Zixuan ZHANG

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Location: Chengdu, China

EDUCATION

Chengdu University of Technology, China **09/2022 - 06/2025**
Master's Degree in Management Science and Engineering

- **Core Modules**: Big Data and Artificial Intelligence (90), Topics in Decision Research (89), Game Theory (90), Management Economic Analysis (89), Scientific and Technical English Reading and Writing (92), Machine Learning and Decision Analysis (89), Literature Review and Scientific and Technical Paper Writing (88), Frontiers of Modern Management Science (80), Nonparametric Analysis on Effi (95)
- **GPA**: 89.1/100

Chengdu University of Traditional Chinese Medicine, China **09/2018 - 06/2022**
Bachelor's Degree in Medical Information Engineering

- **Core Modules**: C Language Programming (83), Advanced Mathematics (88), Database System Design and Programming (85), JAVA Language Programming (83), Engineering Linear Algebra (87.8), Python Language Programming (91.6), Network Technology and Maintenance (90), Fundamentals of Information Management (88.2), Medical Data Analysis and Mining (91.2)
- **GPA**: 3.3/4.0

PAPERS & PUBLICATIONS

Comprehensive Evaluation of "Three Waters" Carrying Capacity and Path Evolution Study: A Case of the Yellow River Basin **10/2023 - 12/2023**
Under review in the Journal of Environmental Management.
Co-Authors: **Zixuan Zhang**; Yue Li; Yangxi Lv; **Corresponding Author:** Pro Xudong Chen

- **Methods**: Developed the Three Waters System Carrying Capacity (TWSCC) index using entropy weight-TOPSIS, SCIE, and ArcGIS tools. Analysed spatiotemporal variations and proposed differentiated developmental pathways. Applied System Dynamics modelling for dynamic simulation from 2020 to 2035.

Coupling Coordination Evaluation and Sustainable Development of "Three Waters" System and Impulse Response Analysis in the Yellow River Basin **09/2023 - 11/2023**
Published in the Sustainable Cities and Society; available at SSRN 4612092.
Co-Authors: Yue Li; Yangxi Lv; **Zixuan Zhang**; Xue Feng; **Corresponding Author:** Pro Xudong Chen

- **Methods**: Established a coupling coordination model and employed Vector Auto Regression (VAR) to analyse key indicators' influence on the sustainable development of the "Three Waters" System (TWS) from 2005 to 2021.

Spatio-temporal Evolution Pattern and Obstacle Factors of Water-Energy-Food Nexus Coupling Coordination in the Yangtze River Economic Belt **07/2023 - 10/2023**
Published in the Journal of Cleaner Production, 2024: 141229.
Co-Authors: Yangxi Lv; Yue Li; **Zixuan Zhang**; **Corresponding Author**: Pro Xudong Chen

- **Methods**: Developed a framework to categorise links within the Water-Energy-Food (WEF) nexus, selecting indicators and integrated models. Applied this framework to assess the degree of coordination and diagnose obstacles in the coupled development of the WEF nexus from 2000 to 2020 in the Yangtze River Economic Belt.

Analysis on the coupling coordination characteristics and key factors between high-quality economic development and water resource carrying capacity for cities in the Yangtze River Basin
07/2023 - 10/2023
Under revision for the Sustainable Cities and Society.
Co-Authors: Yang Shuhui; **Zixuan Zhang**; Yu Keyao; **Corresponding Author**: Pro Zhigang Li

- **Methods**: Utilised the CRITIC-TOPSIS method to compute comprehensive indices for high-quality economic development and water resource carrying capacity in 53 cities. Employed coupling models, coordination measures, and a random panel Tobit regression model to evaluate and analyse the spatiotemporal characteristics and influencing factors affecting coordination.

Collaborative Optimal Allocation of Water Resources and Sewage Discharge Rights in Watershed Cities: Considering Equity among Water Sectors **07/2022 - 10/2022**

Published in the Environmental Science and Pollution Research, 2023, 30(38): 88949-88967.

Co-Authors: Mingkang Yuan; Yue Li; **Zixuan Zhang**; Lin Wang; **Corresponding Author**: Pro Xudong Chen

- **Methods**: Developed a multi-objective optimisation model incorporating sewage discharge rights into watershed water resource allocation. Utilised the Gini coefficient to balance equity and economic aspects across water sectors, considering distinct water demands and sewage discharge requirements.

ACADEMIC PROJECTS

Research on Key Issues and Paths for Systemic Transformation in Sichuan Province under the Dual Carbon Goal **01/2024 - 12/2025**

- **Core Member**; **Supervisor**: Xudong Chen, Vice President of the College of Management Science
- **Key Contributions**: (1) Collected and organised data from 2018 to 2022, including population, economic, and eight types of energy consumption data in Sichuan Province. (2) Utilised the IPCC carbon emission calculation method to quantify carbon emissions in Sichuan Province from 2018 to 2022. (3) Developed a carbon emission driving factor decomposition model and applied the Logarithmic Mean Divisia Index (LMDI) method to analyse the contribution and trends of various factors to carbon emissions. (4) Drafted Chapter Four of the project proposal, involving tasks such as table generation, data analysis, and technical roadmap creation.
- **Achievements**: Completed a project proposal and secured funding from the Sichuan Provincial Natural Science Foundation (Project funding: RMB200,000).

Study of the Allocation Strategy of Water Pollutant Emission Permits in Tuojiang River Basin by Coordinating Water Resources, Water Environment and Water Ecological Management **06/2023 - 12/2024**

- **Core Member**; **Supervisor**: Xue Feng, Deputy Sector Chief of the College of Management Science
- **Key Contributions:** (1) Conducted literature review on three waters nexus, ecological compensation, and pollutant emission permits. (2) Collected and cleaned data for 17 years from six major cities in the Tuojiang River Basin. (3) Proposed integrating bidirectional ecological compensation mechanism with water pollutant emission permits allocation model. (4) Assisted in drafting the research results section and project report.
- **Achievements**: Published a paper (co-author) - Feng, X., Li, Y., Chen, X., Lv, Y., **Zhang, Z.**, & Chen, S. (2023). Study of the allocation strategy of water pollutant emission permits under a bidirectional ecological compensation mechanism. *Ecological Indicators*, 154, 110849.

Research of the Allocation Strategy of Water Pollutant Emission Permits Considering Ecological Compensation Mechanism Driven by Big Data - Taking Tuojiang River Basin as an Example **11/2022 - 12/2024**

- **Core Member**; **Supervisor**: Xudong Chen, Vice President of the College of Management Science
- **Key Contributions**: (1) Conducted literature review on big data analytics, ecological compensation, and pollutant emission permits, outlining the research framework and drawing a technical roadmap. (2) Assisted in developing a data-driven optimisation scheme for pollutant emission permits, designing a non-dominated sorting genetic algorithm based on data analysis, and creating algorithm flowcharts. (3) Contributed to the writing of the research report, including the use of ArcGIS and Origin software for data analysis visualisation, table creation, and writing the conclusion section of the paper.
- **Achievements:** Published a paper (co-author) - Li, Y., Chen, X., Feng, X., Lv, Y., **Zhang, Z.**, & Qi, Q. (2023). Investigation of the allocation and trading strategy of wastewater emission permits considering ecological compensation. *Environmental Technology & Innovation*, 30, 103103.

Chronic Gastritis AI Data Mining and Processing **03/2021 - 06/2021**

- **Team Leader**; **Supervisor**: Chuanbiao Wen, Vice President of the College of Medical Information Engineering
- **Key Contributions**: (1) Conducted literature review on chronic gastritis pathology and AI data analysis, identifying research gaps. (2) Collected and anonymised data from 210 chronic gastritis cases. (3) Utilised SPSS for statistical data analysis and Origin for data visualisation. (4) Coordinated team tasks, supervised team members, and conducted weekly work progress presentations.
- **Achievements:** (1) Co-authored a project proposal. (2) Awarded the National-level First Prize in the 14th China Collegiate Computing Design Competition.

HONOURS & AWARDS

Competitions and Awards

- Excellent Award in China National Undergraduate "Innovation, Creativity and Entrepreneurship" Challenge 06/2021 - 10/2021
- National-level First Prize (Top 5%) in the 14th Chinese Collegiate Computing Competition (Team Leader) 05/2021 - 08/2021
- Provincial-level Second Prize (Top 20%) in the 14th Chinese Collegiate Computing Competition (Team Leader) 03/2021 - 05/2021

Honours

- Third-Class Graduate Academic Scholarship 09/2023
- Technological Innovation Scholarship 09/2021
- Second-Class College Academic Scholarship 05/2021
- Third-Class College Academic Scholarship 12/2020
- Third-Class College Academic Scholarship 06/2020
- Second-Class College Academic Scholarship 09/2019

ADDITIONAL INFORMATION

- **Skills**: ArcGis, MATLAB, Python, Stata, EViews, Maple, Origin, SPSS, Microsoft Office
- **Language**: Mandarin (Native), English (Proficient)