Xiang Li

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Work

King Abdullah University of Science and Technology Dec. 2022 – Present
Postdoctoral Fellow, Supervisor: Mohamed Elhoseiny

New York University Oct. 2019 – Jul. 2022
Postdoctoral Fellow, Supervisor: Yi Fang

Education

University of Chinese Academy of Sciences Sep. 2014 – Jun. 2019
PhD. in Cartography and Geographic Information System, Supervisor: Tianhe Chi

New York University Dec. 2017 – Jau. 2019
Research Assistant, Supervisor: Yi Fang

Wuhan University Sep. 2010 – Jun. 2014
B.S. in Remote Sensing Science and Technology, rank: 1/80

Research Interests

Large Vision-Language Model, Computer Vision, Remote Sensing Data Analysis

Research Funding

- 3D ReefNet: Expert-informed Benchmarks and Machine Learning Systems for Coral Reef 2D/3D Visual Understanding (Towards AI Accelerated Reef Ecology Practice), Sponsored by NEOM, 2024-2027, around 1M USD, proposal writing.
- 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, around 3K USD, Principal Investigator.
- Integrated security solution for scenic spots based on multi-source remote sensing technology, Sponsored by Suzhou Gusu Innovation and Entrepreneurship Project, 2022-2024, around 300K 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, around 4K USD, Principal Investigator.
- CNN-based object detection on high-resolution remote sensing images, Sponsored by Presidential Research Grant of RADI, CAS, 2016-2017, around 2K USD, Principal Investigator.

Peer-reviewed Journal Papers

(† equal contribution, * corresponding author)

1. J Zhou, W Li, Y Cao, H Cai, **X L**. Few-shot Oriented Object Detection with Memorable Contrastive Learning in Remote Sensing Images, preparing for submission to TGRS.

2. Y Hu, J Yuan, C Wen, X Lu, **X Li***. RSGPT: A Remote Sensing Vision Language Model and Benchmark. Earth System Science Data, under review.
3. **X Li**$^{\dagger *}$, C Wen†, Y Hu†, Z Yuan, X Zhu. Vision-Language Models in Remote Sensing: Current Progress and Future Trends. GRSM, under review.
4. **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)
5. 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)
6. 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**)
7. 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**)
8. **X Li**, L Wang, Y Fang. Unsupervised Partial Point Set Registration via Joint Shape Completion and Registration. IEEE Transactions on Visualization and Computer Graphics (**TVCG**), 2022. (**top journal, IF=5.2**)
9. 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)
10. 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)
11. **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)
12. **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**)
13. 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**)
14. 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)
15. **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**)
16. 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**)
17. **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**)
18. **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**)
19. 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**)
20. 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**)
21. 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)
22. **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**)
23. 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**)
24. **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**)

25. 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)
26. **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)

Peer-Reviewed Conference Papers

27. **X Li**†, Jian Ding† , Z Chen, M Elhoseiny. Uni3DL: Unified Model for 3D and Language Understanding. CVPR 2024, under review.
28. D Zhu, J Chen, 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. ICLR 2024, under review(**>24K starts in GitHub**).
29. D Zhu, J Chen, X Shen, **X Li**, M Elhoseiny. MiniGPT-4: Enhancing Vision-Language Understanding with Advanced Large Language Models. ICLR 2024, under review (**>24K starts in GitHub**).
30. 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.
31. X Shen, **X Li**, M Elhoseiny. MoStGAN: Video Generation with Temporal Motion Styles, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023, accepted.
32. 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**.
33. **X Li***†, C Wen†, H Huang, Y Fang. Unsupervised 3D Shape Representation Learning using Normalizing Flow. Asian Conference on Computer Vision (**ACCV**), 2022.
34. 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.
35. H Huang, J Chen, **X Li**, L Wang, Y Fang. Robust Image Matching By Dynamic Feature Selection. British Machine Vision Conference (**BMVC**), 2020.
36. 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.
37. 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.
38. J Chen, L Wang, **X Li**, Y Fang. Arbicon-Net: Arbitrary Continuous Geometric Transformation Networks for Image Registration, Neural Information Processing Systems (**NeurIPS**), 2019.
39. Y Hu, Y Chen, **X Li**, J Feng. Dynamic Feature Fusion for Semantic Edge Detection, International Joint Conferences on Artificial Intelligence (**IJCAI**), 2019.
40. **X Li**, L Wang, Y Fang. PC-Net: Unsupervised Point Correspondence Learning with Neural Networks, International Conference on 3D Vision (**3DV**), 2019.
41. **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**)

Teaching

Successfully completed all requirements for the Higher Education Teaching Certificate through Harvard's Derek Bok Center for Teaching and Learning with HarvardX (Certificate).

Services

- Journal Review: ISPRS Journal of Photogrammetry and Remote Sensing (ISPRS JPRS), IEEE Transactions on Geoscience and Remote Sensing (TGRS), IEEE Transactions on Image Processing (TIP), IEEE Transactions on Visualization and Computer Graphics (TVCG), IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), IEEE Transactions on Big Data (TBB), IEEE Geoscience and Remote Sensing Letters (GRSL), Pattern Recognition Letters (PRL), International Journal of Digital Earth (IJDI),

Computational Intelligence and Neuroscience, ISPRS International Journal of Geo-Information (IJGI).

- Conference Review: CVPR 2022/2023/2024, ICCV 2021/2023, ECCV 2022, NeruIPS 2023, ICLR 2024, AAAI 2022/2023/2024, BMVC 2020/2021/2022.
- Workshop organizer: Challenge organizers of the 1st workshop on compositional 3D vision and 3DCoMPaT dataset challenge.

Invited Talks

- May. 2020, China University of Mining and Technology, Object detection and the Applications in Mining Technology.
- Apr. 2019, Beijing Normal University, The applications of Deep Learning in GIS.

Honors

- **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**