

Shuhao Li

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Educational Background

Jiangxi University of Science and Technology	Sep 2019-Jun 2023
■ B.Sc. in Geographic Information Science with a minor in English	
■ Major GPA: 87.4 Minor GPA:82 Rank: 3/28 (class); 4/60 (department)	
University of Bristol	Sep 2023-Nov 2024
■ M.Sc. in Geographic Data Science and Spatial Analytics (with Merit)	
■ GPA: 68 Rank: 4/16(class)	

Work Experience

Intern Summer School for International Organisations (Intern)	Jun 2022-Aug 2022
■ Participated in training programmes organized by CCPI2, UNIDO, and WCCO, gaining a deeper understanding of the structure and operations of international organizations and global governance systems. Focused on the principles and frameworks of sustainable development, including the UN Sustainable Development Goals (SDGs), and strengthened knowledge of global initiatives addressing environmental, economic, and social challenges.	
Zhejiang Xinyu Technology Co., Ltd. (WebGIS Engineer Intern)	Feb 2023-Apr 2023
■ Learned user requirement analysis, algorithmic design and implementation, and gained an in-depth understanding of GIS engineering, Internet map services, map mapping and marine mapping, etc	
51WORLD Digital Twin Technology Co., Ltd. (Smart City & Flood Management)	Feb 2025- Present
■ Built GIS automation tools for vector - raster conversion, pipeline attribute processing, and road network correction, ensuring data accuracy.	
■ Conducted million-level data cleaning and optimized 3D pipeline visualization for smart flood prevention systems.	
■ Applied pipeline and inundation APIs to create 3D flood simulations, improving scene performance through node merging and mesh processing.	

Research Experience

A Study of Urbanisation Trend Prediction in Nanchang Based on the CA-Markov Model	Mar 2022-June 2022
■ Used the CA-Markov model to simulate and forecast the land use of Nanchang city in 2030 and explore the urbanisation process of the city, to promote the healthy development of Nanchang city in the future and maintain the virtuous cycle of urban ecosystem	
Analysis of soil erosion changes and influencing factors based on the CSLE model and GeoDetector in Dongjiang River Basin of China	Jul 2021-Aug 2023
■ Quantified the spatial and temporal patterns of soil erosion in the area from 2016 to 2020 based on the Chinese Soil Loss Equation (CSLE), GIS and mathematical statistics. Employed multi-temporal Landsat imagery to derive vegetation cover and topography inputs, and used the GeoDetector method to assess the contribution of rainfall, slope, and vegetation indices to erosion variability.	
Analysis of spatial and temporal variations and differences in PM2.5 intensity in urban and rural areas of Ganzhou City and study of its influencing factors	May 2021-Aug 2021
■ This study takes Ganzhou city as an example to compare the accuracy of three interpolation methods, and then analyze the characteristics and patterns of urban and rural PM2.5 concentration distribution from spatial and temporal scales. Finally, explores the spatial mechanisms of its various influencing factors using the geodetector method	
Bristol urban safety analysis and planning of students' routes to school	Jan 2024-Sep 2024
■ This research focuses on enhancing urban safety and route planning for students in Bristol through a twofold approach. Firstly, it employs the U-Safety system, which integrates multi-source data, such as crime statistics, traffic data, and spatial features, with machine learning techniques(SAE, ANN and SVM) to calculate and predict a Safety Index (SI). Secondly, the study utilizes graph-based route planning algorithms, including Dijkstra's and A* algorithms, to design safer routes for university students.	
HCV Incidence Analysis among People Who Inject Drugs in Georgia (Team Research Project)	May 2024-Aug 2024
■ Collaborated with public health students to analyze over 1 million records related to Hepatitis C Virus (HCV) testing data among injecting drug users. Cleaned and transformed the dataset using R, calculated incidence rates based on seroconversion (first negative, later positive), and conducted descriptive and survival analysis to examine population-level risk factors. Created geospatial visualizations to map incidence distributions and identify high-risk regions, contributing to epidemiological insights for public health planning.	
Research on Spatiotemporal Characteristics of Carbon Emissions in the Pearl River Basin (Co-author, Land Degradation & Development, 2025)	Feb 2024-Jul 2025
■ Collaborated on constructing a high-resolution carbon emission grid by integrating land-use data with biomass burning records (2001 - 2020). Applied interpretable machine learning (SHAP) to identify natural and anthropogenic drivers, revealing forests as the main carbon sink (>99% sequestration) and rapid growth of emissions from construction land (+175.9%). Contributed to data processing, spatial analysis, and result interpretation, providing insights for carbon neutrality strategies and land-use planning.	

<i>Published Articles</i>	<i>Publication Date</i>
■ Li, Shuhao. "Study of urbanization trend prediction in Nanchang based on CA-Markov model." <i>E3S Web of Conferences</i> . Vol. 358. EDP Sciences, 2022.	27-Oct-2022
■ Li, S., Kang, J., Ye, J., He, Y., & Wang, H. (2024). Analysis of soil erosion changes and influencing factors based on the CSLE model and GeoDector in Dongjiang River Basin of China. <i>Soil Science Society of America Journal</i> , 88(3), 718–729. https://doi.org/10.1002/saj2.20633	28-Feb-2024
■ Xia, L., C. Ren, S. Li, et al. 2025. “ Spatiotemporal Characteristics of Carbon Emissions in the Pearl River Basin, China: From the Perspective of Land Use and Biomass Burning. ” <i>Land Degradation & Development</i> 1 – 23. https://doi.org/10.1002/ldr.70043	20-July-2025
<i>Professional Skills</i>	
■ GIS Software & Applications: Proficient in ArcGIS (Pro), QGIS, Oracle, PostGIS and GeoScene for advanced spatial data processing and analysis.	
■ Programming & Data Analysis : Deep understanding and practical experience with Python and GIS libraries such as GeoPandas, Rasterio, Arcpy, GDAL, and OGR. Proficient in R for advanced data manipulation and visualization, including packages such as dplyr, tidyr, tidyverse, data.table and readr for data cleaning and reshaping; ggplot2, tmap, ggspatial and plotly for static and interactive visualizations; and sf, raster, and spdep for spatial analysis. Also experienced in igraph for network analysis and the creation of spatially-informed graph-based models.	
■ Machine Learning & Deep Learning : Familiar with the fundamentals of machine learning, including techniques in regression and classification. Familiar with deep learning frameworks such as PyTorch, Tensorflow, and Transformer; capable of applying multimodal data fusion techniques (e.g., SAE, SVM) to integrate imagery, text, and spatial data for complex urban and environmental analysis.	
■ Remote Sensing Technologies : skilled in using ENVI, IDL for remote sensing data processing and analysis, capable of extracting information from remote sensing images.	
■ Qualitative Research and Fieldwork: Experienced in conducting field surveys, interviews, and thematic qualitative analysis to investigate spatial and environmental issues.	
<i>Awards and Honors</i>	
■ The 1 st JUST “Nonferrous Metal Industry English” Vocabulary Contest 2021 (3 rd Prize in University)	Nov 2021
■ 2021 “FLTRP • ETIC Cup” English Public Speaking Contest (1 st Award in Jiangxi Provincial Final)	Nov 2021
■ 2020-2021 Jiangxi Provincial English Contest for College Students (Outstanding Participant)	May 2021
■ 2021 JUST English Speaking Contest (1 st Prize in University)	May 2021
■ 2021 “ESRI” Cup Chinese College Students' GIS Software Development Competition	Nov 2021
■ 2021 Zhang Wenhai Academy Scholarship	Nov 2021
■ 2019-2020 Second-class Scholarship	Jun 2020
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■ GIS Applied Technology Level I	Apr 2022
■ 2019-2020 Outstanding Student	Dec 2020
■ 2020-2021 Outstanding Student	Dec 2021
■ 2021-2022 Outstanding Student	Dec 2022
■ 2019-2020 JXUST West Campus Anti-Epidemic Series Activities (Outstanding Individual)	Jul 2020