

# Zhouxuan Xiao

PH.D. IN CARTOGRAPHY AND GIS, SUN YAT-SEN UNIVERSITY, 519082. ZHUHAI, CHINA

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## Education

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### Sun Yat-sen University

*Zhuhai, China*

PH.D. IN CARTOGRAPHY AND GIS

*Sep. 2020 – Dec. 2024*

- Supervisor: [Prof. Dr. Wuming Zhang](#) and [Prof. Dr. Zhiyong Xiao](#)
- Research Topic: Automatic Detection and Classification of Lunar Surface Changes
- Skills: ISIS3, ASP, ArcGIS, ENVI, Blender, python, C++

### University of Trento

*Trento, Italy*

VISITING SCHOLAR IN INFORMATION ENGINEERING AND COMPUTER SCIENCE

*Oct. 2022 – Oct. 2023*

Supervisor: [Prof. Dr. Lorenzo Bruzzone](#)

- Research Topic: Remote Sensing Images Change Detection
- Skills: Linux, python, Matlab, deep learning

### Chang'an University

*Xi'an, China*

M.S. IN GEOLOGY

*Sep. 2017 – Jul. 2020*

- Supervisor: [Prof. Dr. Ran Wang](#)
- Research Topic: Multi-scale Segmentation and Classification of Remote Sensing Imagery
- Skills: eCognition developer, QGIS, Matlab, C

### Chang'an University

*Xi'an, China*

B.S. IN RESOURCE EXPLORATION ENGINEERING

*Sep. 2013 – Jul. 2017*

- Supervisor: [Prof. Dr. Ran Wang](#)
- Research Topic: Fault Zone Investigation and Analysis
- Skills: MS Office, CorelDraw, C

## Selected Awards

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2023 - <b>Scholarship</b> , 3rd place Scholarship of Sun Yat-sen University	<i>Zhuhai, China</i>
2022 - <b>Scholarship</b> , CSC	<i>China</i>
2022 - <b>Scholarship</b> , 2nd place Scholarship of Sun Yat-sen University	<i>Zhuhai, China</i>
2021 - <b>Scholarship</b> , 2nd place Scholarship of Sun Yat-sen University	<i>Zhuhai, China</i>
2021 - <b>Award</b> , Champion of Volleyball match in Zhuhai Campus, SYSU	<i>Zhuhai, China</i>
2021 - <b>Award</b> , 2nd place of Basketball match in Zhuhai Campus, SYSU	<i>Zhuhai, China</i>
2020 - <b>1st Place</b> , High-precision Map Contest in the National LiDAR Conference	<i>Beijing, China</i>
2020 - <b>2nd Place</b> , Point Cloud Classification Contest in the National LiDAR Conference	<i>Beijing, China</i>
2020 - <b>Scholarship</b> , 3rd place Scholarship of Sun Yat-sen University	<i>Zhuhai, China</i>
2020 - Outstanding Graduates Awards of Chang'an University	<i>Xi'an, China</i>
2019 - <b>Scholarship</b> , National Scholarship for Graduate Student	<i>Xi'an, China</i>
2016 - Merit Student Awards of Chang'an University	<i>Xi'an, China</i>
2015 - <b>Scholarship</b> , National Endeavor Scholarship for Undergraduate Student	<i>Xi'an, China</i>

## Research Projects

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2021-present: **3D rock extraction on Mars** (State Key Laboratory of Remote Sensing, Participant)  
2020-present: **Site selection for the International Lunar Research Station** (CNSA, Participant)  
2019-2020: **Digitalizing rocky valley using point cloud data** (Shaanxi Provincial Natural Science Foundation Project, Co-investigator)  
2019-2020: **Multi-scale analysis and feature extraction of crystalline rocks** (Postgraduate research innovation practice project, principal investigator)  
2017-2019: **Surrounding rock lining of tunnel crossing active fault** (National Key R&D Program, Co-investigator)  
2016-2018: **Investigation of oil and gas resources around the Qaidam Basin** (China Geological Survey Project, Co-investigator)

## Publication List

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### Papers on peer-review journals:

- [15] Chaohua Ma, Yuan Li, Junying Lv, **Zhouxuan Xiao**, Wuming Zhang, Linshan Mo. "Automated Rock Detection from Mars Rover Image via Y-shape Dual-Task Network with Depth-aware Spatial Attention Mechanism". IEEE Transactions on Geoscience and Remote Sensing, 2024, <https://doi.org/10.1109/TGRS.2024.3371684>.
- [14] Yuanhe Yu, **Zhouxuan Xiao**, Lorenzo Bruzzone, Huan Deng. "Mapping and analyzing the spatiotemporal patterns and drivers of multiple ecosystem services: A case study in the Yangtze and Yellow River Basins". Remote Sensing, 2024, <https://doi.org/10.3390/rs16020411>.
- [13] Yuan Li, **Zhouxuan Xiao**, Chaohua Ma, Linzhou Zeng, Wuming Zhang, Man Peng, Aiguang Li. "Extraction and Analysis of Three-dimensional Morphological Features of Centimeter-scale Rocks in Zhong Landing Region". JGR-Planets, 2023, <https://doi.org/10.1029/2022JE007656>.
- [12] Yonghui Xin, Ran Wang, Xi Wang, Xingwei Wang, **Zhouxuan Xiao**, Jingyu Lin. "High-Resolution Terrain Reconstruction of Slot Canyon Using Backpack Mobile Laser Scanning and UAV Photogrammetry". Drones, 2022, 6(12), 429, <https://doi.org/10.3390/drones6120429>.
- [11] Yichen Wang, Zhiyong Xiao, Rui Xu, **Zhouxuan Xiao**, Jun Cui. "Dark spots on Mercury show no signs of weathering during 30 Earth months". Communications Earth & Environment, 2022, Springer Nature, <https://doi.org/10.1038/s43247-022-00634-z>.
- [10] **Zhouxuan Xiao**, Linzhou Zeng, Yuan Li\*, Jie Shao, Chaohua Ma, Wuming Zhang\*, Man Peng. "High-Precision Measurement of 3-D Rock Morphology on Mars Using Stereo Rover Imagery". IEEE Geoscience and Remote Sensing Letters, 2022, Vol.19, <https://doi.org/10.1109/LGRS.2022.3154629>.
- [9] **Zhouxuan Xiao**, Licheng Ma, Wan Jiang, Ran Wang, Yuyan Yao, Jie Cai, Jingyu Lin, Lu Li. Grenville-age orogenic event along the northeastern margin of the Qianji massif, NW China: constraints from ~1.1 Ga migmatite. Geosciences Journal, 2020, 24, 249–266, <https://doi.org/10.1007/s12303-019-0033-8>.
- [8] Ran Wang, Jingyu Lin, Lu Li, **Zhouxuan Xiao**, Yonghui Xin. "A revised orientation-based correction method for SfM-MVS point clouds of outcrops using ground control planes with marks". Journal of Structural Geology, 2021, 143,

104266, <https://doi.org/10.1016/j.jsg.2020.104266>.

[7] Yuanxiu Hui, Rang Wang, Lu Li, Jingyu Lin, **Zhouxuan Xiao**, Yonghui Xin. "The timing of barleik formation and its implication for the devonian tectonic evolution of western junggar, NW china". Open Geosciences, 2021, 13(1), 188-196, <https://doi.org/10.1515/geo-2020-0229>.

[6] Licheng Ma, Wan Jiang, **Zhouxuan Xiao**, Zongxing Li, Bo Peng, Junjie Hu, Min Dong. "Discussion on the depositional timing of the Zhabusagaxiu formation in the eastern Qaidam Basin". Journal of Geomechanics, 2020, 26(6):961-972. <https://doi.org/10.12090/j.issn.1006-6616.2020.26.06.077>.

[5] SUN, J., JIANG, W., MA, L. and **XIAO, Z.** (2019), Early Permian Strata Exist in the Olongbluk Block. Acta Geologica Sinica - English Edition, 93: 481-482. <https://doi.org/10.1111/1755-6724.13786>

[4] Lu Li, Ran Wang, Jingyu Lin, **Zhouxuan Xiao**, Yuanxiu Hui. "A Novel Approach for Extraction of Ripple Mark Parameters Based on SfM". Sedimentary Geology, 2019, 392, 105523, <https://doi.org/10.1016/j.sedgeo.2019.105523>.

[3] Ran Wang, Jingyu Lin, Bo Zhao, Lu Li, **Zhouxuan Xiao**, Jürgen Pilz. "Integrated Approach for Lithological Classification Using ASTER Imagery in a Shallowly Covered Region—The Eastern Yanshan Mountain of China". IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2018, vol. 11, no. 12, pp. 4791-4807, <https://doi.org/10.1109/JSTARS.2018.2879493>.

[2] Ran Wang, **Zhouxuan Xiao**, Jingyu, Lu Li, Wenling Cui. "*The Diverse Tectonic Background of Boudinage Structures*". Geotectonica et Metallogenia, 2018, 45(5):777-785.(EI)

[1] **Zhouxuan Xiao**, Hui Li, Rukuan Chai. "Well productivity formula in low permeability reservoir with threshold pressure gradient". Petrochemical Application, 2016, 35(9), <https://doi.org/10.3969/j.issn.1673-5285.2016.09.009>.

### Papers on academic conferences:

[6] **Zhouxuan Xiao**, Ran Wang, Jingyu Lin, Wuming Zhang. "Outcrop-scale Yardang Geometric Analysis using SfM-MVS Point Clouds in Hami Area, NW China". The Third Symposium on Space Earth Science, China, 2020.

[5] **Zhouxuan Xiao**, Ran Wang, Yuanxiu Hui, Jingyu Lin, Lu Li. "Integrated Approach for Calculating the Mineral Assemblages and Oxide Percentage of Crystalline Rock based on Object-Based Image Analysis and Electron Probe Microscopic Analyzer". IEEE International Conference on Image, Vision and Computing (ICIVC), 2019, pp. 109-113, <https://doi.org/10.1109/ICIVC47709.2019.8981017>.

[4] Yuanxiu Hui, **Zhouxuan Xiao**, Ran Wang, Jingyu Lin, Lu Li. "Feature Extraction and Analysis of Zircon Cathodoluminescence Images Based on Multiscale Segmentation". IEEE International Conference on Image, Vision and Computing (ICIVC), 2019, pp. 114-117, <https://doi.org/10.1109/ICIVC47709.2019.8980954>.

[3] Jingyu Lin, Ran Wang, Lu Li, **Zhouxuan Xiao**. "A Workflow of SfM-Based Digital Outcrop Reconstruction Using Agisoft PhotoScan". IEEE 4th International Conference on Image, Vision and Computing (ICIVC), 2019, pp. 711-715, <https://doi.org/10.1109/ICIVC47709.2019.8980982>.

[2] Lu Li, Ran Wang, Jingyu Lin, **Zhouxuan Xiao**. Yuanxiu Hui, Wei Zeng, "Arbitrary Oriented Outcrop Section Measurement Using 3D Point Cloud". IEEE International Conference on Image, Vision and Computing (ICIVC), 2019, pp. 193-196, <https://doi.org/10.1109/ICIVC47709.2019.8981331>.

[1] Jingyu Lin, Ran Wang, **Zhouxuan Xiao**, Lu Li, Weihua Yao, Wei Han, Baolin Zhao. "Application of backpack Lidar to geological cross-section measurement". Proceeding of SPIE 10605, LIDAR Imaging Detection and Target Recognition 2017, 106050J (15 November 2017), <https://doi.org/10.1117/12.2295060>.

## Datasets:

[2] Li, Yuan, **Xiao, Zhouxuan**, Ma, Chaohua, Zeng, Linzhou, Zhang, Wuming\*, Peng, Man, & Li, Aiguang. (2023). DEM, rock point clouds, and 3D morphological features of Martian rocks in the landing region of Zhurong rover (1.0) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7620416>

[1] Ma, Chaohua, Li, Yuan, **Xiao, Zhouxuan**, Zhang, Wuming, Mo, Linshan, & Li, Aiguang. (2023). SimMars6K (1.0) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7707898>

## Patents:

[2] 林靖愉, 王冉, 惠元秀, 辛永辉, 李路, **肖宙轩**, 刘源. "基于 NED 坐标系向量旋转的 SfM 点云校正方法". 中国发明专利. 2020. <https://patents.google.com/patent/CN112712559B/zh>

[1] 王冉, 林靖愉, 李路, **肖宙轩**, 惠元秀, 辛永辉. "一种用于 SfM 三维建模的加载激光无级比例尺的永平指南针". 中国发明专利, 2019. <https://patents.google.com/patent/CN110672080A/zh>