

郭鹏辉 · Penghui Guo

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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 L^AT_EX. Native in Chinese Mandarin.

RESEARCH PAPERS

- [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 Emergency Rescue Location-Routing-Allocation Problem *Jun. 2017 - Nov. 2018*

- Project supported by Foundation of Graduate Innovation Center in NUAA.

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| SCHOLARSHIPS, HONORS, AND AWARDS | Short-term visiting Ph.D. scholarship | <i>Jun. 2019</i> |
| | – Supported by NUAA for three months. | |
| | 2 nd Price (top 3% of participants) | <i>May 2019</i> |
| | – The 2 nd 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) | <i>Apr. 2019</i> |
| | – By NUAA graduate school. | |
| | 3 rd Price (top 30% of participants) | <i>Dec. 2018</i> |
| | – The 15 th China Post-Graduate Mathematical Contest in Modeling. | |
| | National Scholarship (top 0.5% of graduate student) | <i>Oct. 2018</i> |
| OPEN SOURCE ACTIVITIES | – By Ministry of Education of the People’s Republic of China. | |
| | 3 rd Price (top 30% of participants) | <i>Jun. 2018</i> |
| | – The 2018 NUAA Post-Graduate Mathematical Contest in Modeling. | |
| | 3 rd Price (top 30% of participants) | <i>Dec. 2017</i> |
| | – The 14 th China Post-Graduate Mathematical Contest in Modeling. | |
| | Benders.jl https://github.com/phguo/Benders.jl | <i>May 2022 - present</i> |
| | – A Julia package for Benders decomposition and its variants (now support the classical Benders). | |
| | BendersLib https://pypi.org/project/BendersLib | <i>Jun. 2021 - present</i> |
| | – A Python library for Benders decomposition (under development). | |
| | VRP2E https://github.com/phguo/VRP2E | <i>Jan. 2018</i> |
| MEMBERSHIP | – A coevolutionary-algorithm solver for multi-objective two-echelon vehicle routing problems. | |
| | arxiv-latex-cleaner https://pypi.org/project/arxiv-latex-cleaner | <i>Jan. 2022</i> |
| | – Contributor. | |
| | – A 3k+ stars tool that cleans the LaTeX code for submitting to arXiv. | |
| | INFORMS Student Member (ID: 1606090) | <i>Apr. 2021 - present</i> |
| | – The Institute for Operations Research and the Management Sciences (INFORMS) | |
| | ORSC Student Member (ID: S390022695M) | <i>Oct. 2021 - present</i> |
| | – The Operations Research Society of China (ORSC) | |
| | SESC Member | <i>Oct. 2021 - present</i> |
| | – The System Engineering Society of China (SESC) | |
| | SCOPE Student Member (ID: S320005073A) | <i>Oct. 2021 - present</i> |
| | – Chinese Society of Optimization, Overall Planning and Economic Mathematics (SCOPE) | |