李祥

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教育背景

New York University 2019.07 – 2021.07
Postdoctoral Associate, Research Interest: computer vision, deep learning, remote sensing

New York University 2017.12 – 2019.01
专业：计算机科学, 联合培养博士生, 导师: Yi Fang

中国科学院大学 2014.09 – 2019.06
专业：地图学与地理信息系统, 直博生, 导师: 池天河

武汉大学 2010.09 – 2014.06
专业：遥感科学与技术, 工学学士, 专业排名：1/80

研究方向

深度学习、计算机视觉、遥感信息提取、智慧城市大数据分析

获奖情况

- 2020 年, NYU Abu Dhabi Postdoctoral Non-travel Award
- 2018 年, 获中国科学院大学**博士生国家奖学金**
- 2017 年, 获**国家留学基金委公派留学资格**
- 2017 年, 获**遥感地球所优秀科研论文奖励**
- 2016 年, 获中科院遥感与数字地球研究所**所长基金**
- 2012 年, 获武汉大学希捷奖学金
- 2011 年, 获武汉大学**国家奖学金**

科研成果

- 在审论文 († equal contribution)

    - (1) **X Li**, L Wang, Y Fang. Unsupervised Partial Point Set Registration via Joint Shape Completion and Registration. IEEE Transactions on Visualization and Computer Graphics (JCR Q1), major revision.

    - (2) **X Li**, L Wang, Y Fang. Learn to Learn Metric Space for Few-Shot Part Segmentation of 3D Shapes. International Journal of Computer Vision, under review.

    - (3) S Yuan†, **X Li**†, Y Fang. DeepTracking-Net: 3D Tracking with Unsupervised Learning of Continuous Flow. International Journal of Computer Vision 2021, under review.

    - (4) S Yuan†, **X Li**†, Y Fang. Learn to Learn Few-Shot 3D Object Detection. IEEE International Conference on Computer Vision (ICCV) 2021, under review.

    - (5) H Huang, **X Li**, L Wang, Y Fang. 3D Meta Point Signature: Learning to Learn 3D Point Signature for 3D Dense Shape Correspondence. IEEE International Conference on Computer Vision (ICCV) 2021, under review.

    - (6) **X Li**, L Wang, Y Fang. Monocular 3D Object Detection via Dense Fusion of RGB and Pseudo-LiDAR. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2021, under review.

– (7) L Wang†, **X Li**†, Y Fang. GP-Aligner: Unsupervised Non-rigid Groupwise Point Set Registration Based On Optimized Group Latent Descriptor, International Conference on Machine Learning (ICML) 2021, under review.

– (8) L Wang, X Li, Y Fang. Deep-3DAligner: Unsupervised 3D Point Set Registration Network With Optimizable Latent Vector, International Conference on Machine Learning (ICML) 2021, under review.

- 以第一作者/通讯作者发表 SCI 论文 **11** 篇 **(top** 期刊 **5** 篇**,** 二区 **6** 篇**),** 中文核心 (CSCD 检索) 论文 4 篇, 人工智能顶级会议论文 3 篇。(† equal contribution)

– (1) **X Li**, L Wang, Y Fang. Geometry-Aware Segmentation of Remote Sensing Images via implicit height estimation. IEEE Geoscience and Remote Sensing Letters, 2021, accepted. (JCR Q2, IF=3.5).

– (2) **X Li**†, J Deng†, Y Fang. Few-shot Object Detection on Remote Sensing Images. IEEE Transactions on Geoscience and Remote Sensing, 2021, accepted. (JCR Q1, **top journal, IF=5.8**)

– (3) 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, accepted, 2020. (JCR Q2, IF=3.5)

– (4) 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, 2020, accepted. (JCR Q2, IF=3.5)

– (5) **X Li**, M Wang, Y Fang. Height estimation from single aerial images using a deep ordinal regression network. IEEE Geoscience and Remote Sensing Letters, 2020, accepted. (JCR Q2, IF=3.5)

– (6) H Huang, J Chen, **X Li**, L Wang, Y Fang. Robust Image Matching By Dynamic Feature Selection. British Machine Vision Conference (BMVC) 2020, accepted. (CCF B)

– (7) 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, accepted.

– (8) 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, 2020, accepted. (JCR Q1, **top journal, IF=6.9**)

– (9) 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. (**CCF A**, citations 3)

– (10) **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, 2020(166):128-139. (JCR Q1, **top journal, IF=6.9**, citations 3)

– (11) **X Li**†, C Wen†, L W, Y Fang. Topology Constrained Shape Correspondence, IEEE Transactions on Visualization and Computer Graphics, 2020, accepted. (JCR Q1, **top journal, IF=3.8**, citations 1)

– (12) C Wen, L Yang, L Peng, **X Li(corresponding author)**, T Chi. Directionally Constrained Fully Convolutional Neural Network For Airborne Lidar Point Cloud Classification, ISPRS Journal of Photogrammetry and Remote Sensing, 2020(162):50-62. (JCR Q1, **top journal, IF=6.9**, citations 15)

– (13) 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, 654: 1091-1099. (JCR Q1, **top journal, IF=4.6**, citations 86)

– (14) J Chen, L Wang, **X Li**, Y Fang. Arbicon-Net: Arbitrary Continuous Geometric Transformation Networks for Image Registration, Neural Information Processing Systems (NeurIPS), 2019. (CCF A, citations 11)

– (15) Y Hu, Y Chen, **X Li**, J Feng. Dynamic Feature Fusion for Semantic Edge Detection, International Joint Conferences on Artificial Intelligence (IJCAI), 2019. (CCF A, citations 10).

– (16) Y Hu, **X Li**, 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, 2019, 16(6). (JCR Q2, IF=3.5, citations 13)

– (17) **X Li**, L Wang, Y Fang. PC-Net: Unsupervised Point Correspondence Learning with Neural Networks, International Conference on 3D Vision (3DV), 2019. (CCF B, citations 6).

– (18) **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 2019. (**best student paper nomination**, citations 9)

- (19) **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, 2018(99):1-8. (JCR Q2, IF=2.8, citations 30)
- (20) Y Hu, L Peng, **X Li**, X Yao, H Lin, T Chi. A novel evolution tree for analyzing the global energy consumption structure[J]. Energy, 2018, 147: 1177-1187. (JCR Q1, **top journal, IF=4.9**, citations 18)
- (21) **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, 2017, 231P1: 997-1004. (JCR Q1, **top journal, IF=5.1**, citations 185)
- (22) 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, 9(6), 521. (JCR Q2, IF=4.1, citations 23)
- (23) **X Li**, L Peng, Y Hu, J Shao, T Chi. Deep learning architecture for air quality predictions, Environmental Science and Pollution Research, 2016,23(22):22408-22417. (JCR Q2, IF=2.7, citations 141)
- (24) **李祥**, 彭玲, 池天河等. 北京市空气质量时空特征分析, 测绘通报, 2016, 40(09): 47-51. (CSCD, 引用 1)
- (25) **李祥**, 彭玲, 邵静等. 基于小波分解和 ARMA 模型的空气污染预报研究, 环境工程, 2016,34(08): 110-113.(CSCD, 引用 3)
- (26) 彭玲, **李祥 (corresponding author)**, 徐逸之等, 基于时空大数据的城市脉动分析研究, 地理信息世界, 2016, 23(3): 5-12. (中文核心, 引用 2)
- (27) 徐逸之, 周楠, **李祥 (corresponding author)** 等. 基于全卷积网络的高分辨遥感影像目标检测研究, 测绘通报, 2018, 15(1). (CSCD, 引用 1)

- Google Scholar 引用 645 次 (截止 2021.3.17): `https://scholar.google.com/citations?user=4Apl5FgAAAAJ`
- Reviewer for: ISPRS Journal of Photogrammetry and Remote Sensing (ISPRS J. P&RS), IEEE Transactions on Geoscience and Remote Sensing (IEEE TGRS), IEEE Geoscience and Remote Sensing Letters (IEEE GRSL), Pattern Recognition Letters (PRL), BMVC 2020, ICCV 2021, IEEE ACCESS.
- 申请发明专利 7 项
  - (1) 基于对抗网络的遥感影像建筑物提取方法、系统、存储介质及设备 (CN201910644747.3, 第 2 发明人, 实质审查).
  - (2) 神经网络、遥感影像的建筑物提取方法、介质 (CN201810373725.3, 第 1 发明人, 已授权).
  - (3) 空气污染物浓度预报方法及系统 (CN201610875403.X, 第 1 发明人, 已授权).
  - (4) 基于样本更新的卷积神经网络目标检测框架 (CN201811112898.6, 第 3 发明人, 实质审查).
  - (5) 基于空间大数据进行知识挖掘的地图可视化系统及方法 (CN201510776887.8, 第 4 发明人, 已授权).
  - (6) 地铁短时流量预测方法及装置 (CN201610830343.X, 第 5 发明人, 实质审查).

项目经历

浙江省生态保护绩效评价扩展系统   2020.06 – 2020.12

项目负责人　浙江省生态环境保护专项

围绕浙江省易灾地区的主要类型植被生态系统遥感分类工作, 开展浙江高分辨率遥感分类算法研究及遥感分类系统开发工作。项目内容主要包括: (1) 建立浙江试验区域土地覆盖大类样本信息数据库; (2) 开展基于深度学习算法的浙江实验区域的高分辨率遥感影像土地分类研究。

基于 CNN 的高分辨遥感影像实时目标检测技术研究   2016.10-2017.10

项目负责人　遥感地球所所长基金项目

项目采用深度卷积神经网络开展遥感卫星影像典型地物目标检测, 并根据检测结果叠加地图及其他专题数据, 开展应用实践。目标检测算法采用 SSD, 并结合遥感影像多波段特点进行改进。项目成果获苏

州中科天启遥感科技有限公司高度认可, 并联合申报了江苏省地理信息科研项目"基于 DCNN 的高分辨遥感影像建筑物提取技术研究", 项目已成功验收。

智慧城市大数据平台   2015.07 – 2016.10

技术负责   国家住建部首批智慧城市试点建设项目

"中新天津生态城脉动城市数据汇聚平台建设"。带领团队成员完成了从需求分析、方案设计、数据整合、数据清洗、数据分析, 基于 WebGIS 技术搭建数据汇聚平台, 使用 ECharts 等工具进行可视化结果的展示, 项目已顺利验收。

室内外一体化定位平台   2014.05 – 2017.12

技术支持   国家科技支撑计划项目

国家科技支撑计划项目"面向新型城镇建设的室内外定位技术综合集成典型示范", 参与室内外一体化定位方案设计与定位算法研发。