Weizhi Liu

Curriculum Vitae

#7-17, Blk E1, 1 Engineering Drive 2
Singapore 117576
(+65) 93716374
weizhiliu2009@gmail.com
greenwicher.com

"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 $4^{th}/5^{th}$ Google Warm China Cup

2011.12 Top 2, the 2^{nd} 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 Competion 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, LaTeX

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.

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

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 strucutre of nested partitions.
– Uniform sampling is implemented to collect information for each regions.
– 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 decompoing 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 Modeling[1] 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

[1]The 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.