Xiang Li

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Work

University of Reading 2024.10 – now
Lecturer in Computer Science

King Abdullah University of Science and Technology 2022.12 – 2024.10
Postdoctoral Fellow, Supervisor: Mohamed Elhoseiny

New York University 2019.10 – 2022.07
Postdoctoral Fellow, Supervisor: Yi Fang

Education

University of Chinese Academy of Sciences 2014.09 – 2019.06
PhD. in Cartography and Geographic Information System, Supervisor: Tianhe Chi

New York University 2017.12 – 2019.01
Visiting PhD, Supervisor: Yi Fang, Edward Wong

Wuhan University 2010.09 – 2014.06
B.S. in Remote Sensing Science and Technology, rank: 1/80

Research Interests

Remote Sensing Image Processing, 3D Computer Vision, Vision-Language Models

Peer-reviewed Journal Papers

(† equal contribution, * corresponding author)

1. C Wen, Y Lin, X Qu, N Li, Y Liao, H Lin, **X Li**. RS-RAG: Bridging Remote Sensing Imagery and Comprehensive Knowledge with a Multi-Modal Dataset and Retrieval-Augmented Generation Model, arXiv 2025. PDF
2. J Zhou, W Li, Y Cao, H Cai, G Xia. **X Li***. Few-shot Oriented Object Detection with Memorable Contrastive Learning in Remote Sensing Images, IEEE Transactions on Geoscience and Remote Sensing (**TGRS**), 2025. (**top journal**, IF=8.2).
3. Y Hu, J Yuan, C Wen, X Lu, **X Li***. RSGPT: A Remote Sensing Vision Language Model and Benchmark. ISPRS Journal of Photogrammetry and Remote Sensing (**ISPRS JPRS**), 2025. (**top journal**, IF=12.7) PDF
4. H Slim, **X Li**, Y Li, M Ahmed, M Ayman, U Upadhyay, A Abdelreheem, A Prajapati, S Pothigara, P Wonka, M Elhoseiny. 3DCoMPaT++: An improved Large-scale 3D Vision Dataset for Compositional Recognition. **IEEE TPAMI**, minor revision (**top journal**, IF=20.8).
5. W Li, J Zhou, Y Cao, G Jin, X Zhang, **X Li**. InfRS: Incremental Few-Shot Object Detection in Remote Sensing Images. IEEE Transactions on Geoscience and Remote Sensing (**TGRS**), 2024. (**top journal**, IF=8.2).
6. H Huang, L Wang, **X Li**, S Yuan, C Wen, Y Hao, Y Fang. Learning to learn point signature for 3D shape geometry. Pattern Recognition Letters (**PRL**), 2024. PDF
7. Z He, G Fan, **X Li**, F Gong, M Liang, L Gao, M Zhou. Spatio-temporal modeling of satellite-observed CO2 columns in China using deep learning. International Journal of Applied Earth Observation and Geoinformation (**JAG**), 2024. (**top journal**, IF=7.5) PDF

8. Z He, G Fan, Z Li, S Li, L Gao, **X Li**, Z Zeng. Deep learning modeling of human activity affected wildfire risk by incorporating structural features: A case study in eastern China. **Ecological Indicators**, 2024.
9. **X Li**†*, C Wen†, Y Hu†, Z Yuan, X Zhu. Vision-Language Models in Remote Sensing: Current Progress and Future Trends. IEEE Geoscience and Remote Sensing Magazine (**GRSM**), 2024. (**top journal**, IF=14.6, **ESI highly cited paper**.) PDF
10. **X Li**, C Wen, N Zhou. RS-CLIP: Zero Shot Remote Sensing Scene Classification via Contrastive Vision-Language Supervision. International Journal of Applied Earth Observation and Geoinformation (**JAG**), 2023. (**top journal**, IF=7.5) PDF
11. W Li, J Zhou, **X Li**, Y Cao, G Jin. Few-shot object detection on aerial imagery via deep metric learning and knowledge inheritance. International Journal of Applied Earth Observation and Geoinformation (**JAG**), 2023. (**top journal**, IF=7.5) PDF
12. C Wen, **X Li**, H Huang, Y Liu, Y Fang, 3D Shape Contrastive Representation Learning with Adversarial Examples. IEEE Transactions on Multimedia (**TMM**), 2023. (**top journal, IF=7.3**) PDF
13. L Wang, N Zhou, H Huang, **X Li***, Y Fang. GP-Aligner: Unsupervised Non-rigid Groupwise Point Set Registration Based On Optimized Group Latent Descriptor, IEEE Transactions on Geosciences and Remote Sensing (**TGRS**), 2022. (**top journal, IF=8.2**) PDF
14. **X Li**, L Wang, Y Fang. Unsupervised Category-Specific Partial Point Set Registration via Joint Shape Completion and Registration. IEEE Transactions on Visualization and Computer Graphics (**TVCG**), 2022. (**top journal, IF=5.2**) PDF
15. X Jiang, N Zhou, **X Li***. Few-Shot Segmentation of Remote Sensing Images using Deep Metric Learning. IEEE Geosciences and Remote Sensing Letters (**GRSL**), 2022. (IF=4.8) PDF
16. Y Du, J Yin, **X Li**, F Gao, J Yang. Accurate and efficient solution of electromagnetic scattering from randomly rough surface using MoM-SMCG with adaptive quadrature. Electronics Letters, 2021. (IF=1.3) PDF
17. **X Li**, L Wang, Y Fang. Geometry-Aware Segmentation of Remote Sensing Images via implicit height estimation. IEEE Geoscience and Remote Sensing Letters (**GRSL**), 2021. (IF=4.8) PDF
18. **X Li**†, J Deng†, Y Fang. Few-shot Object Detection on Remote Sensing Images. IEEE Transactions on Geoscience and Remote Sensing (**TGRS**), 2021. (**top journal, IF=8.2**, **ESI highly cited paper**) PDF
19. N Zhou†, **X Li**†, Z Shen, T Wu, J Luo. Geo-parcel-based Change Detection Using Optical and SAR Images in Cloudy and Rainy Areas. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (**JSTAR**), 2020. (**top journal, IF=5.5**) PDF
20. R Chen†, **X Li**†, Y Hu, L Peng. Road Extraction from Remote Sensing Images in Wildland-Urban Interface Areas. IEEE Geosciences and Remote Sensing Letters (**GRSL**), 2020. (IF=4.8) PDF
21. **X Li**, M Wang, Y Fang. Height estimation from single aerial images using a deep ordinal regression network. IEEE Geoscience and Remote Sensing Letters (**GRSL**), 2020. (IF=4.8, **ESI highly cited paper**) PDF
22. C Wen, **X Li**, L Peng, T Chi. Airborne LiDAR Point Cloud Classification with Graph Attention Convolution Neural Network. ISPRS Journal of Photogrammetry and Remote Sensing (**ISPRS J. P&RS**), 2020. (**top journal, IF=12.7**) PDF
23. **X Li**, L Wang, M Wang, C Wen, N Zhou, Y Fang. Density-Aware Convolutional Networks with Context Encoding for Airborne LiDAR Point Cloud Classification, ISPRS Journal of Photogrammetry and Remote Sensing (**ISPRS J. P&RS**), 2020. (**top journal, IF=12.7**) PDF
24. **X Li**†, C Wen†, L W, Y Fang. Topology Constrained Shape Correspondence, IEEE Transactions on Visualization and Computer Graphics (**TVCG**), 2020. (**top journal, IF=5.2**) PDF
25. C Wen, L Yang, L Peng, **X Li***, T Chi. Directionally Constrained Fully Convolutional Neural Network For Airborne Lidar Point Cloud Classification, ISPRS Journal of Photogrammetry and Remote Sensing (**ISPRS J. P&RS**), 2020. (**top journal, IF=12.7**) PDF
26. L Wang, **X Li**, Y Fang. Unsupervised learning of 3D point set registration. arXiv 2020.
27. S Yuan†, **X Li**†, Y Fang. Deeptracking-net: 3d tracking with unsupervised learning of continuous flow. arXiv 2020.
28. C Wen, S Liu, X Yao, L Peng, **X Li**, Y Hu, T Chi. A novel spatiotemporal convolutional long short-term neural network for air pollution prediction. Science of The Total Environment, 2019. (**top journal, IF=9.8**, **ESI highly cited paper**) PDF
29. Y Hu, **X Li**, N Zhou, L Yang, L Peng. A Sample Update-based Convolutional Neural Network Framework for Object Detection in Large-area Remote Sensing Images. IEEE Geoscience and Remote Sensing Letters

(**GRSL**), 2019. (IF=4.8) PDF

30. **X Li**, X Yao, Y Fang. Building-A-Nets: Robust building extraction from high-resolution Remote Sensing images with adversarial networks, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (**JSTAR**), 2018. (**top journal, IF=5.5**) PDF
31. Y Hu, L Peng, **X Li**, X Yao, H Lin, T Chi. A novel evolution tree for analyzing the global energy consumption structure. Energy, 2018. (**top journal, IF=9.0**) PDF
32. **X Li**, L Peng, X Yao. S Cui, Y Hu, C You, T Chi. Long short-term memory neural network for air pollutant concentration predictions: Method development and evaluation, Environmental Pollution (**EP**), 2017. (**top journal, IF=8.9**, **ESI highly cited paper**) PDF
33. H Tian, W Li, M Wu, N Huang, G Li, **X Li**, Z Niu, Dynamic monitoring of the largest freshwater lake in China using a new water index derived from high spatiotemporal resolution Sentinel-1A data. Remote Sensing, 2017. (IF=5.0) PDF
34. **X Li**, L Peng, Y Hu, J Shao, T Chi. Deep learning architecture for air quality predictions, Environmental Science and Pollution Research, 2016. (IF=5.8) PDF

Peer-Reviewed Conference Papers

35. **X Li**, Y Tao, S Zhang, S Liu, Z Xiong, C Luo, L Liu, M Pechenizkiy, X Zhu, T Huang. REOBench: Benchmarking Robustness of Earth Observation Foundation Models, arXiv 2025. PDF
36. T Huang, H Hu, Z Zhang, G Jin, **X Li**, L Shen, T Chen, L Liu, Q Wen, Z Wang, S Liu. Stable-SPAM: How to Train in 4-Bit More Stably than 16-Bit Adam, arXiv 2025. PDF
37. Y Zhou, M Lan, **X Li**, Y Ke, X Jiang, L Feng, W Zhang. GeoGround: A unified large vision-language model for remote sensing visual grounding, arXiv 2024. PDF
38. **X Li**, J Ding, M Elhoseiny. VRSBench: A Versatile Vision-Language Benchmark Dataset for Remote Sensing Image Understanding. Thirty-eighth Annual Conference on Neural Information Processing Systems (**NeruIPS**), 2024. PDF
39. M Ahmed, **X Li**, M Elhoseiny. 3DCoMPaT200: Language Grounded Large-Scale 3D Vision Dataset for Compositional Recognition. Thirty-eighth Annual Conference on Neural Information Processing Systems (**NeruIPS**), 2024.
40. **X Li**†, Jian Ding† , Z Chen, M Elhoseiny. Uni3DL: Unified Model for 3D and Language Understanding. The European Conference on Computer Vision (**ECCV**) 2024. PDF
41. J Chen, D Zhu, X Shen, **X Li**, Z Liu, P Zhang, R Krishnamoorthi, V Chandra, Y Xiong, M Elhoseiny. MiniGPT-v2: Large Language Model as a Unified Interface for Vision-Language Multi-task Learning. arXiv. PDF
42. D Zhu, J Chen, X Shen, **X Li**, M Elhoseiny. MiniGPT-4: Enhancing Vision-Language Understanding with Advanced Large Language Models. International Conference on Learning Representations (**ICLR**) 2024 (**>24K starts in GitHub**). PDF
43. J Chen, D Zhu, K Haydarov, **X Li**, M Elhoseiny. Video chatcaptioner: Towards the enriched spatiotemporal descriptions, arXiv 2023. PDF
44. F Khan†, **X Li**†, A Temple, M Elhoseiny. FishNet: A Large-scale Dataset and Benchmark for Fish Recognition, Detection, and Functional Traits Prediction. International Conference on Computer Vision (**ICCV**), 2023. PDF
45. X Shen, **X Li**, M Elhoseiny. MoStGAN: Video Generation with Temporal Motion Styles, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023. PDF
46. S Yuan†, **X Li**†, H Huang, Y Fang. Meta-Det3D: Learn to Learn Few-Shot 3D Object Detection. Asian Conference on Computer Vision (**ACCV**), 2022, **Oral**. PDF
47. **X Li***†, C Wen†, H Huang, Y Fang. Unsupervised 3D Shape Representation Learning using Normalizing Flow. Asian Conference on Computer Vision (**ACCV**), 2022. PDF
48. H Huang, **X Li**, L Wang, Y Fang. 3D-MetaConNet: Meta-learning for 3D Shape Classification and Segmentation. International Conference on 3D Vision (**3DV**) 2021. PDF
49. H Huang, J Chen, **X Li**, L Wang, Y Fang. Robust Image Matching By Dynamic Feature Selection. British Machine Vision Conference (**BMVC**), 2020. PDF
50. S Yuan†, **X Li**†, Y Fang. 3DMotion-Net: Learning Continuous Flow Function for 3D Motion Prediction. The IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2020. PDF
51. L Wang†, **X Li**†, Y Fang. Few-shot Learning of Part-specific Probability Space for 3D Shape Segmentation, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020. PDF

52. J Chen, L Wang, **X Li**, Y Fang. Arbicon-Net: Arbitrary Continuous Geometric Transformation Networks for Image Registration, Neural Information Processing Systems (**NeurIPS**), 2019. PDF
53. Y Hu, Y Chen, **X Li**, J Feng. Dynamic Feature Fusion for Semantic Edge Detection, International Joint Conferences on Artificial Intelligence (**IJCAI**), 2019. PDF
54. **X Li**, L Wang, Y Fang. PC-Net: Unsupervised Point Correspondence Learning with Neural Networks, International Conference on 3D Vision (**3DV**), 2019. PDF
55. **X Li**, H Cui, J Rizzo, E Wong, Y Fang. Cross-Safe: A computer vision-based approach to make all intersection-related pedestrian signals accessible for the visually impaired, Computer Vision Conference (**CVC**), 2019. (**best student paper nomination**) PDF

TEACHING

CSMBD-24/25: Big Data and Cloud Computing

SERVICES

- **Lead Guest Editor** of the special issue "Vision Language Models in Remote Sensing" of the journal **IEEE GRSM**.
- Workshop organizer: Challenge organizers of the **1st &2nd workshop on compositional 3D vision and 3DCoMPaT dataset challenge** (CVPR 2023/2024).
- Journal Review: IEEE TPAMI, IEEE TIP, IEEE TVCG, IEEE TGRS, IEEE TCSVT, RSE, ISPRS JPRS, etc.
- Conference Review: CVPR 2022/2023/2024/2025, ICCV 2021/2023/2025, ECCV 2022/2024, NeruIPS 2023/2024/2025, ICLR 2024/2025, AAAI 2022/2023/2024, etc.

HONORS

- **IEEE GRSS Early Career Award 2025**.
- **ICCV 2021 Outstanding reviewer**
- **2020 & 2021, NYU Abu Dhabi Postdoctoral Non-travel Award**
- **2018, Outstanding research paper award (top 30)**, RADI, CAS.
- **2017, National Scholarship**
- **2017, China Scholarship Council scholarship**
- 2012, Seagate Scholarship, Wuhan University
- **2011, National Scholarship**

RESEARCH GRANTS

- 3D ReefNet: Expert-informed Benchmarks and Machine Learning Systems for Coral Reef 2D/3D Visual Understanding, Sponsored by NEOM, 2024-2027, 1M USD, **proposal writing**.
- National Science Foundation, National Science Foundation (NSF), 1952180, SCC-IRG Track 2: Transportation Gaps and Disability-Related Unemployment: Smarter Cities and Wearables combating Commuting Challenges for the Visually Impaired, 2020-2023, 1.6M USD, **Investigator**.
- Few-/Zero-shot Oriented Object Detection in Remote Sensing Images using Large Language Models, Sponsored by Guangdong−Hong Kong-Macau Joint Laboratory for Smart Cities Open Research Fund, 2023-2024, 3K USD, **Principal Investigator**.
- Plot-level crop extraction method from remote sensing images based on deep learning—taking caladium as an example, Sponsored by Zhejiang Provincial Ecological Center Fund, 2022-2023, 4K USD, **Principal Investigator**.
- CNN-based object detection on high-resolution remote sensing images, Sponsored by Presidential Research Grant of RADI, CAS, 2016-2017, 2K USD, **Principal Investigator**.