Minwei Kong

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EDUCATION

➢ **The London School of Economics and Political Science**   2023/09 – Present
- M.S. Geographic Data Science (Expected Nov. 2024)
- Average Mark: Pending
- 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
- Average Mark: 88.4/100 (Major GPA: 89.4/100)
- 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
- 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 the impact of autonomous taxis on Tokyo's traffic flow and travel mode choices using MATSim (Multi-Agent Transport Simulation); integrate personal preference difference (e.g., age, income, acceptability) into the agent's utility function
- Implement the four-step model to predict traffic demand and analyze OD spatiotemporal clustering in Sapporo using bus GTFS and IC card data; apply deep learning models (e.g., Graph Neural Networks) and compare their performance and interpretability with statistical methods

➢ **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; 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 NO_2 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 – 2023/05

Team leader; Course Project (High Distinction); Supervisor: Prof. Chengchun Shi, Department of Statistics, LSE
- Formulated charging stations placement as a reinforcement learning problem including state, action and reward
- Developed a utility 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; 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 Nighttime Economy of Nanjing, China**   2023/01 – 2023/05

Undergraduate thesis; National First Prize; Supervisor: Prof. Yi Qi
- Obtained spatiotemporal patterns of nighttime economic by combining nighttime images and POIs
- Analyzed multiscale interactions of nighttime economic impact factors using interpretable deep learning
- Compared nighttime economy impact mechanism across six areas at different development levels

➢ **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

➢ **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 intensity prediction and deployed the models to the website
- Co-developed an interactive web app and applied for a computer software copyright

HONORS & AWARDS

• 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)	2023/06
• The Grand Prize in National College Students Spatial Information Technology Competition (Hosted by Chinese Society for Geodesy, Photogrammetry and Cartography, CSGPC)	2021/11
• Campus Noise Monitoring and Traceability System (NoiseLoc). Copyright Holder: Yi Qi, Minwei Kong, Ye Li, Hongyun Zhang, Zhen Zhou. (2022SR0258036)	2022/02
• Honor Credential for Excellent Reporting, The 3rd National Symposium on Regional Ecology	2022/11
• The First Prize Scholarship, Nanjing University	2020/11
• Excellent Peer Counsellor, Nanjing University	2022/08
• Outstanding Member, Nanjing University Student Union	2019/06