Dr. Rui Li （李睿）

Research Fellow, School of Engineering, University of Warwick

rui.li.8@warwick.ac.uk | +44 (0)7421726001 | Homepage

Summary

Rui Li is a Research Fellow at the University of Warwick working at the intersection of **remote sensing**, **numerical simulation**, and **artificial intelligence** for multi-scale civil and environmental engineering systems. At the macro scale, he leverages satellite to monitor regional **infrastructure–environment interactions**, such as coastal systems and wind-energy interactions. At the meso scale, he integrates physics-based simulations with data-driven models to study **urban**, **coastal**, and **atmospheric processes** relevant to infrastructure performance. At the micro scale, his research advances UAV-based sensing and vision-language intelligence for **low altitude economy** and **resilient infrastructure management**. His work provides a unified framework for integrating observations, simulations, and AI to support **sustainable**, **resilient**, and **intelligent** infrastructure modeling and digital construction. He has published more than **20** academic papers in journals such as ISPRS *Journal of Photogrammetry and Remote Sensing* (IF=**12.2**), IEEE *Transactions on Geoscience and Remote Sensing* (IF=**8.6**), *International Journal of Applied Earth Observation and Geoinformation* (IF=**8.6**), *Pattern Recognition* (IF=**7.6**), *Applied Energy* (IF=**11.0**), *Energy Conversion and Management* (IF=**10.9**), and *Energy* (IF=**9.4**), which have been cited exceeding **5000** times with an *h*-index of **18** by Google Scholar and a FWCI of **10.2** by SciVal. **11** of his papers have been selected as **ESI Highly Cited Papers** (Top 1%) and **2** papers as **ESI Hot Papers** (Top 0.1%). His paper on semantic segmentation using Vision Transformers, published in ISPRS *P&RS*, received the **The U.V. Helava Award**, i.e. the 2022 Best Paper Award of the ISPRS *P&RS* journal. He is the first scholar in Warwick University's history to receive this prestigious honor. He has been invited to serve as the leading guest editors for ***Remote Sensing***, ***Drones*** and ***Frontiers in Remote Sensing***, and as reviewers for over **35** international journals, including ISPRS *P&RS*, *Applied Energy*, *Neural Networks*, *Patterns*, IEEE {*TMI, TGRS, TNNLS, TCSVT, TAE*}, contributing more than **130** times.

Experiences

2024.04-present **Research Fellow**: School of Engineering, University of Warwick

2021.10-2024.05 **Ph.D.**: School of Engineering, University of Warwick

2019.09-2021.07 **M.Sc.**: School of Remote Sensing and Information Engineering, Wuhan University

2015.09-2019.07 **B.Eng.**: School of Automation Science and Engineering, South China University of Technology

Publications

† Equal Contribution * Corresponding Author ESI Highly Cited Paper ESI Hot Paper

◦ **AI for Urban Scene Analysis & Geospatial Intelligence**:

[1] R. Li, X. Zhao. AeroReformer: Aerial Referring Transformer for UAV-based Referring Image Segmentation, *International Journal of Applied Earth Observation and Geoinformation*, JCR Q1, 2025.

[2] R. Li, S. Zheng, C. Zhang, C. Duan, L. Wang, P. M. Atkinson. ABCNet: Attentive Bilateral Contextual Network for Efficient Semantic Segmentation of Fine-Resolution Remote Sensing Images. ISPRS *Journal of Photogrammetry and Remote Sensing*, JCR Q1, 2021. (citation: **400**+)

[3] L. Wang, R. Li, C. Zhang, S. Fang, C. Duan, X. Meng, P. M. Atkinson. UNetFormer: An UNet-like Transformer for Efficient Semantic Segmentation of Remote Sensing Urban Scene Imagery. ISPRS *Journal of Photogrammetry and Remote Sensing*, JCR Q1, 2022. **U.V. Helava Award Best Paper 2022** (citation: **1100**+)

[4] R. Li, X. Zhao. LSwinSR: UAV Imagery Super-Resolution Based on Linear Swin Transformer. IEEE *Transactions on Geoscience and Remote Sensing*, JCR Q1, 2024.

[5] L. Wang, S. Fang, X. Meng, R. Li. Building Extraction with Vision Transformer. IEEE *Transactions on Geoscience and Remote Sensing*, JCR Q1, 2022. (citation: **250**+)

[6] L. Wang †, R. Li †, D. Wang, C. Duan, T. Wang, X. Meng. Transformer Meets Convolution: A Bilateral Awareness Network for Semantic Segmentation of Very Fine Resolution Urban Scene Images. *Remote Sensing*, JCR Q1, 2021. (citation: **250**+)

◦ **Intelligent Image Interpretation & Land Cover Classification**:

[7] R. Li, S. Zheng, C. Zhang, C. Duan, J. Su, L. Wang, P. M. Atkinson. Multiattention-Network for Semantic Segmentation of Fine-Resolution Remote Sensing Images. IEEE *Transactions on Geoscience and Remote Sensing*, JCR Q1, 2021. (citation: **550**+)

[8] R. Li *, S. Zheng, C. Duan, J. Su, L. Wang, C. Zhang. Multistage Attention ResU-Net for Semantic Segmentation of Fine-Resolution Remote Sensing Images. IEEE *Geoscience and Remote Sensing Letters*, JCR Q1, 2021. (citation: **450**+)

[9] R. Li, L. Wang, C. Zhang, C. Duan, S. Zheng. A^2-FPN for Semantic Segmentation of Fine-Resolution Remotely Sensed Images. *International Journal of Remote Sensing*, JCR Q3, 2022. (citation: **150**+)

[10] R. Li, S. Zheng, C. Duan, L. Wang, C. Zhang. Land Cover Classification from Remote Sensing Images Based on Multi-Scale Fully Convolutional Network. *Geo-spatial Information Science*, JCR Q1, 2022. (citation: **150**+)

[11] R. Li †*, C. Duan †, S. Zheng, C. Zhang, P. M. Atkinson. MACU-Net for Semantic Segmentation of Fine-Resolution Remotely Sensed Images. IEEE *Geoscience and Remote Sensing Letters*, JCR Q1, 2021. (citation: **100**+)

[12] R. Li *, S. Zheng, C. Duan, Y. Yang, X. Wang. Classification of Hyperspectral Image based on Double-Branch Dual-Attention Mechanism Network. *Remote Sensing*, JCR Q1, 2020. (citation: **500**+)

[13] L. Wang, R. Li, C. Duan, C. Zhang, X. Meng, S. Fang. A Novel Transformer based Semantic Segmentation Scheme for Fine-Resolution Remote Sensing Images. IEEE *Geoscience and Remote Sensing Letters*, JCR Q1, 2022. (citation: **450**+)

[14] X. Meng, Y. Yang, L. Wang, T. Wang, R. Li, C. Zhang. Class-Guided Swin Transformer for Semantic Segmentation of Remote Sensing Imagery. IEEE *Geoscience and Remote Sensing Letters*, JCR Q1, 2022.

[15] L. Wang, C. Zhang, R. Li, C. Duan, X. Meng, P. M. Atkinson. Scale-aware Neural Network for Semantic Segmentation of Multi-resolution Remote Sensing Images. *Remote Sensing*, JCR Q1, 2021.

◦ **Urban 3D Mapping & Localization**:

[16] Q. Zhang, S. Zheng *, C. Zhang, X. Wang, R. Li *. Efficient Large-Scale Oblique Image Matching Based on Cascade Hashing and Match Data Scheduling. *Pattern Recognition*, JCR Q1, 2023.

[17] Q. Zhang, S. Zheng, R. Li, X. Wang, Y. He, X. Wang. RLS-LCD: An Efficient Loop Closure Detection for Rotary-LiDAR Scans. IEEE *Sensors Journal*, JCR Q1, 2024.

◦ **Data-driven Offshore Energy Modeling & Prediction**:

[18] R. Li, J. Zhang, X. Zhao. Multi-Fidelity Modeling of Wind Farm Wakes Based on A Novel Super-Fidelity Network. *Energy Conversion and Management*, JCR Q1, 2022.

[19] R. Li, J. Zhang, X. Zhao. Dynamic Wind Farm Wake Modeling Based on a Bilateral Convolutional Neural Network and High-Fidelity LES Data. *Energy*, JCR Q1, 2022.

[20] R. Li, J. Zhang, X. Zhao. Phase-resolved Real-time Forecasting of Three-Dimensional Ocean Waves via Machine Learning and Wave Tank Experiments. *Applied Energy*, JCR Q1, 2023.

[21] R. Li, J. Zhang, Y. Huang, X. Zhao. FlowFormer: Toward a foundation model for full-flow-field wind farm wake

modeling, *Renewable Energy*, JCR Q1, 2025.

- **Ongoing Works**:

[22] R. Li, J. Zhang, X. Zhao. Long-Distance and High-Impact Wind Farm Wake Effects Revealed by SAR: A Global-Scale Study, 2023, Under Revision.

[23] R. Li, J. Zhang, X. Zhao. Potential Impact of Large-Scale Wind Clusters on Local Weather Patterns, 2024.

[24] R. Li, X. Zhao. CA-DETR: Context-Aware Detection Transformers for Wind Turbine Health Monitoring, 2026.

- **Conference Works**:

[25] R. Li, J. Zhang, X. Zhao. Deep Learning-based Wind Farm Power Prediction using Transformer Network, 2022. In *2022 European Control Conference (ECC, Oral)*.

[26] R. Li, X. Zhao. A Transformer-based Motion Deblurring Network for UAV Images, 2024. In *2024 IEEE International Geoscience and Remote Sensing Symposium (IGARSS, Oral)*.

Services

- Leading Guest Editor of *Remote Sensing* and *Drones* Special Issue: ***Advancing UAV-Based Remote Sensing: Innovations, Techniques and Applications***
- Leading Guest Editor of *Remote Sensing* Special Issue: ***Advancing UAV-Based Remote Sensing: Innovations, Techniques and Applications (Second Edition)***
- Leading Guest Editor of *Frontiers in Remote Sensing* Special Issue: ***Machine Learning for Advanced Remote Sensing: From Theory to Applications and Societal Impact***
- Contributing my expertise as a reviewer over **130** times for more than **35** reputable journals including ISPRS *Journal of Photogrammetry and Remote Sensing*, *Geo-Spatial Information Science*, *Engineering Applications of Artificial Intelligence*, *Neural Networks*, *Aquaculture*, *Journal of Field Robotics*, *Waste Management*, *Ocean Engineering*, *Applied Energy*, *Energy*, *Energy and Buildings*, *International Journal of Digital Earth* and IEEE Transactions on {*Medical Imaging*, *Circuits and Systems for Video Technology*, *Aerospace and Electronic Systems*, *Neural Networks and Learning Systems*, *Geoscience and Remote Sensing*}.

Awards

- 2023, U.V. Helava Award Best Paper 2022, International Society for Photogrammetry and Remote Sensing, **1/281**
- 2020, National Scholarship for Postgraduate Student, Ministry of Education, **Top 0.2% Nationwide**
- 2021, Outstanding Postgraduates, Wuhan University
- 2020, First Class Postgraduate Scholarship, Wuhan University
- 2017 & 2018, National Encouragement Scholarship, Ministry of Education