Chenhui Qu

University of Colorado Boulder, Leeds School of Business
Email address: Chenhui.Qu@colorado.edu | Phone number: +86 13153512707

EDUCATION

Huazhong University of Science and Technology, Wuhan, China — Sep.2022 — present
Major: Management Science and Engineering — GPA: 3.9/4.0
Main Course: Advanced Decision Theory and Methods (99), Mathematical Statistics (96), Advanced Operations Research (94), Introduction to Management Research Methods (90)

Wuhan University of Technology, Wuhan, China — Sep.2018 — June.2022
Major: Information Management and Information System — GPA: 3.98/4.0 (Top 2% student)
Main Course: Advanced Mathematics (98.6), Java Language Programming (97.75), Operational Research (97.6), Fundamentals of C Language Programming (97.37), Systems Engineering (95.6), Probability Theory & Mathematical Statistics (92.3)

PUBLICATIONS

- Yangming Zhou, **Chenhui Qu**, Qinghua Wu, Yawen Kou, Zhibin Jiang, MengChu Zhou. A Bilevel Hybrid Iterated Search Approach to Soft-clustered Capacitated Arc Routing Problems, ***Transportation Research Part B: Methodological***, 2024, 184, 102944.

ACADEMIC EXPERIENCE

Integrated Layout Optimization for Large-Scale Onshore Wind Farms
Advisor: Dr. Yu Yang (Department of Industrial and Systems Engineering, University of Florida) — Oct.2023 — Present

- Built the first integrated, close-to-reality optimization model for onshore wind farm that addresses unique challenges, including land acquisition and road construction, alongside the conventional aspects of turbine layout and cable routing.
- Employed a physics-based non-linear model of the wake effects experienced by wind turbines and demonstrated that this approach yields more precise results than the linear model commonly used in the operations research community.
- Developed a two-stage hybrid evolutionary algorithm, consisting of a first stage with approximate computation crossover operators and tabu search algorithm, and a second stage featuring a mathematical model-based crossover operator and a variable neighborhood search algorithm with complex neighborhood structures.
- Developed an effective exact method for solving the proposed MIQCP model, which combines dynamic linearization, and customized cutting planes.

A Bilevel Hybrid Iterated Search Approach to Soft-clustered Capacitated Arc Routing Problems
Advisor: Dr. Yangming Zhou (Sino-US Global Logistics Institute, Shanghai Jiao Tong University) — Feb.2023 — Feb. 2024

- Developed a highly efficient heuristic algorithm to solve the Soft-clustered Capacitated Arc Routing Problem, which outperforms state-of-the-art algorithms in terms of both time and solution quality on 611 existing benchmark instances.
- Conducted research from both the cluster-level and arc-level, and proposed an effective bilevel hybrid iterated search method, which includes a bilevel variable neighborhood search and a similarity-driven hybrid perturbation.
- Generated large-scale benchmark instances based on real road networks in the UK and China, which have been publicly released on our GitHub site.
- Compared several state-of-the-art algorithms for comparison with the proposed algorithm and visualized the results through graphical presentations.

PROJECT EXPERIENCE

Power Grid Load Forecasting in Electric Market using Machine Learning Algorithms
Advisor: Dr. Qinghua Wu (School of Management, Huazhong University of Science & Technology) — June.2022 — June.2023

- Collected massive data from diverse platforms and completed a comprehensive report by analyzing the trend of industrial structure change and the development path of emerging industries in Hubei Province.
- Visualised data, analyzed the correlation between the development of emerging industries and power grid load, and explored the development trends of the impact of emerging industries such as electric vehicles on power grid load.
- Leveraged machine learning algorithms, such as Time Series, to propose a load forecasting method suitable for the Hubei power grid under new circumstances, developed the forecasting algorithm code, and published a patent.

Modeling and Evolution Research on Online Public Opinion Based on Opinion Dynamics: A Case Study of COVID-19 Rumor Spreading
Project: Wuhan University of Technology Self-Innovation Fund Research Project
Advisor: Dr. Jindong Qin (School of Management, Wuhan University of Technology) — Feb.2021 — Feb.2022

- Carried out a literature review on opinion dynamics and the online public opinion field, exploring research related to rumor spreading in the context of the COVID-19 pandemic.
- Employed a combination of quantitative theoretical research and empirical application studies, organized team discussions and deliberations on the topic, designed research proposals for the project, and conducted feasibility analysis.

MathorCup College Mathematics Modeling Challenge - Big Data Competition
Team Leader(National First Prize) Feb.2021

- Employed a Nonlinear Autoregressive (NAR) neural network model for short-term network traffic forecasting and integrated particle swarm optimization (PSO) with a back propagation (BP) neural network, grey wolf optimizer (GWO) enhanced support vector machine (SVM), and a power function regression model to predict long-term traffic trends.
- Utilized Principal Component Analysis (PCA) and Independent Component Analysis (ICA) for data dimensionality reduction and blind source separation.
- Compared the CURE algorithm, DBSCAN algorithm, and CLIQUE algorithm, and proved the advantage of adopting the CLIQUE algorithm for feature vector clustering in this project.

WORK EXPERIENCE

Engineering Optimization Decision Making
Teaching Assistant, HUST Aug.2024 — Sep.2024

- Taught two 3-hour sessions on how to use various solvers, such as CPLEX amd Gurobi.
- Assisted the professor in grading assignments and exams, and provided after-class tutoring services to students.

Operations Research China Society
Responsible Editor June.2022 — present

- Led the team to deeply interpret top journal papers in the field of operations research and provided valuable learning resources for professionals and academic enthusiasts by thoroughly explaining algorithms and theoretical knowledge.
- Guided the team in writing and publishing WeChat articles summarized key content and algorithms of papers, and presented complex operations research theories in an easily understandable manner to the public. One of the articles exceeded 4,500 views, ranking first for the month.

AWARDS

National-Level: MathorCup College Mathematics Modeling Challenge - Big Data Competition National First Prize 2020
National-Level: 'CITIC Securities Cup' Mock Securities Investment Competition Award of Excellence 2019
Provincial-Level: National Advertising Art Design Competition for College Students Hubei Third Prize 2020
Provincial-Level: Shandong Chamber of Commerce Dream Building Scholarship 2020
University-Level: Pacemaker to Merit Student **(Top 1%)** 2019& 2020& 2021
University-Level: First Prize Scholarship **(Top 2%)** 2019& 2020& 2021& 2022
University-Level: Outstanding Graduates 2022
University-Level: Merit postgraduate **(Top 5%)** 2023 & 2024
University-Level: Third Prize of Zhixing Scholarship **(Top 5%)** 2023

SKILLS

- **Languages:** Mandarin (native), English (IELTS 7(6.5))
- **Programming:** C/C++, Java, Python, Matlab
- **Solvers:** Gurobi, CPLEX
- **Interest:** Singing, Watching detective TV series, Playing Werewolf Kill