Minwei Kong

minw_k@hotmail.com | (+86)19825092411 | Academic Profile | GitHub

EDUCATION

- **The London School of Economics and Political Science** 2023/09 – 2024/09
  - M.S. Geographic Data Science
  - GPA: 3.89 (Rank 1/15)
  - Relevant Modules: Applied Geographical Information Systems; The Economics of Urbanization; Data for Data Scientists; Techniques of Spatial Economic Analysis; Graph Data Analytics and Representation Learning; Reinforcement Learning
- **Nanjing University** 2018/09 – 2023/06
  - B.E. Urban and Rural Planning
  - GPA: 3.78 (Rank 5/30; Average Mark: 88.4/100)
  - Relevant Modules: Virtual City and Environment Modelling; Digital Techniques in Urban Planning & Design; Urban and Regional System Analysis; Urban and Regional Economics; Intelligent Transport and Innovative Trips; Fundamentals of RS and GIS
- **Skills and Expertise**
  - Programming and Software: Python, R, ArcGIS/QGIS, HTML/CSS, JavaScript, Docker
  - Data Science and Analysis: Spatial Econometrics, Machine Learning & Deep Learning, Reinforcement Learning; WebGIS Development

PUBLICATIONS

- **Kong, M.W.**, Hu, H., Zhang, H.Y. Du, S.H. (2023). Spatio-temporal evolution of urban low-carbon competitiveness in the Yangtze River Delta from 2000 to 2020. *Geographical Research,* 42(10), 2713-2737.
- Zhou, Y.Y., Wang, Y.W., Xu, J.G., Ju Y., **Kong, M.W.**, Qi, Y., Wang, Q., Liang, L. (2024). Disentangling the Associations between Socio-environmental Dynamics and Subjective Well-being during and post the COVID-19 pandemic Using Explainable Machine Learning. *Computers, Environment and Urban Systems.* (under review)

PROFESSIONAL EXPERIENCE

- **Spatial Pleasure Co., Ltd.** Tokyo, Japan

  Data Scientist 2024/09 – Present
  - Simulate individual travel behaviors in Tokyo following the introduction of autonomous taxis using MATSim (Multi-Agent Transport Simulation); Utilizing discrete choice models to estimate individual transportation mode choices and the acceptability level of autonomous taxis
  - Analyze Origin-Destination spatiotemporal patterns in Sapporo with bus GTFS and IC card data; Exploring the improvements of the four-step model (trip generation, trip distribution, mode choice, and route assignment) in travel demand prediction
- **Urban Planning And Design Institute Of Nanjing University Co., Ltd** Nanjing, China

  Data Analysis Intern 2022/02 – 2022/05
  - Analyzed urban spatial structure in the Nanjing metropolitan area based on big data and complex network analysis
  - Constructed and maintained the GIS database of developable construction lands in the Yuhuatai District, Nanjing

RESEARCH EXPERIENCE

- **Predicting Roadside Emissions Using Spatiotemporal Graph Neural Networks: A Case Study in London** 2024/06 – 2024/08

  Master's thesis (Distinction); Supervisor: Prof. Ana Varela Varela, Department of Geography and Environment, LSE
  - Collected a comprehensive feature set, categorized into spatial static features (e.g., road conditions, traffic characteristics, and land use) and temporal features (e.g., historical emissions and meteorological data)
  - Developed a spatiotemporal dynamic graph of air pollutant monitoring stations, incorporating geographical proximity and wind-driven dispersion patterns
  - Integrated Long Short-Term Memory (LSTM) with Graph Attention Networks to forecast hourly NO2 concentrations at roadside monitoring stations in London, demonstrating superior accuracy in long-term prediction tasks

- **Optimizing Public Electric Vehicle Charging Station Placement Using Reinforcement Learning** 2024/03 – 2024/05

  Team leader; Course Project (High Distinction); Supervisor: Prof. Chengchun Shi, Department of Statistics, LSE
  - Formulated charging station placement as a reinforcement learning problem including state, action and reward
  - Developed an objective function to evaluate a specific placement plan, incorporating charging station coverage, travel time, charging time, waiting time and budget constraints
  - Implemented reinforcement learning algorithms (DQN, A2C, PPO) to optimize the utility function, which outperform other literature-based baselines
  - Visualized the optimal charging station placements on interactive maps and compared their practical implications

- **Disentangling Associations between Socio-Environmental Dynamics and Subjective Well-being during and post COVID-19 pandemic** 2023/02 – 2023/08

  Team member (top three contributor); National First Prize; Supervisor: Prof. Jiangang Xu, Dr. Yang Ju, Prof. Yi Qi
  - Extracting sentiment score of social media comment texts by ChatGPT during epidemic crisis in Shanghai, 2022
  - Analyzed attributions of impact factors to public sentiment based on SHAP (SHapley Additive exPlanations) interpretable neural network
  - Generalized the spatiotemporal impact mechanisms of the built environment on sentiment

- **Study on Multi-scale Spatiotemporal Impact Mechanism in the Nighttime Economy of Nanjing, China** 2023/01 – 2023/05

  Undergraduate thesis; National First Prize; Supervisor: Prof. Yi Qi
  - Assessed the dynamic intensity of nighttime economy from 2015 to 2020 with nighttime images and POIs
  - Investigated spatiotemporal patterns of nighttime economy through an automated workflow implemented using ArcGIS Pro Python scripts
  - Analyzed multiscale interactions of nighttime economic impacting factors using interpretable deep learning

- **Spatio-temporal Evolution of Urban Low-Carbon Competitiveness in the Yangtze River Delta from 2000 to 2020** 2021/10 – 2022/11

  Team leader; Excellent National Undergraduate Training Program for Innovation and Entrepreneurship; Supervisor: Prof. Hong Hu; Supported by National Natural Science Foundation of China (NSFC)
  - Constructed a comprehensive urban low-carbon competitiveness indicator system based on a large panel dataset
  - Evaluated urban low-carbon competitiveness from 2000 to 2020 using the Gray Correlation TOPSIS method
  - Analyzed and generalized evolutionary mechanisms by spatiotemporal clustering and exploratory spatiotemporal data analysis methods (LISA time path and space-time transition)

- **NoiseLoc: Campus Noise Monitoring and Traceability System** 2021/06 – 2021/11

  Team leader; National Grand Prize; Supervisor: Prof. Yi Qi
  - Built a spatial noise propagation and traceability model with real noise data on campus
  - Created deep-learning models for sound classification and intensity prediction and deployed models to website
  - Co-developed an interactive web application and applied for a computer software copyright

HONORS & AWARDS

- MSc Geographic Data Science Best Overall Performance Prize (2023-2024), LSE 2024/11
- The First Prize in the Wuhan Planning Cup 1st Urban and Rural Planning Graduation Design (Thesis) Contest (Hosted by Human Resource Development Centre, Ministry of Natural Resources, China) 2023/09
- The First Prize in 2023 Nanjing University Undergraduate Outstanding Graduation Thesis (Design) 2023/09
- Team member for Best Presentation Award in Global Smart Cities Summit - The 3rd International Conference on Urban Informatics (GSCS & ICUI 2023) 2023/08
- The First Prize in the 7th Chengyuan Cup: Planning Decision Support Model Design Competition (Hosted by World Urban Planning Education Network), $1,400 2023/06
- The Grand Prize in National College Students Spatial Information Technology Competition (Hosted by the Chinese Society for Geodesy, Photogrammetry and Cartography, CSGPC), $1,500 2021/11
- Honor Credential for Excellent Reporting, The 3rd National Symposium on Regional Ecology (Hosted by The Regional Ecology Professional Committee of the Ecological Society of China) 2022/11
- Campus Noise Monitoring and Traceability System. (Software Copyright No.: 2022SR0258036) 2022/02
- Excellent Peer Counsellor, Nanjing University 2022/08
- The First Prize Scholarship, Nanjing University, $420 2020/11
- Outstanding Member, Nanjing University Student Union 2019/06