Cong Cao

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Authorized to work in the US for any employer | Permanent Resident

SKILLS & OTHERS

Programming: Proficient in Python, Java, C++, C, SQL, R, SAS, frequently user of Bloomberg, Tableau
Others: SAS Base Certification, Bloomberg Market Concepts, Society of Actuary (P), CFA Candidate

EDUCATION

University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA Jan. 2021 – Dec. 2022 (Expected)
Master of Computer and Information Technology (Online Option); GPA: 3.8 / 4.0
Study: Data Structures & Software Design, Computer System Programming, Software Development, Applied Machine Learning

Boston University, Questrom School of Business, Boston, MA Aug. 2018 - Jan. 2020
M.S. Mathematical Finance; GPA: 3.5 / 4.0
Study: Statistics (time series analysis, PCA, Bayesian analysis, machine learning), Computational Methods (simulation, calibration, optimization), Risk Management (financial risk, corporate risk, credit risk), Fixed Income (short-rate model, HJM model, interest rate derivatives), Portfolio Theory (factor modeling, asset allocation, life cycle finance), Stochastic Calculus, Advanced Investments

Projects:
- **Data Analytics:** Predicted stock returns and directions with 88 features and machine learning methods [random forest, XGboost, neural network], calibrated and validated models via tuning and feature importance; finally, achieved 62.5% testing accuracy.
- **Portfolio Analytics:** Constructed risk parity and inverse volatility portfolios under risk allocation methods, the result outperformed the 60/40 and market portfolios under recession and high volatility markets with 2.55 Sharpe and 1.5% max drawdown.
- **Fixed-Income:** Analyzed interest risk metrics of swaptions in Bloomberg, built hedged portfolios based on the analysis and verified the hedging strategies via P&L and Greeks sensitivity analysis in scenario tests.
- **Risk Modeling:** Modeled portfolio loss and VaR using empirical, GARCH (1,1), variance-covariance methods; investigated models' estimation accuracy and limits; evaluated VaR in stress market by simulating large loss and modeling asset correlation; and estimated rare, extreme loss by estimating loss distribution using extreme value theory.

University of California, Los Angeles, Los Angeles, CA Sep. 2012 - Sep. 2016
B.S. Financial Actuarial Mathematics; Cumulative GPA: 3.6 / 4.0. Minor in Statistics; Minor GPA: 3.8 / 4.0
Study: Statistics (regression methods, data cleaning, experimental designs, ANOVA, clustering analysis), Actuarial Models (Covered SOA Materials: P, FM, IFM, LTAM), Probability Theory, Econometrics, Banking, Corporate Finance, Financial Mathematics

Project:
- **Data Analysis:** Fitted the trends of 5-year housing price data to time-series models and detected significant correlation between the housing price in two districts using vector auto-regression and granger causality test.

PROFESSIONAL EXPERIENCE

Enel Group, Andover, MA May. 2020 – Present
Portfolio Management Senior Analyst

- **Portfolio Analytics:** Develop strategies to maximize the Gross Margin of assets in the Market, based on transmission grid constraints, market conditions, fiscal incentives, assets' technical performance and on a detailed analysis of financial derivatives.
- **Risk Modeling:** Develop a market-oriented model for the analysis of Gross Margin and definition of new KPIs for single asset in the generation portfolio.
- **Risk Modeling:** Calculate monthly and weekly energy Gross Margin for renewable assets and analysis of deviations versus Budget (volume effects, price effects, basis, and congestion effects).
- **Data Analytics:** Introduce statistical models for the analysis and forecast of generation and market prices, and support front office on market hedging activities.
- **Data Analytics:** Maintain dashboards and databases that track energy portfolio and market forecasts, and support on data entry and data validation processes.

Clear Creek Capital, Los Angeles, CA Jun. 2019 – Oct. 2019
Quantitative Analyst Intern

- **Portfolio Analytics:** Developed a long/short trading strategy with issued size 500M using portfolio optimization, factor modeling, and market-timing patterns based on moving average and VIX; strategy beat the market benchmarks with Sharp ratio 2.68.

- **Risk Modeling:** Designed stress tests and option strategies to measure and mitigate the variance and risk of the portfolio.
- **Market Analysis:** Wrote reports on financial market analysis with future trading strategies and their performance weekly.

China Galaxy Securities, Beijing, China Aug. 2019 – Oct. 2019
Quantitative Analyst Intern

- **Option Pricing:** Priced the SSE 50 ETF options under stochastic volatility with jump-diffusion, calibrated parameters with two step optimization procedure to improve efficiency and validated the model via pricing errors and delta hedging.
- **Algorithmic Trading:** Constructed design, simulation, analysis, back-testing, and implementation for automated trading strategies with regards to equities and futures in Apama trading platform e.g., Price Oscillator, Trend Following, Market Making.

Pioneer Institute, Boston, MA Feb. 2019 – May. 2019
Data Analyst Intern

- **Data Analytics:** Compiled Massachusetts 20 years' Macro data on YTS database by industry based on NAICS code; extracted and cleaned employment data, and added categories including GDP, wages from U.S. BLS using SQL and advanced Excel formulas.
- **Data Analytics:** Created dashboards in Tableau to visualize data trend and developed forecast analysis via regression in R

Caitong Securities, Shanghai, China May. 2017 – Jun. 2018
Quantitative Analyst

- **Data Analysis:** Researched on economic and financial indicators, built statistical models [PCA, LASSO, KNN] to predict 10-year treasury yield based on selected factors and features, and finally obtained a 60% testing accuracy and over 8% R-square**.**
- **Data Analysis:** Extracted constituent stocks of the CSI 300 index data using SQL queries, created an index dividend yield factor based on stock weights, dividend yields and dates, and analyzed its effects on the index.
- **Passive Investing:** Evaluated and presented 6 indexing strategies across market caps, financial ratios, historical performance, etc.
- **Passive Investing:** Analyzed and predicted [PCA, LASSO, Ridge] the weights of industrial sectors and stocks over 2064 funds.

AXA Financial, Hong Kong July. 2014 – Aug. 2014
Financial Analyst Intern

- **Fundamental Analysis:** Assisted on team of 4 interns to evaluated stocks through financial ratios, industry outlooks, and pitched them based on comparable analysis and growth potentials; finally won "Top Performer Award".