Huachen Ren

huachen.r@outlook.com 201-349-3470

EDUCATION

Rutgers University New Brunswick, USA
Ph.D., Statistics Sep 2019 –Jan 2025

- Coursework: Applied Statistical Model, Advanced Probability Theory, Advanced Statistical Theory, Machine Learning, Time Series Analysis, Stochastic Process, Natural Language Processing (Audit)

Yale University New Haven, USA
Master of Arts, Statistics Aug 2017 - May 2018

- Coursework: Applied Data Mining and Machine Learning, Data Analysis, Linear Models, Optimization Techniques, Statistical Decision Theory, Statistical Inference, Stochastic Process

Renmin University of China Beijing, China
B.A. in Mathematics & Applied Mathematics Sep 2013 - Jun 2017

- Class Ranking: 2/177, Overall GPA: 3.82/4.00
- Coursework: Mathematical Finance, Data Structure, C++ programming, Financial Engineering and Risk Management
- Honors: Wu Yuzhang Scholarship-Summa Cum Laude, China National Scholarship (Top 1%), Outstanding Student Leader in RUC (Top 1%, 2013-2014)

WORKING EXPERIENCE

Credit Lyonnais Securities Asia (CITIC CLSA) New York, US
Summer Intern, Quantitative Researcher July 2024 - Aug 2024

- Constructed, optimized and backtested intraday trading strategies for E-mini S&P500 minute-level data, achieving Sharpe ratios exceeding 10 and information coefficient greater than 0.6 during a 2-year out of sample period
- Developed hybrid recurrent neural network (RNN) and GARCH-type models to jointly estimate expected return and volatility, accounting for heteroscedasticity, and demonstrated superior performance against Boosting and linear models
- Designed volatility features by analyzing the momentum and reversal effect of overnight return and the temporal relationship between volatility and futures-spot price differences. Utilizing high-frequency volatility measures, including bi-power variation, two-scale realized volatility and pseudo maximum likelihood estimators.
- Explored various feature selection methods, including autoencoders, tree-based approaches, and LASSO, to enhance model performance and reduce dimensionality

7-Eleven Inc. Dallas, US
Data Scientist (Full Time), Artificial Intelligence Team Jun 2018 – Mar 2019

- Designed, prototyped and productionalized a hybrid recommender system based on matrix factorization using Spark for 7-Eleven mobile App, addressing temporal and seasonal effect and cold-start problem. Optimized model performance using normalized discounted cumulative gain (NDCG)
- Implemented a/b testings to evaluate the performance of the recommender system and conducted hypothesis testing
- Applied data mining algorithms, including FP-growth and Aprior, to analyze 200GB of transaction data and identify popular combo offers. Recommended combo offers for product team based on different vendors, locations and time

Haipu Investments Beijing, China
Summer Intern, Quantitative Researcher May 2019 - Aug 2019

- Developed parallel online processing pipelines for real-time high-frequency tick data of all Chinese stocks, utilizing Python's Multiprocessing and NumPy to efficiently compute various price-volume features

GF Asset Management Co. Ltd Guangzhou, China
Summer Intern, Quantitative and International Department Jun 2016 - Aug 2016

- Developed and backtested algorithmic trading strategies based on RPS, signed volatility measures and Turtle Trading Rules for Chinese stock index.

RESEARCH PROJECTS

Optimal algorithms for multi-armed bandit and reinforcement learning
Rutgers University, USA Sep 2021 – Jun 2024

- Developed optimal algorithms for stochastic multi-armed bandits and tabular Markov Decision Process which achieves Lai-Robbins type information lower bound
- "On Lai's Upper Confidence Bound on Multi-Armed Bandits.", submitted to Annals of Mathematical Sciences and Applications
- "Sharp Non-asymptotic Regret Bounds in Multi-Armed Bandits", submitted to Journal of Machine Learning Research

High dimensional logistic regression and nonparametric shape-constrained models
Rutgers University, USA Sep 2021 – Dec 2023

- Studied the asymptotic risk of logistic regression under the high dimensional regime and nonparametric additive models
- Technical report: "Gaussian random projections of convex cones: approximate kinematic formulae and applications."

SKILLS

- Machine learning, Statistics, Deep Learning, NLP
- Packages and Tools: Python, R, C++, PyTorch, Tensorflow, Spark, SQL, Linux, Databricks
- CFA Level I