

KAIXUAN ZHOU

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EDUCATION

- Delft University of Technology, Netherlands** *January 2016–July 2020*
PhD candidate in Geoscience and Remote Sensing
- Delft University of Technology, Netherlands** *September 2013–July 2015*
Master in Geomatics
- Central South University, China** *September 2009–July 2013*
Bachelor in Geomatics Engineering

RESEARCH EXPERIENCE

- PhD student, Delft University of Technology, Netherlands** *January 2016–Present*
- Extended the LiDAR-guided edge-aware dense matching (E-LEAD-Matching) to integrate airborne LiDAR data with **multi-view images obtain an accurate, dense and textured point cloud**. The planimetric accuracy of buildings extracted from the fused result is improved to meet requirements of large scale maps.
 - Designed LEAD-Matching to integrate airborne LiDAR data with **a stereo pair** to integrate the complementary information for **3D building change detection and updating**. The method successfully verifies all unchanged buildings with a minimum detectable change of 2m*2m*2m.
 - Designed **a machine learning approach to detect shadows from a single image** using shadow reconstructed from LiDAR data as training samples.
 - Applied **deep learning** to segment buildings from airborne images focusing on small building detection and edges.
- Visiting PhD student, University of New South Wales, Australia** *July 2018-September 2018*
- Designed and implemented LEAD-Matching on an airborne stereo pair.
 - Hosted by Geospatial Research Innovation Development (GRID) group.
- Exchange student, Wuhan University, China** *February 2015-March 2015*
- Designed an approach to identify and apply common features, regularity, shared by objects in the façade, to improve quality of façade reconstruction from terrestrial point cloud.
 - Hosted by School of Remote Sensing and Information Engineering.

WORKING EXPERIENCE

- Intern, 3D Building Reconstruction using Point Clouds Obtained from Panoramic Images, Cyclomedia, the Netherlands** *July 2014–August 2014*
- Designed a procedure for automated 3D building reconstruction (LoD2) based on the point cloud from panoramic images

TEACHING EXPERIENCE

- Teaching assistant, bachelor course, Geostatistics & Remote Sensing, TU Delft** *2016-2018*
- Assisted and supported 40 students using QGIS and programming to explore geostatistics from remote sensing data.

Teaching assistant, master course, 3D surveying, TU Delft *February 2018 -May 2018*

- Designed and assessed a **camera calibration assignment** for 20 students
- Supervised a group projects to co-register LiDAR with multi-view images for road detection.

Supervision, bachelor thesis, TU Delft *May 2019 - June 2019*

- Supervised a bachelor project on fusion airborne LiDAR data and airborne images to detect the surface permeability

OTHER EXPERIENCE

Commissioner of Education, student association for GRS, TU Delft *2016-2017*

- Responsible for communication between the students and the teachers and organizing excursion to companies and research institutes

Awards

Best Poster Award *ISPRS TC-IV Symposium, 2018*

Best Youth Oral Paper Award. *ISPRS Geospatial Week, 2017*

TECHNICAL SKILLS

Language and environment : C++, Python, Opencv, Tensorflow, matlab

Courses

TU Delft master course: Pattern Recognition, Machine learning, Deep learning, Computer vision

Summer school: the 6th Lisbon Machine Learning School in 2016

Journal Publications

[1] **Zhou, K.**, Gorte, B., Smal, I., & Lindenbergh, R. E-LEAD-Matching—Improving the planimetric accuracy of ALS-Derived building boundaries using airborne multi-view images. *Computer vision and Image understanding*, under review.

[2] **Zhou, K.**, Lindenbergh, R., Gorte, B., & Zlatanova, S. (2020) LiDAR-guided dense matching for detecting changes and updating of buildings in Airborne LiDAR data. *ISPRS Journal of Photogrammetry and Remote Sensing*, 162, 200-213.

[3] **Zhou, K.**, Lindenbergh, R., & Gorte, B. (2019). Automatic Shadow Detection in Urban Very-High-Resolution Images Using Existing 3D Models for Free Training. *Remote Sensing*, 11(1), 72.

Conference Publications (selected)

[4] **Zhou, K.**, Chen, Y., Smal, I., Lindenbergh, R. (2019). Building segmentation from airborne vhr images using mask r-cnn. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 42(2/W13).

[5] Chen, Y., Gao, W., Widyaningrum, E., Zheng, M., & **Zhou, K.** (2018). Building classification of VHR airborne stereo images using fully convolutional networks and free training samples. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, 42(4). (**Best Poster Award, corresponding author**)

[6] **Zhou, K.**, & Gorte, B. (2017). Shadow detection from VHR aerial images in urban area by using 3d city models and a decision fusion approach. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, 42. (**Best Youth Oral Paper Award.**)