郭鹏辉 · Penghui Guo

Updated: August 2, 2023

Nanjing University of Aeronautics and Astronautics (NUAA)
29 Jiangjun Avenue
Nanjing Jiangsu, 211106 China

Email: m@guo.ph
Homepage: https://guo.ph

EDUCATION	**Ph.D. Candidate,** Management Science and Engineering *Apr. 2019 - present* **Nanjing University of Aeronautics and Astronautics** Nanjing, China — Advisor: Prof. Jianjun Zhu — College of Economics and Management — Concentrations: Disaster and Humanitarian Operations Management

Visiting Student, Industrial Engineering *Sep. 2019 - Dec. 2019*
Texas State University San Marcos, U.S.
— Advisor: Dr. Zhijie Sasha Dong
— UTIL Lab at Ingram School of Engineering
— Research project: A Stochastic Optimization Approach for Prepositioning Relief Supplies Considering Lateral Transshipment
— Funded by NUAA

M.S., Management Science and Engineering *Sep. 2016 - Apr. 2019*
Nanjing University of Aeronautics and Astronautics Nanjing, China
— Advisor: Prof. Jianjun Zhu
— College of Economics and Management
— Dissertation: Models and Algorithms for Post Disaster Rescue Route Optimization. (full text)

B.S., Industrial Engineering *Sep. 2011 - Jul. 2015*
Henan Polytechnic University Jiaozuo, China
— School of Energy Science and Engineering

RESEARCH INTERESTS

◇ **Disaster and Humanitarian Operations Management:** The location, routing, and allocation problem for humanitarian planning and response.
◇ **Optimization Modeling and Algorithms:** Stochastic programming, mixed-integer programming, and decomposition algorithms. Development for optimization packages.

SKILLS

Solid knowledge of modeling and algorithms for optimization problems. 50k+ lines of `Python` code (including `gurobipy` for Gurobi, `Pyomo` for optimization modeling, `Matplotlib` for visualization, and `Django` for web development). Beginner of `Julia`. Working proficiency in typesetting by LaTeX. Native in Chinese Mandarin.

RESEARCH PAPERS

[4] **Guo,P.**, Dong,Z.S.*, & Zhu,J. (working paper). Nested logic-based Benders decomposition for disaster preparedness planning with horizontal coordination.

[3] **Guo,P.**, & Zhu,J.* (2023). Capacity reservation for humanitarian relief: A logic-based Benders decomposition method with subgradient cut. *European Journal of Operational Research*, 311(3), 942-970. https://doi.org/10.1016/j.ejor.2023.06.006. (full text)

[2] **Guo,P.**, Zhu,J.*, & Wang,H. (2019). Location-routing-allocation problem with consolidated shipping of heterogeneous relief supplies in post-disaster rescue. *Systems Engineering - Theory & Practice,* 39(9), 2345-2360. (in Chinese, full text)

[1] **Guo,P.**, Zhu,J.*, & Wang,H. (2018). Multi-location emergency rescue route optimization under the condition of natural disaster considering safety and time Cost. *Systems Engineering,* 36(6), 62-70. (in Chinese, full text)

RESEARCH EXPERIENCE	ACADEMIC

Integrated Optimization for Large-scale Natural Disaster Rescue Location-Routing-Allocation Problem *Jun. 2017 - Nov. 2018*
– Project supported by Foundation of Graduate Innovation Center in NUAA.

SCHOLARSHIPS, HONORS, AND AWARDS

Joint Ph.D. scholarship (NO. 202106830115) *Jul. 2021*
– Supported by the China Scholarship Council (CSC) for 12 months.

Short-term visiting Ph.D. scholarship *Jun. 2019*
– Supported by NUAA for three months.

2nd Price (top 3% of participants) *May 2019*
– The 2nd National Innovation Competition of Industrial Engineering and Lean Management.
– Name of the Project: Models and Algorithms for Emergency Rescue Location-Routing Optimization with Stochastic Demand

Outstanding Postgraduate Student (top 20% of postgraduate student) *Apr. 2019*
– By NUAA graduate school.

3rd Price (top 30% of participants) *Dec. 2018*
– The 15th China Post-Graduate Mathematical Contest in Modeling.

National Scholarship (top 0.5% of graduate student) *Oct. 2018*
– By Ministry of Education of the People's Republic of China.

3rd Price (top 30% of participants) *Jun. 2018*
– The 2018 NUAA Post-Graduate Mathematical Contest in Modeling.

3rd Price (top 30% of participants) *Dec. 2017*
– The 14th China Post-Graduate Mathematical Contest in Modeling.

OPEN SOURCE ACTIVITIES

Benders.jl https://github.com/phguo/Benders.jl *May 2022 - present*
– A Julia package for Benders decomposition and its variants (now support the classical Benders).

BendersLib https://pypi.org/project/BendersLib *Jun. 2021 - present*
– A Python library for Benders decomposition (under development).

VRP2E https://github.com/phguo/VRP2E *Jan. 2018*
– A coevolutionary-algorithm solver for multi-objective two-echelon vehicle routing problems.

arxiv-latex-cleaner https://pypi.org/project/arxiv-latex-cleaner *Jan. 2022*
– Contributor.
– A 3k+ stars tool that cleans the LaTeX code for submitting to arXiv.

MEMBERSHIP

INFORMS Student Member (ID: 1606090) *Apr. 2021 - present*
– The Institute for Operations Research and the Management Sciences (INFORMS)

ORSC Student Member (ID: S390022695M) *Oct. 2021 - present*
– The Operations Research Society of China (ORSC)

SESC Member *Oct. 2021 - present*
– The System Engineering Society of China (SESC)

SCOPE Student Member (ID: S320005073A) *Oct. 2021 - present*
– Chinese Society of Optimization, Overall Planning and Economic Mathematics (SCOPE)