Olaf Wysocki

Website: olafwysocki.github.io
Email: olaf.wysocki@tum.de
LinkedIn: olaf-wysocki
GitHub: github.com/OloOcki
Google Scholar: olaf-wysocki

Education

Technical University of Munich — Munich, Germany
Doctoral Candidate, Photogrammetry & Remote Sensing Chair — Sep 2020–Jun 2024

- Thesis: Enrichment of 3D building models by facade elements based on point clouds and confidence values, Profs. Uwe Stilla and Thomas H. Kolbe

Technical University of Munich — Munich, Germany
M.Sc. in Geodesy & Geoinformation — Oct 2018–Sep 2020

- Thesis: Semantic-based Geometry Refinement of 3D City Models for Testing Automated Driving, Grade: 1.0, Prof. Thomas H. Kolbe
- Major: Photogrammetry, Remote Sensing, Geoinformatics

Wroclaw University of Science and Technology — Wroclaw, Poland
B.Eng. in Geodesy and Cartography — Oct 2015–Feb 2018

- Thesis: Visibility analysis for selected lookout towers in the Sudety Mountains, Grade: 1.0, Prof. Jan Blachowski
- Major: Geodesy, Geoinformatics

Research Experience

Technical University of Munich — Munich, Germany
Senior Research Associate at Photogrammetry & Remote Sensing Professorship — Sep 2023–Present

- Leading an interdisciplinary team of researchers at the intersection of geoinformatics, photogrammetry, computer vision, and machine learning research

Research Associate at Photogrammetry & Remote Sensing Chair — Sep 2020–Sep 2023

- Designing and developing high-detail 3D building reconstruction strategy using mobile mapping point clouds while considering uncertainty

Audi AG — Ingolstadt, Germany
Master's Thesis Candidate in R&D — Mar 2020–Sep 2020

- Thesis: Semantic-based Geometry Refinement of 3D City Models for Testing Automated Driving, Grade: 1.0, Prof. Thomas H. Kolbe

Audi AG — Ingolstadt, Germany
Intern in R&D — Aug 2019–Sep 2019

- Designing an approach to generate semantic 3D city models for autonomous driving simulations

Professional experience

SHH Wroclaw, Poland
GIS Specialist Sep 2017–Jul 2018

- Developing and implementing a semantic 3D city model reconstruction workflow

Teaching experience

- **Point Cloud Processing** SS 2024
  Master's course, Technical University of Munich
- **TUM Data Innovation Lab** SS 2023
  Interdisciplinary Master's course, Technical University of Munich
- **Photogrammetry Project** WS 2022/23; WS 2023/24
  Master's course, Technical University of Munich
- **Point Cloud Processing** SS 2022
  Erasmus+ Staff Mobility for Lecturers, Technion - Israel Institute of Technology
- **Photogrammetry Selected Topics** SS 2022
  Master's course, Technical University of Munich
- **Photogrammetry Selected Chapters** WS 2020/21; WS 2022/23; WS 2023/24
  Master's course, Technical University of Munich

Peer-reviewed publications

- Zhu J., **Wysocki, O.**, Holst, Ch., Kolbe, TH. Enriching thermal point clouds of buildings using semantic 3D building models, *Accepted for 3DGeoInfo 2024*
- Bieringer A., **Wysocki, O.**, Hoegner L., Holst, Ch. Analyzing the impact of semantic LoD3 building models on image-based vehicle localization, *Accepted for 3DGeoInfo 2024*
- Froech, T., **Wysocki, O.**, Hoegner, L., Stilla, U. Reconstructing facade details using MLS point clouds and Bag-of-Words approach *In: International 3D GeoInfo Conference 2023, Recent Advances in 3D Geoinformation Science, 337-355. Cham: Springer Nature Switzerland, 2023, https://doi.org/10.1007/978-3-031-43699-4*$_2$1
- Tan, Y., **Wysocki, O.**, Hoegner, L., Stilla, U. Classifying point clouds at the facade-level using geometric features and deep learning networks, *In: International 3D GeoInfo Conference 2023, Recent Advances in 3D Geoinformation Science, 391-404. Cham: Springer Nature Switzerland, 2023, https://doi.org/10.1007/978-3-031-43699-4*$_2$5
- Schwarz, S., Pilz, T., **Wysocki, O.**, Hoegner, L., Stilla, U. Transferring facade labels between point clouds with semantic octrees while considering change detection *In: International 3D GeoInfo Conference 2023, Recent Advances in 3D Geoinformation Science, 287-298. Cham: Springer Nature Switzerland, 2023, https://doi.org/10.1007/978-3-031-43699-4*$_1$7
- **Wysocki, O.**, Hoegner, L., Stilla, U. MLS2LoD3: Refining low LoDs building models with MLS point clouds to reconstruct semantic LoD3 building models. *In: International 3D GeoInfo Conference 2023, Recent Advances in 3D Geoinformation Science, 367-380. Cham: Springer Nature Switzerland, 2023, https://doi.org/10.1007/978-3-031-43699-4*$_2$3
- **Wysocki, O.**, Xia, Y., Wysocki M., Grilli, E., Hoegner, L., Cremers D., and Stilla, U. Scan2LoD3: Reconstructing semantic 3D building models at LoD3 using ray casting and Bayesian networks, *In: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 6547-6557, 2023, https://shorturl.at/qzSX0*
- **Wysocki, O.**, Grilli, E., Hoegner, L. and Stilla, U. Combining visibility analysis and deep learning for refinement of semantic 3D building models by conflict classification, *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, X-4/W2-2022, 289–296, https://doi.org/10.5194/isprs-annals-X-4-W2-2022-289-2022, 2022*

- **Wysocki, O.**, Hoegner, L. and Stilla, U. Refinement of semantic 3D building models by reconstructing underpasses from MLS point clouds, *International Journal of Applied Earth Observation and Geoinformation, 111, 2022, 102841, https://doi.org/10.1016/j.jag.2022.102841, 2022*
- **Wysocki, O.**, Hoegner, L. and Stilla, U. TUM-FAÇADE: Reviewing and enriching point cloud benchmarks for façade segmentation, *International Archives of the Photogrammetry, Remote Sensing Spatial Information Sciences, XLVI-2/W1-2022, 529–536, https://doi.org/10.5194/isprs-archives-XLVI-2-W1-2022-529-2022, 2022*
- **Wysocki, O.**, Xu, Y. and Stilla, U. Unlocking point cloud potential: Fusing MLS point clouds with semantic 3D building models while considering uncertainty, *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, VIII-4/W2-2021, 45–52, https://doi.org/10.5194/isprs-annals-VIII-4-W2-2021-45-2021, 2021*
- **Wysocki, O.**, Schwab, B., Hoegner, L., Kolbe, TH. and Stilla, U. Plastic surgery for 3D city models: A pipeline for automatic geometry refinement and semantic enrichment, *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, V-4-2021, 17–24, https://doi.org/10.5194/isprs-annals-V-4-2021-17-2021, 2021*

Scientific Reviewer

- IEEE Transactions on Geoscience and Remote Sensing — Mar 2024 –Present
- ISPRS Journal of Photogrammetry and Remote Sensing — Mar 2023 –Present
- IEEE Geoscience and Remote Sensing Letters — Feb 2023 –Present
- International Journal of Applied Earth Observation and Geoinformation — Nov 2022 –Present

Scholarships and Awards

- Runner-up: Best poster presentation, the 3D GeoInfo 2022 conference, Sydney, Australia — Oct 2022
- Deutscher Akademischer Austauschdienst (DAAD) Study Scholarships for Graduates — Aug 2018
- Rector's Scholarship for high grade average and achievements in the scientific area — Sep 2017
- 1st place: Best oral paper presentation, the 15th Students' Science Conference, Jelenia Gora, Poland — Sep 2017

Skills

- **Designing** machine learning and deterministic point cloud 3D reconstruction algorithms adhering to mapping standards (CityGML, OpenDRIVE)
- **Developing** solutions in Python (Open3D, NumPy, Pandas, OpenCV, PyTorch, TensorFlow), Unreal Engine (CARLA), FME, and QGIS
- **Communicating** effectively findings in written and verbal forms to academic and industry partners
- **Leading** teams of academics to pursue a common goal

Languages

- **English:** Full professional proficiency
- **German:** Professional working proficiency
- **Polish** Native proficiency