Jinyuan Shao

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Skills

Programming	Deep Learning	Image understanding	3D data understanding	Tools	Language
Python	Random Forest		Geometric feature	Git/Github	
R	SVM	Image segmentation	Point cloud registration	Jupyter	English
Bash	CNN	Object detection	Point cloud classification	Latex	Chinese
Javascript	Transformers	Remote sensing change detection	Point cloud segmentation	Matlab	

Education

Purdue University   **West Lafayette, United States**
PhD in Forestry and Natural Resources; Purdue Ross Fellowship   *08/2021-present*
Focus on: LiDAR; Remote Sensing; Deep Learning; Forestry

Faculty Advisor: Prof. Songlin Fei

Chinese Academy of Sciences   **Beijing, China**
M.Sc in Ecology; National Scholarship for Graduate Students(top 0.2%)   *09/2018-07/2021*
Focus on: Remote Sensing; Earth Vision; Deep Learning: Ecology

Huaqiao University   **Xiamen, China**
B.Eng in Information Engineering   *08/2014-07/2018*
Graduation project: Street Tree Extraction on mobile LiDAR Point Cloud

Awards

- Purdue Charles H. Michler Scholarships, 2022. (top 5%)
- IndianaView Student Scholarship, 2022&2023.
- Purdue Ross Fellowship, 2021-2025. (top PhD applicants).
- National Scholarship for Graduate Students, 2020. (top 0.2%)
- Merit Student, University of Chinese Academy of Sciences, 2019-2020. (top 5%)
- Level Scholarship, University of Chinese Academy of Sciences, 2019-2020. (top 10%)
- Level Scholarship, University of Chinese Academy of Sciences, 2020-2021. (top 10%)
- Academic Scholarship, University of Chinese Academy of Sciences, 2020&2021. (top 10%)
- Zhongke Dingshi Scholarship, University of Chinese Academy of Sciences, 2021. (top 10%)

Projects

Tree instance segmentation of LiDAR point cloud for tree plantation inventory
- Collected point cloud data using a backpack LiDAR system in the field.
- Developed an unsupervised method for tree instance segmentation in tree plantation LiDAR point cloud.
- Helped stakeholders increase the efficiency of inventory in a plantation with 1200 trees.

Large-scale semantic segmentation of LiDAR point cloud in natural forests
- Created a point cloud dataset for natural forest segmentation.
- Developed a deep learning method for large-scale point cloud segmentation in natural forests.
- Developed a framework based on the segmentation results for forest inventory.
- Achieved segmentation and inventory of 20 hectares of natural forest in 20 min.

Leaf-wood separation of tree point clouds
- Developed an unsupervised method for leaf-wood separation of tree point clouds.
- Achieved SOTA on 11 species of trees.
- Published this research in IGARSS (top conference in Remote Sensing) as the first author.

Quick response to urban natural disasters

- Designed a CNN model to recognize damaged buildings after natural disasters with dual temporal images.
- The model was applied to disaster response in Guangdong Province, China.
- Published one paper as the first author.

Research

Publication

1. **Jinyuan Shao**, Yi-Ting Cheng, Yerassyl Koshan, Raja Manish, Ayman Habib, and Songlin Fei. "Radiometric and Geometric Approach for Major Woody Parts Segmentation in Forest LiDAR Point Clouds". **International Geoscience and Remote Sensing Symposium**, 2023, pp. 6220-6223.
2. **Jinyuan Shao**, Lina Tang, Ming Liu, Guofan Shao, Lang Sun, and Quanyi Qiu. "BDD-Net: A General Protocol for Mapping Buildings Damaged by a Wide Range of Disasters Based on Satellite Imagery". **Remote Sensing**, 2020, 12(10), 1670. (JCR Q1, IF: 5.349)
3. **Jinyuan Shao**, Quanyi Qiu, Yao Qian, and Lina Tang. "Optimal visual perception in land-use planning and design based on landsenses ecology". **International Journal of Sustainable Development & World Ecology**, 2020, 27(3): 233-239. (JCR Q2, IF: 3.716)
4. Yi-Chun Lin, **Jinyuan Shao**, Sang-Yeop Shin, Zainab Saka, Mina Joseph, Raja Manish, Songlin Fei and Ayman Habib. "Comparative Analysis of Multi-Platform, Multi-Resolution, Multi-Temporal LiDAR Data for Forest Inventory". **Remote Sensing**, 2022, 14(3), 649. (JCR Q1, IF: 5.349)
5. Sheng Fang, Kaiyu Li, **Jinyuan Shao**, Zhe Li. "SNUNet-CD: A Densely Connected Siamese Network for Change Detection of VHR Images". **IEEE Geoscience and Remote Sensing Letters**, vol. 19, pp. 1-5, 2022. (JCR Q2, IF: 3.833)
6. Guofan Shao, Hao Zhang, **Jinyuan Shao**, Keith Woeste, Lina Tang "Strengthening Machine Learning Reproducibility for Image Classification". **Advances in Artificial Intelligence and Machine Learning**, 2022; 2 (4): 32
7. Qiang Zhou, Yuanmao Zheng, **Jinyuan Shao**, Yinglun Lin, and Haowei Wang. "An Improved Method of Determining Human Population Distribution Based on Luojia 1-01 Nighttime Light Imagery and Road Network Data—A Case Study of the City of Shenzhen". **Sensors**, 2020, 20(18), 5032.. (JCR Q2, IF: 3.847)
8. Lang Sun, Lina Tang, Guofan Shao, Quanyi Qiu, Ting Lan, and **Jinyuan Shao**. "A Machine Learning-Based Classification System for Urban Built-Up Areas Using Multiple Classifiers and Data Sources". **Remote Sensing**, 2020, 12(1), 91. (JCR Q1, IF: 5.349)

Academic Services

- Pattern Recognition
- Expert systems with applications
- Journal of Forestry Research
- International Journal of Sustainable Development & World Ecology
- Journal of Spatial Science

Work Experiences

Internships

Zhongke Chengxin Satellite Technology Co., Ltd   **Shanghai, China**
Research Intern: Object Detection in Satellite Images   *09/2019-12/2019*

- Developed an object detection algorithm for satellite images based on YOLT.
- Worked on Archaeological-prospection with object detection.

China Academy of Urban Planning & Design   **Beijing, China**
Research Intern: Urban Planning with Artificial Intelligence   *03/2019-06/2019*

- Analyzed features of the population of Heilongjiang province based on geospatial data.
- Developed a tourist counting system from the camera of attractions based on YOLOv3.