Wei **Wang**

RESEARCH ASSISTANT IN THE CHINESE UNIVERSITY OF HONG KONG

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"Make the change that you want to see in the world."

Education

Doctor of Philosophy (University of Southampton) *Southampton, United Kingdom*

PHD IN DECISION ANALYTICS & RISK *Sep. 2017 - Jun. 2023*

- Funded by ESRC SCDTP (South Coast Doctoral Training Partnership) for promising students in economic and social science.
- Thesis: Multivariate Shortfall Risk Measure, Statistical Robustness, and Risk Capital Allocation.
- The date on which I was awarded the degree of Doctor of Philosophy was Jun 29, 2023.

Master of Science (Xi'an Jiaotong University) *Xi'an, China*

M.S. IN STOCHASTIC OPTIMIZATION & MATHEMATIC FINANCE *Sep. 2014 - Jul. 2017*

- Thesis: Optimization Problems with Multivariate Stochastic Dominance Constraints and Their Applications in Portfolio Selection.

Bachelor of Science (Xi'an Jiaotong University) *Xi'an, China*

B.S. IN MATHEMATICS AND APPLIED MATHEMATICS *Aug. 2010 - Jul. 2014*

- First Speciality: Mathematics and Applied Mathematics (Elite Class) · Second Speciality: Accounting
- Thesis: The Practicable Algorithm for Multi-period Investment Decision Model.
- Exchange student (Michigan States University, Aug. 2013 - Dec. 2013) funded by CSC (China Scholarship Council), East Lansing, United States.

Working Experiences

Associate Lecturer (University of Southampton) *Southampton, United Kingdom*

SOUTHAMPTON BUSINESS SCHOOL, UNIVERSITY OF SOUTHAMPTON *Jun. 2023- Nov. 2023*

- Supervised MSc students with their final dissertations in Decision Analytics and Risk Department at the University of Southampton.
- Marked the MSc students' dissertations.

Research Fellow (The Chinese University of Hong Kong) *Hong Kong, China*

DEPARTMENT OF SYSTEMS ENGINEERING AND ENGINEERING MANAGEMENT, CUHK *Apr. 2023- Present*

- Supported by CUHK Direct Grant and supervised by Prof Huifu Xu.

Associate Lecturer (University of Southampton) *Southampton, United Kingdom*

SOUTHAMPTON BUSINESS SCHOOL, UNIVERSITY OF SOUTHAMPTON *May. 2022- Aug. 2022*

- Supervised MSc students with their final dissertations in Decision Analytics and Risk Department at the University of Southampton.
- One of my supervised students received the best dissertation prize from the business school student office.

Research Assistant (The Chinese University of Hong Kong) *Hong Kong, China*

DEPARTMENT OF SYSTEMS ENGINEERING AND ENGINEERING MANAGEMENT, CUHK *Jan. 2021- Jul. 2021*

- Supported by CUHK Direct Grant and supervised by Prof Huifu Xu.

Junior Research Assistant (The Chinese University of Hong Kong) *Hong Kong, China*

DEPARTMENT OF SYSTEMS ENGINEERING AND ENGINEERING MANAGEMENT, CUHK *Jul. 2020-Jan. 2021*

- Supported by CUHK Direct Grant and supervised by Prof Huifu Xu.

Part-time Counsellor *Xi'an, China*

CORE MEMBER *Jan. 2016- Jun. 2017*

- Severed as chief organizer and coordinator for the masters in School of Mathematics and Statistics.
- Organized and managed the 1st Data-Driven Mathematical Contest in Modeling and Product Designing as a leader.

Publications and working papers

[14]. W. Wang and H. Xu, A pragmatic approach to systemic risk measurement and allocation: a multivariate loss ratio perspective, Working paper, 2023.

[13]. W. Wang and T. Ma, Portfolio selection under optimal scenario dependent multivariate risk measure, Working paper, 2023.

[12]. W. Wang, Decision making under preference robust distortion risk measure, Working paper, 2023.

[11]. W. Wang, **A numerical and comparative study for optimal scenario-dependent allocation strategy**, Working paper, 2022.

[10]. W. Wang, **Optimization representation of spectral risk measures**, Working paper, 2022.

[9]. W. Wang and H. Xu, **Optimized certainty equivalent with ϕ-divergence disutility and its application in capital allocation**, Working paper, 2021.

[8]. W. Wang, H. Xu and T. Ma, **General set excess based optimal capital allocation principle**, Working paper, 2021.

[7]. Q. Wu, S. Zhang, W. Wang, and H. Xu, **Multi-attribute utility preference robust optimization: a continuous piecewise linear approximation approach**, Submitted to European Journal of Operational Research, Under review.

[6]. W. Wang and H. Xu, **State-dependent preference robust distortion risk measure on act space and its application in optimal decision making**, Computational Management Science, Published online: 05 October 2023.

[5]. W. Wang and H. Xu, **Preference robust distortion risk measure and its application**, Mathematical Finance, Published online: 26 February 2023.

[4]. W. Wang, H. Xu and T. Ma, **Optimal scenario-dependent multivariate shortfall risk measure and its application in capital allocation**, European Journal of Operational Research, Published online: 10 August 2022.

[3]. W. Wang, H. Xu and T. Ma, **Quantitative statistical robustness for tail-dependent law invariant risk measures**, Quantitative Finance, Published online: 26 Mar 2021.

[2]. W. Wang and H. Xu, **Robust spectral risk optimization when information on risk spectrum is incomplete**, SIAM Journal on Optimization, Published online: 24 Nov 2020.

[1]. Y. Zhang, H. Xu and W. Wang, **Preference robust models in multivariate utility-based shortfall risk minimization**, Optimization Methods and Software, Published online: 02 Oct 2020.

Presentations

Research Seminar in SUSTech
Shenzhen, China

PRESENTATION — *Oct. 2023*

Introduced the Paper "Preference robust distortion risk measures".

2022 INFORMS Annual Meeting
Indianapolis, United States

PRESENTATION — *Oct. 2022*

Introduced the Paper "Optimal Scenario-dependent Multivariate Shortfall Risk Measure and Its Application in Capital Allocation".

MOS2021--online
Qingdao, China

PRESENTATION — *Oct. 2021*

Introduced the Paper "Preference Robust Distortion Risk Optimization".

SCDTP Final-Year Conference
Brighton, United Kingdom

POSTER — *Dec. 2019*

Introduced the topic "Risk Measure and Its Application in Capital Allocation".

Project Experience

Preference Robust Optimization Problem and Its Stability Analysis
Hong Kong, China

CORE MEMBER — *Feb. 2022 - Present*

- To develop a new preference robust optimization model and analyze its stability.
- To develop a novel algorithm to solve the preference robust model.
- To apply the proposed preference robust optimization model in various applications, for instance, decision making, machine learning, auction design.
- To establish the quantitative statistical robustness result.

Preference Robust Models and Its Applications
Hong Kong, China

PROJECT PRINCIPAL AND SUPERVISED BY PROF HUIFU XU — *Jul. 2020 - Jul. 2021*

- Developed the preference robust models under the Yarri's dual theory of choice under risk.
- Developed the connection between expected utility theory and Yarri's dual theory and find the potential gaps for future research.

General Set Excess Based Optimal Capital Allocation Principle
Southampton, United Kingdom

PROJECT PRINCIPAL AND SUPERVISED BY PROF HUIFU XU & PROF TIEJUN MA — *Oct. 2017 - Oct. 2019*

- Extended "Excess based allocation of risk capital" to a general convex case.
- Provided an efficient algorithm for calculation.

The Fault Diagnosis of Thermal Power Equipment, XJTU & Shanghai Electric *Xi'an, China*

CORE MEMBER AND SUPERVISED BY PROF ZHIPING CHEN *Sep. 2015 - Feb. 2016*

- Summarized the methods used in the fault diagnosis of thermal power equipment such as logistic regression, support vector machine (SVM), hidden Markov model (HMM).
- Wrote a research report for the fault diagnosis of thermal power equipment.

Time Consistent Dynamic Risk Measure and Optimal Investment Policy Selection *Xi'an, China*

CORE MEMBER AND ADVISED BY DR JIA LIU *Mar. 2012 - May. 2013*

- Selected as scientific research training program for undergraduates in elite class.
- Investigated the time consistent multi-period mean-variance portfolio selection problem under a Markov regime switching framework and Investigated time consistency of the mean-variance optimal investment policy in stochastic markets.

Ratings of Colleges on the Basis of Quantitative Analysis and Grey Relationship Analysis (GRA) *Xi'an, China*

CORE MEMBER AND LEADER *Jan. 2013 - Feb. 2013*

- Established a mathematical model focusing on the effect of class-size and student-faculty size using GRA.
- Constructed a 'Ratings of Colleges System' to perform the ranking of Universities.

Teaching Experience

MSc Dissertation Supervisor *Southampton, United Kingdom*

PROGRAM LEADERS: PROF TIEJUN MA AND DR STEFFEN BAYER *2019, 2020, 2022, 2023*

- Supervised students to develop their research ideas, structure their dissertations and ultimately produce high-quality work.

BSc/MSc Dissertation Marker *Southampton, United Kingdom*

KEY MEMBER *2018, 2019, 2020, 2022*

- Marked dissertations and provided the feedback accordingly for BSc and MSc in the Business School, University of Southampton.

Data and Program Tutor *Southampton, United Kingdom*

HELPER *2018, 2019*

- Helped the BSc and MSc with their Matlab/ Python code in the Mathematics School, University of Southampton.

Teaching Assistant *Xi'an, China*

MODULE LEADER: PROF YANMEI KANG *2015*

- Taught the book ``Stochastic differential equations: an introduction with applications" for Masters.

Honors & Awards

INTERNATIONAL

2020,2022	**Publications Award**, Southampton Business School	*Southampton, UK*
2017	**ESRC SCDTP scholorship**, Economic and Social Research Council	*Southampton, UK*
2013	**Meritorious Winner**, Mathematical Contest in Modeling of America	*Xi'an, China*

DOMESTIC

2016	**2nd Prize**, Data-Driven Mathematical Contest in Modeling and Product Designing Competition	*Xi'an, China*
2016	**GuangHua Scholarship**, Xi'an Jiaotong Univerisity	*Xi'an, China*
2016	**Merit Graduate Student**, Xi'an Jiaotong University	*Xi'an, China*
2015	**Samsung Scholarship**, Xi'an Jiaotong Univerisity	*Xi'an, China*
2015	**Excellent Volunteer**, International Universities Alliance of the New Silk Road	*Xi'an, China*
2012	**National Endeavor Fellowship**, Xi'an Jiaotong University	*Xi'an, China*
2011	**2nd Prize**, National Mathematics Contest for college students (Shaanxi Contest District)	*Xi'an, China*

Skills

Softwares MATLAB, Latex, Office, Maple, Python, R, SAS.

Languages Chinese (Native or bilingual proficiency), English (Professional working proficiency).

References

1. Huifu Xu.

Professor in Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong. Email: hfxu@se.cuhk.edu.hk. He is also an associate editor of Computational Management Science and Mathematical Programming and a member of Mathematical Optimization Society.

2. Tiejun Ma.

Associate Professor in Risk and Decision Analytics within Department of Decision Analytics and Risk, Southampton Business School, University of Southampton, Southampton, SO17 1BJ, United Kingdom. Email: tiejun.ma@soton.ac.uk. He is also a management team member of the EPSRC/GCHQ funded Southampton Centre of Excellence for Cyber-Security Research and is on the University Executive Board of High Performance and Data Intensive Computing Working Group. In addition, he is a selected member of EPSRC's New Economy Model Network and is a selected reviewer for EPSRC/ESRC proposals, as well as a Fellow of the Higher Education Academy.

3. Steffen Bayer.

Lecturer in Business Analytics within Southampton Business School at the University of Southampton. Email: S.C.Bayer@soton.ac.uk. He is the Programme Leader of the MSc in Business Analytics and Finance and a member of the editorial board of Operations Research for Health Care and a past president of the UK Chapter of the International Systems Dynamics Society.