scores.

**Prediction of AI Model Runtime with LGBMRanker** (Kaggle Bronze Medal) **Oct 2023 – Dec 2023**

- Built a LightGBM-based ranking model (LGBMRanker) for AI compiler optimization, achieving a 1.42-fold enhancement in runtime prediction precision by analyzing node and edge features from XLA HLO graphs within the TpuGraphs dataset.

## ADDITIONAL INFORMATION

**Leadership & Service**: College House Asso. VP (2020-2021), Provincial Debate League Coordinator of NHSDLC (2018-2019)
**Languages:** English (Fluent, GRE 338), Mandarin (Native) **Interests:** Table tennis, tennis, poker games and Go