Tassilo Wald

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Research Interest:

My research focuses on machine learning and its applications in medical image analysis, with a particular interest in understanding the representations learned by deep neural networks and guiding their development. This led me to explore self-supervised learning for 3D medical imaging, where I aim to develop general-purpose representations applicable to various downstream tasks. Notably, I am currently interning with Microsoft Health Futures in Cambridge, working on 3D vision-language models and recently collaborated with the German startup Floy to develop a large pre-trained brain MRI model. I am also currently leading the development of pre-training methods for The Human Radiome Project, a pilot project of the Helmholtz Foundation Model Initiative, which seeks to create a vision foundation model for 3D radiology. Furthermore, I recently curated a large-scale dataset, established a benchmark, and am maintaining a comprehensive repository of the most relevant 3D SSL methods to accelerate the 3D medical SSL community.

Education:

Apr. 2020 – present: **German Cancer Research Center (DKFZ),** Heidelberg
Department for Medical Image Computing (MIC)
PhD Student in Computer Science
Advisor: Prof. Klaus H. Maier-Hein

- Representational Similarity
- Feature Diversity
- 3D Medical Image Computing

Apr 2016 – Aug. 2019: **Karlsruhe Institute of Technology (KIT)**,
M.Sc. in Electrical Engineering and Information Theory Ø1,3

- Master thesis in computer vision (1,0): "Combination of Temporal and Spatial Information Extraction Within a CNN for Improving Object Detection"
- Specialization in control theory and machine learning

Other Research Experience:

May. 2025 – Aug. 2025: **Microsoft Health Futures**, Cambridge, UK
Intern

- Vision Language Models
- Zero-shot segmentation
- 3D Report generation

Oct. 2019 – Mar. 2020: **FZI Research Center for Information Technology**, Karlsruhe
Student Assistant

- 2D+t Object detection
- Multi Task Learning

Dec. 2017 – Apr. 2018: **Bosch Japan**, Yokohama
Intern in the Engineering Application Product Department

- Automated evaluation of brake assistant validation and testing
- Neural network classification for ultrasound brake assistant

Publications (First & Equal Contribution):

1. **[ICCV 2025] Wald, Tassilo***, Constantin Ulrich*, Jonathan Suprijadi*, Sebastian Ziegler, Michal Nohel, Robin Peretzke, Gregor Köhler, and Klaus H. Maier-Hein. "An OpenMind for 3D medical vision self-supervised learning." arXiv preprint arXiv:2412.17041 (2024). ICCV (2025).
2. **[CVPR Highlight 2025] Wald, Tassilo***, Constantin Ulrich*, Stanislav Lukyanenko, Andrei Goncharov, Alberto Paderno, Leander Maerkisch, Paul F. Jaeger, and Klaus Maier-Hein. "*Revisiting MAE pre-training for 3D medical image segmentation.*" CVPR (2025).
3. **[Preprint 2025] Wald, Tassilo***, Saikat Roy*, Fabian Isensee*, Constantin Ulrich, Sebastian Ziegler, Dasha Trofimova, Raphael Stock, Michael Baumgartner, Gregor Koehler and Klaus H. Maier-Hein. "*Primus: Enforcing Attention Usage for 3D Medical Image Segmentation.*" Preprint (2025).
4. **[ER-x 2025] Wald, Tassilo***, Benjamin Hamm*, Julius C. Holzschuh, Rami El Shafie, Andreas Kudak, Balint Kovacs, Irada Pflüger et al. "Enhancing deep learning methods for brain metastasis detection through cross-technique annotations on SPACE MRI." *European Radiology Experimental* 9 (2025): 15.
5. **[ICLR 2025]** Klabunde, Max*, **Tassilo Wald***, Tobias Schumacher*, Klaus Maier-Hein, Markus Strohmaier, and Florian Lemmerich. "*Resi: A comprehensive benchmark for representational similarity measures.*" ICLR (2025).
6. **[NeurIPS 2024]: Wald, Tassilo**, Constantin Ulrich, Gregor Köhler, David Zimmerer, Stefan Denner, Michael Baumgartner, Fabian Isensee, Priyank Jaini, and Klaus H. Maier-Hein. "Decoupling Semantic Similarity from Spatial Alignment for Neural Networks." In *The Thirty-eighth Annual Conference on Neural Information Processing Systems,* (2024) (Collaboration with Google DeepMind).
7. **[MICCAI 2024]** Isensee, Fabian*, **Tassilo Wald***, Constantin Ulrich*, Michael Baumgartner*, Saikat Roy, Klaus Maier-Hein, and Paul F. Jaeger. "nnu-net revisited: A call for rigorous validation in 3d medical image segmentation." *International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 488-498. Cham: Springer Nature Switzerland*, 2024
8. **[Preprint 2024]** Constantin Ulrich*, **Wald Tassilo***, Emily Tempus*, Maximilian Rokuss, Paul F. Jaeger, Klaus H. Maier-Hein. "RadioActive: 3D Radiological Interactive Segmentation Benchmark." arXiv preprint arXiv:2411.07885 (2024)
9. **[SCIS 2023] Tassilo Wald**, Constantin Ulrich, Fabian Isensee, David Zimmerer, Gregor Koehler, Michael Baumgartner, Klaus H. Maier-Hein. "Exploring new ways: Enforcing representational dissimilarity to learn new features and reduce error consistency," *Workshop on Spurious Correlations, Invariance and Stability (SCIS) at ICML*, 2023. [PDF]
10. **[MIDL short 2023] Tassilo Wald***, Saikat Roy*, Gregor Köhler*, Maximilian R. Rokuss*, Nico Disch*, Julius Holzschuh*, David Zimmerer*, Klaus H. Maier-Hein. "SAM.MD: Zero-shot medical image segmentation capabilities of the Segment Anything Model," *Medical Imaging with Deep Learning (MIDL), short paper track*, 2023. [PDF]
11. **[BVM 2023]** Fabian Isensee*, Constantin Ulrich*, **Tassilo Wald***, Klaus H. Maier-Hein. "Extending nnU-Net is all you need," *Bildverarbeitung für die Medizin (BVM)*, 2023. (Oral) [PDF]
12. **[NOA 2022]** Irada Pflueger*, **Tassilo Wald***, Fabian Isensee, Marianne Schell, Hagen Meredig, Kai Schlamp, Denise Bernhardt, Gianluca Brugnara, Claus Peter Heußel, Juergen Debus, Wolfgang Wick, Martin Bendszus, Klaus H. Maier-Hein, Philip Vollmuth. "Automated detection and quantification of brain metastases on clinical MRI data using artificial neural networks," *Neuro-Oncology Advances, 4(1)*, 2022. [PDF]

For co-authored papers please check my website tawald.github.io or my google scholar.

Challenges & Hackathons:

1. [**MICCAI Challenge**] **1st place of 13**
   Jonathan Deissler*, **Tassilo Wald***, "Mediastinal Lymph Node Quantification (**LNQ**): Segmentation of Heterogeneous CT Data," 2023 [Grand Challenge]
2. [**MICCAI Challenge**] **1st place of 20**
   Fabian Isensee*, Constantin Ulrich*, **Tassilo Wald***, "Abdominal Multi-Organ Segmentation (AMOS) Challenge", 2022 [Grand Challenge]
3. [**HiDA Hackathon**] **1st place of 4**
   Tassilo Wald*, Michael Baumgartner*, Gregor Köhler*, "AI-HERO Hackathon for Energy-Efficient AI", 2022 [Link]

Services & Activities:

- Selected as Outstanding Reviewer at CVPR 2025.
- Organizer of the Heidelberg.ai non-profit organization for researchers in the field of Artificial Intelligence since Feb. 2023.
- Reviewer for NeurIPS, ICLR, CVPR, ICML 2024 as well as ICCV, NeurIPS and ICML 2025
- Maintainer of nnU-Net, a self-configuring method for 3D medical image segmentation, since 2023.
- Reviewer for Unifying Representations in Neural Models (UniReps) workshop hosted at NeurIPS 2023, Bildverarbeitung für die Medizin (BVM) 2020-2022, Medical Image Computing and Computer-Assisted Intervention (MICCAI) 2021-2022 (allegedly), Nature methods 2022-2023 (allegedly).
- Tutorial Speaker on "Multi Task Learning in medicine" in the scope of the "Advanced Deep Learning" Tutorial for BVM 2022.
- Scholarship holder of "*Deutschlandstipendium*" awarded to 300 engaging and talented students out of 23.920 enrolled students in KIT 2017-2018.