Weizhi LIU

#7-17, Blk E1, 1 Engineering Drive 2, Singapore 117576

(+65) 9371-6374 | weizhiliu2009@gmail.com | greenwicher.com | Greenwicher | weizhiliu

Education

National University of Singapore | Department of Industrial Systems Engineering and Management
Singapore

MULTI-OBJECTIVE SIMULATION OPTIMIZATION, PH.D. CANDIDATE
2014.08-Present

- Research Topic：Optimal Computing Budget Allocation, Random Search, Simulation Analytics, Discrete Event Simulation.

Nanjing University | School of Management and Engineering
Nanjing, China

INDUSTRIAL ENGINEERING, B.ENG. ；FINANCIAL ENGINEERING, B.ECON.
2010.09-2014.06

- Core Modules: Operations Research, Operations Management, Supply Chain Management, Quality and Reliability Engineering, Engineering Economics, Management Information System; Principles of Economics, Financial Economics, Financial Engineering, Corporate Finance, Financial Risk Management, Modeling and Simulation of Financial Markets, Structured Finance, Fixed Income Securities, Econometrics, Financial Markets Microstructure.

Experience

WorldQuant LLC
Singapore

RESEARCH CONSULTANT (QUANTITATIVE RESEARCHER)
2018.08-Present

- Developed 300++ quantitative trading strategies on the WorldQuant's WebSim platform to seek abnormal returns (or alpha) in the U.S. markets (Russell top 3000).
- The idea of my strategies comes from the utilization of various data sources (e.g., price/volume for equity, fundamental data, analyst estimate data, and sentiment data).
- Most strategies have high Sharpe ratios ($\sim$2.2), stable annualised returns ($\sim$10%, after neutralisation), low maximum drawdown ($\sim$2%) and moderate daily turnover ($\sim$18%).
- One among the top strategies has one-year out-sample Sharpe ratio 3.41 and five-year in-sample Sharpe ratio 2.52, see `http://greenwicher.com/me/misc/stock-long-short-trading-strategy.pdf`.
- Some trading strategies perform quite well even in a highly liquid stock pool (e.g., Russell top 200).
- Ranked the 1st place in the region of China and Singapore for the WorldQuant Spring Alphathon, 2017.
- Best Record: top 10 in the world.

Martian Capital Management PTE. LTD.
Singapore

QUANTITATIVE RESEARCHER INTERN
2018.03-Present

- Developed an automatic framework in Python to identify and visualize promising leading indicators for the prediction of the forward return of month-1 future contract of WTI/Brent Crude/Heating Oil/RBOB Gasoline/Gasoil.
- Developed a flexible backtesting framework in Python to cross-validate various multi-period strategies (and hyper-parameters) and generate a detailed tear sheet report via LaTeX.
- Developed several multi-factor long-short trading strategies with three years++ out-of-sample Sharpe ratio 1.4++ based on machine learning methods.

ADVANCE.AI
Singapore

DATA SCIENTIST INTERN
2017.07-2017.10

- Proposed two graph-based anti-fraud algorithms (community and anomaly detection) for GoJek (an Indonesian company) to identify fraudulent drivers/customers with abnormal topological structures in the co-occurrence graph.
- Deployed Tableau/Gephi dashboard to visualize the fraudulent drivers/customers.
- Conducted feature engineering and applied isolation forest, ensemble supervised learning to provide fraudulent and abnormal scores for the given email addresses.

PyPRS
Singapore

DESIGNER & DEVELOPER
2016.03-2017.05

- Proposed Partition-based Random Search (PRS) algorithm in Python to solve multi-objective optimization via simulation.
- Designed the architecture of the PRS algorithm.
- The components and test problems of the algorithm are encapsulated based on the object-oriented paradigm.
- Adopted SWIG to integrate the core code written in C ++ with the Python main program to speed up the program's running efficiency.
- Visualized the search dynamics of PRS algorithm.
- `https://github.com/Greenwicher/PyPRS`

BiblioPy

Nanjing, China

Developer

- Proposed an algorithm in Python to discover the knowledge graph for a research field by the co-occurence and clustering methods.
- Implemented TF-IDF and TextRank to conduct the Natural Language Processing analysis of the literature data and identify the key research topics of each academic community.
- Developed an automatic report generation tool via LaTeX and the visualization tool for Gephi.
- `https://github.com/Greenwicher/BiblioPy`

Honors & Awards

2018.08   **CFA Level I Candidate**, CFA Institute

2018.01   **FRM Part 1 Candidate**, Global Association of Risk Professionals

2017.04   **Gold Medal**, WorldQuant Global Alpha Building Competition

2017.03   **Level 5 (Finalist)**, Google FooBar Coding Challenge

2014.05   **Graduate of Excellence**, Nanjing University

2013.02   **INFORMS Paper Award (0.04%, 2/5536)**, The Mathematical Contest in Modeling

2013.02   **Outstanding Winner (0.2%, 11/5536)**, The Mathematical Contest in Modeling

2011/2012 **Outstanding Volunteer**, The 4th, 5th "Caring for China" - the Google China Social Innovation Cup

Publications

[1] Chenhao Zhou*, Haobin Li, Weizhi Liu, Stephen Aloisius, Loo Hay Lee, and Ek Peng Chew. Challenges and opportunities in integration of simulation and optimization in maritime logistics. In *Proceedings of the 2018 Winter Simulation Conference*. IEEE, 2018.

[2] Weizhi Liu*, Siyang Gao, and Loo Hay Lee. A multi-objective perspective on robust ranking and selection. In *Proceedings of the 2017 Winter Simulation Conference*. IEEE, 2017.

[3] Weizhi Liu*, Siyang Gao, and Loo Hay Lee. A partition-based random search for multi-objective optimization via simulation. Under Review, 2017.

[4] Juxin Li, Weizhi Liu*, Giulia Pedrielli, Loo Hay Lee, and Ek Peng Chew. Optimal computing budget allocation to select the non-dominated systems - a large deviations perspective. Accepted by IEEE Transactions on Automatic Control, 2017.

[5] Weizhi Liu, Juan Li*, Di Zhang, and Wei Chen. 公平感对供应链成员定价决策影响的研究 (fairness's effect on the pricing decisions of the supply chain). *Journal of Management Sciences in China (管理科学学报)*, 20(7):115–126, 2017.

[6] Cenying Yang, Wei Chen, and Weizhi Liu*. 滴水尽其用 (make wise use of every drop). *Mathematical Modeling and Its Applications (数学建模及其应用)*, 2(5–6):75–89, 2013.

[7] Cheng Ji*, Weizhi Liu, and Huiwen Chen. Verification of option parity relations in domestic warrants market of china. In *Proceedings of 2013 3rd International Conference on Social Sciences and Society(ICSSS 2013)*, 2013.

[8] Cheng Ji*, Mengyi Niu, Weizhi Liu, and Jinyang Han. 大学城社区共同配送中心的配置模型 (joint distribution center model in university community). *China Journal of Commerce (中国商贸)*, 11:091, 2013.