

Weizhi Liu

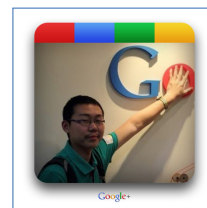
Curriculum Vitae

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"Impossible is nothing if you dare to challenge !"

Education

- 2014.08–now **Ph.D. Candidate - Simulation Optimization**, *National University of Singapore*, Singapore.
- 2010.09–2014.06 **B.Eng. - Industrial Engineering**, *Nanjing University*, China.
- 2010.09–2014.06 **B.Ec. - Financial Engineering**, *Nanjing University*, China.

Accomplishments



- 2017.04 Gold Medal, WorldQuant Global Alpha Building Competition
- 2017.03 Level 5 (Finalist), Google 2017 FooBar Coding Challenge
- 2013.02 INFORMS Paper Award, The Mathematical Contest in Modeling (0.05%)
- 2013.02 Outstanding Winner, The Mathematical Contest in Modeling (0.2%)
- 2011.07 Second Place, Google Summer Students Blog Share Competition (0.3%)
- 2011/2012 Outstanding Volunteer, the 4th/5th Google Warm China Cup
- 2011.12 Top 2, the 2nd Nanjing "JinWeiNing Inc" Logistics and Supply Chain Innovation Competition (5%)

Experience

Academic Experience

- 2012.07–2012.09 **An investigation of "City 100 Logistics Inc, Beijing" concerning jointly distribution.**
- 2013.04–2013.05 **An experiment study of Supply Chain Contract concerning Stackelberg Games and Bilateral Bargaining Games.**

Extra-curricular

- 2011.09–2012.09 **President**, *Google Camp*, Nanjing University.
 Invite some geeks to come to lectures and seminars, organize wonderful competition of Google such as Android App Competition and Warm China Cup and organize visits to Google Inc.
- 2011.07–2012.09 **Vice President**, *Students Research Training Program Association*, Nanjing University.
 Invite some experienced seniors to give seminars and host the summit of innovation @NJU.

Projects

- 2016.03-Present Developed Partition-Based Random Search algorithms to tackle Multi-objective Optimization via Simulation in Python.
- 2014.05-2014.06 Developed the graduation website for School of Engineering and Management, Nanjing University based on Django, Twitter Bootstrap and jQuery.
- 2014.04-2014.05 Developed Bibliometric tools to identify the knowledge graph for any research areas in Python.

Computer skills

- Basic Netlogo, AutoMod
- Intermediate Emacs, R, Git, z-tree, C++
- Advanced Python, Matlab, Octave, L^AT_EX

Interests

- Complex System
- Machine Learning
- Online Optimization
- Reinforcement Learning
- Formula One
- Cooking
- Chess
- Artificial Intelligence
- Quantitative Trading
- Simulation Optimization
- Competitive Programming
- Science Fiction
- Badminton
- Go

Publications

- Title *Multi-gradient Search for Multi-objective Stochastic Optimization*
- Supervisors A/Prof. Lee Loo Hay, Dr. Li Haobin
- Published in Working Paper
- Description – A multi-gradient search considering the hypervolume is developed.
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- Title *Optimal Computing Budget Allocation to Select a Subset of Elite Solutions for Multi-objective Ranking & Selection: a Large Deviations Perspective*
- Supervisors A/Prof. Lee Loo Hay, A/Prof. Xiao Hui
- Published in Working Paper
- Description – Proposed an efficient simulation budget allocation strategy for the problem to select a subset of elite solutions for Multi-objective Ranking & Selection
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- Title *Finding the Pareto Robustly Optimal Solutions based on Optimal Computing Budget Allocations*
- Supervisors A/Prof. Lee Loo Hay, A/Prof. Gao Siyang
- Published in Working Paper

Description – A novel approach considering not only worst cases is proposed to tackle Robust Optimization
– An efficient simulation budget allocation strategy is developed to improve the probability of selection iteratively.

Title *A Partition-based Random Search for Stochastic Multi-objective Optimization via Simulation*

Supervisors A/Prof. Lee Loo Hay, A/Prof. Gao Siyang

Published in Presented in INFORMS Annual Meetings, 2016

Description – Binary tree with nodes as partition rule is used to represent the structure of nested partitions.
– Uniform sampling is implemented to collect information for each region.
– Most promising region is selected by comparing the promising index (average of domination count) of each region.
– Partition the node of binary tree, which represents current most promising region.

Title *Optimal Computing Budget Allocation to Select the Non-dominated Systems - a Large Deviations Perspective*

Supervisors A/Prof. Lee Loo Hay, A/Prof. Giullia Pedrielli

Published in Under Review for IEEE Transactions on Automatic Control 2016

Description – Rate of probability of false selection considering multi-objective ranking & selection problem is proposed.
– Optimal budget allocation strategy is derived by solving the non-convex optimization which maximizes the rate as a function of allocation proportion.
– Global optimal allocation strategy is proposed by decomposing the non-convex optimization into a set of convex optimization.
– Numerical experiments show the newly proposed strategy (MOCBA+, MOCBA*) performs better than previous MOCBA.

Title *Make Wise Use of Every Drop*

Supervisors A/Prof. Li Juan & A/Prof. Qu Hui

Published in Mathematical Modeling And Its Applications, Volume 2, 2013

- Description – Outstanding Winner(0.2%) and INFORMS Prize Award(0.05%) in 2013 Mathematical Contest in Modeling¹ held by COMAP, sponsored by INFORMS, MAA, and SIAM.
- A grey prediction model was used to predict water gap between demand and supply across China during 2013~2025.
 - Four rigorous models are proposed to address water transfer, water storage, desalinization and water conservation to handle the severe water shortage issues.
 - Interplay between four strategies is analyzed, namely whether they are substitutes or complements in terms of water demand uncertainty and area properties.

Title *How Social Preference and Bounded Rationality Effects Pricing on A Supply Chain*

Supervisors A/Prof. Li Juan

Published in Journal of Management Sciences in China, 2018

- Description – A two-echelon supply chain with a supplier as Stackelberg Game's leader and a retailer as follower has been analyzed.
- A utility model and multinomial logit choice model have been adopted to capture people's social preferences and bounded rationality.
 - Apart from theoretical analysis, A/Prof. Li Juan, A/Prof. Wang Yulan Amanda and I have conducted a series of economic experiments to collect real decision data.
 - Structural estimation and some hypothesis tests were conducted via software R. Learning effect and bullwhip effect will be studied later.

Title *Joint Distribution Center Model in University Community*

Supervisors Prof. Zhou Jing & Dr. Li Min

Published in China Business and Trade, Issue 6, 2013

- Description – Achievement of our "National Students Research Training Program" concerning joint distribution center and the last mile problem.
- Scales, densities, locations, operations and profit model of joint distribution center have been studied roughly.

Title *Verification of Option Parity Relations in Domestic Warrants Market of China*

Supervisors A/Prof. Zhu Hongliang

Published in 2013 International Conference on Education and Education Management

¹The description of **MCM 2013 Problem B: Water, Water, Everywhere** can be viewed in <http://www.comap.com/undergraduate/contests/mcm/contests/2013/problems/>

- Description
- An empirical study of option parity relations in domestic warrants market of China has been analyzed.
 - Black-Scholes Model has been used to adjust the call price to make the strike price of call/put option equivalent.
 - A linear regression model and wilcoxon signed-rank test have been conducted to verify the parity relations.