

Zhu Mao

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Biography

Postdoctoral Researcher at the Department of Forest Sciences, University of Helsinki. My research focuses on precision forestry harvesting, deep learning and artificial intelligence in forestry, photogrammetry and remote sensing, 3D Modeling.

Education

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| 2019 – 2023 | LIESMARS, Wuhan University – Wuhan
Ph.D. in Photogrammetry and Remote Sensing |
| 2016 – 2018 | LIESMARS, Wuhan University – Wuhan
M.Eng. in Surveying and Mapping Engineering |
| 2012 – 2016 | Nanjing University of Information Science & Technology – Nanjing
B.Sc. in Geographic Information Science |

Work experience

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| 2024 – Now | Department of forest sciences, University of Helsinki – Helsinki
Postdoctoral Researcher |
| 2018 – 2019 | IBM CIO Identity – Chengdu
Business Analyst |
| 2021 – 2024 | Geo-spatial Information Science, Wuhan University – Wuhan
Editorial Assistant |

Selected publications

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| 2025 | Mao, Z., Abdi O., Uusitalo J., Laamanena V., & Kivinen V. Super-resolution supporting individual tree detection and canopy stratification using half-meter aerial data. <i>ISPRS Journal of Photogrammetry and Remote Sensing</i>, 224, 251-271. DOI: org/10.1016/j.isprsjprs.2025.04.005 |
| 2025 | Cao, S., Abdi, O., Koivukoski, K., Mao, Z., & Uusitalo, J. Automating the consolidation of GNSS logging tracks and machine pass counting in Boreal forests. <i>Smart Agricultural Technology</i>, 101038. DOI: org/10.1016/j.atech.2025.101038 |

- 2023 **Mao, Z.,** Huang, X., Niu, W., Wang, X., Hou, Z., & Zhang, F. **Improved instance segmentation for slender urban road facility extraction using oblique aerial images.** *International Journal of Applied Earth Observation and Geoinformation*, 121:103362. DOI: [org/10.1016/j.jag.2023.103362](https://doi.org/10.1016/j.jag.2023.103362)
- 2023 **Mao, Z.,** Huang, X., Xiang, H., Gong, Y., Zhang, F., & Tang, J. **Glass façade segmentation and repair for aerial photogrammetric 3D building models with multiple constraints.** *International Journal of Applied Earth Observation and Geoinformation*, 118, 103242. DOI: [org/10.1016/j.jag.2023.103242](https://doi.org/10.1016/j.jag.2023.103242)
- 2023 Wang, X., Xiang, H., Niu, W., **Mao, Z.,** Zhang, F., & Huang, X. **Oblique photogrammetry supporting procedural tree modeling in urban areas.** *ISPRS Journal of Photogrammetry and Remote Sensing*, 200, 120-137. DOI: [org/10.1016/j.isprsjprs.2023.05.008](https://doi.org/10.1016/j.isprsjprs.2023.05.008)
- 2022 **Mao, Z.,** Huang, X., Gong, Y., Xiang, H., & Zhang, F. **A dataset and ensemble model for glass façade segmentation in oblique aerial images.** *IEEE Geoscience and Remote Sensing Letters*, 19, 1-5. DOI: [org/10.1109/LGRS.2022.3187760](https://doi.org/10.1109/LGRS.2022.3187760)
- 2021 **Mao, Z.,** Zhang, F., Huang, X., Jia, X., Gong, Y., & Zou, Q. **Deep neural networks for road sign detection and embedded modeling using oblique aerial images.** *Remote Sensing*, 13(5), 879. DOI: [org/10.3390/rs13050879](https://doi.org/10.3390/rs13050879)

Teaching

Guest lecturer in

- 2024, 2026 FOR-263: Operations Research in Forest Resource Management, computer vision in forestry, University of Helsinki
- 2025 FOR-280: Precision harvesting, University of Helsinki
- 2025 FOR-018: Introduction to MSc programme in Forest Sciences, University of Helsinki

Conference presentation

- Jun., 2025 **Deep-learning-based Individual tree detection for tomorrow's precision harvesting operations** – Formec 2025 in Joensuu
- Nov. 2025 **Mapping tree-level structural diversity for precision harvesting operations: A comparison of open-source and drone datasets** – Forest Science Day 2025 in Helsinki

Technical skills

Programming languages: Python

OS & Software:

MS Windows, Ubuntu Linux, L^AT_EX, MS Office, ArcGIS, ContextCapture

Languages: English (Fluent), Chinese (Native)

Reviewer:

ISPRS Journal of Photogrammetry and Remote Sensing (ISPRS JP&RS)

Geo-spatial Information Science (GSIS)

Remote Sensing (RS)