Publications

Conference Publications

1. *Does Biomedical Training Lead to Better Medical Performance?*, Amin Dada, Osman Alperen Koraş, Marie Bauer, Jean-Philippe Corbeil, Amanda Butler Contreras, *Constantin Seibold*, Kaleb E Smith, Jens Kleesiek, Proceedings of the Fourth Workshop on Generation, Evaluation and Metrics (GEM), 2025, [Paper]

2. *Anatomy-guided Pathology Segmentation*, Alexander Jaus, *Constantin Seibold*, Simon Reiß, Lukas Heine, Anton Schily, Moon Kim, Fin Hendrik Bahnsen, Ken Herrmann, Rainer Stiefelhagen, Jens Kleesiek, MICCAI, 2025, [Paper]

3. *Improving Medical Visual Instruction Tuning with Labeled Datasets*, Amin Dada, Amanda Butler Contreras, *Constantin Seibold*, Osman Alperen Koraş, Julius Keyl, Aokun Chen, Cheng Peng, Alexander Brehmer, Kaleb E Smith, Jiang Bian, Yonghui Wu, Jens Kleesiek, International Workshop on Foundation Models for General Medical AI (MedAGI), 2025

4. *CT-GRAPH: Hierarchical Graph Attention Network for Anatomy-Guided CT Report Generation*, Hamza Kalisch, Fabian Hörst, Jens Kleesiek, Ken Herrmann, *Constantin Seibold*, ICCVW, 2025, [Paper]

5. *Is Visual in-Context Learning for Compositional Medical Tasks within Reach?*, Simon Reiß, Zdravko Marinov, Alexander Jaus, *Constantin Seibold*, M. Saquib Sarfraz, Erik Rodner, Rainer Stiefelhagen, ICCV, 2025, [Paper]

6. *Towards unifying anatomy segmentation: automated generation of a full-body CT dataset via knowledge aggregation and anatomical guidelines*, Alexander Jaus†, *Constantin Seibold*† , Kelsey Hermann, Alexandra Walter, Kristina Giske, Johannes Haubold, Jens Kleesiek, Rainer Stiefelhagen, ICIP, 2024, [Paper]

7. *FootCapture: Towards an AR-based System for 3D Foot Object Acquisition through Photogrammetry*, Valentin Khan-Blouki, Franziska Seiz, Nicolas Walter, Alexander Jaus, Zdravko Marinov, Gijs Luijten, Jan Egger, *Constantin Seibold*, Dirk Solte, Jens Kleesiek, Rainer Stiefelhagen, MIDL, 2024, [Paper]

8. *Style Transfer and Pseudo-Label Filtering Improve Transferability in Cell Organelle Segmentation Scenarios*, Dmitrii Seletkov, Simon Reiß, Alexander Freytag, *Constantin Seibold*, Rainer Stiefelhagen, ISBI, 2024

9. *Enhancing Contrastive Training for Semi-Supervised Chest X-Ray Analysis Through Gaussian Mixture Models*, Phuong Quynh Le, Jens Kleesiek, *Constantin Seibold*, ISBI, 2024

10. *IKIM at MEDIQA-M3G 2024: Multilingual Visual Question-Answering for Dermatology through VLM Fine-tuning and LLM Translations*, Marie Bauer, Amin Dada, *Constantin Seibold*, Jens Kleesiek, Proceedings of the 6th Clinical Natural Language Processing Workshop, 2024 [First Place Solution: Spanish, Chinese]

11. *Autopet III challenge: Incorporating anatomical knowledge into nnUNet for lesion segmentation in PET/CT*, Hamza Kalisch, Fabian Hörst, Ken Herrmann, Jens Kleesiek, *Constantin Seibold*, MICCAI - AutoPET III, 2024, [Paper]

12. *Every Component Counts: Rethinking the Measure of Success for Medical Semantic Segmentation in Multi-Instance Segmentation Tasks*, Alexander Jaus, *Constantin Seibold*, Simon Reiß, Zdravko Marinov, Keyi Li, Zeling Ye, Stefan Krieg, Jens Kleesiek, Rainer Stiefelhagen, AAAI, 2024, [Paper]

13. *Spacewalker: Traversing Representation Spaces for Fast Interactive Exploration and Annotation of Unstructured Data*, Lukas Heine, Fabian Hörst, Jana Fragemann, Gijs Luijten, Miriam Balzer, Jan Egger, Fin Bahnsen, Saquib Sarfraz, Jens Kleesiek, *Constantin Seibold*, MLVis@EuroVis, 2024, [Paper]

14. *Multimodal Interactive Lung Lesion Segmentation: A Framework for Annotating PET/CT Images based on Physiological and Anatomical Cues*, Verena Jasmin Hallitschke, Tobias Schlumberger, Philipp Kataliakos, Zdravko Marinov, Moon Kim, Lars Heiliger, *Constantin Seibold*, Jens Kleesiek, Rainer Stiefelhagen, ISBI, 2023 [Oral Paper], [Paper]

15. *Decoupled Semantic Prototypes enable learning from diverse annotation types for semi-weakly segmentation in expert-driven domains*, Simon Reiß, *Constantin Seibold*, Alexander Freytag, Erik Rodner, Rainer Stiefelhagen, CVPR, 2023

16. *On the Impact of Cross-Domain Data on German Language Models*, Amin Dada, Aokun Chen, Cheng Peng, Kaleb E Smith, Ahmad Idrissi-Yaghir, *Constantin Seibold*, Jianning Li, Lars Heiliger, Christoph M Friedrich, Daniel Truhn, Jan Egger, Jiang Bian, Jens Kleesiek, Yonghui Wu, EMNLP, 2023, [Paper]

17. *Flying guide dog: Walkable path discovery for the visually impaired utilizing drones and transformer-based semantic segmentation*, Haobin Tan, Chang Chen, Xinyu Luo, Jiaming Zhang, *Constantin Seibold*, Kailun Yang, Rainer Stiefelhagen, IEEE ROBIO, 2022, [Paper]

18. *Reference-guided Pseudo-Label Generation for Medical Semantic Segmentation*, *Constantin Seibold*, Simon Reiß, Jens Kleesiek, Rainer Stiefelhagen, AAAI, 2022, [Paper]

19. *Hierarchical nearest neighbor graph embedding for efficient dimensionality reduction*, Saquib Sarfraz, Marios Koulakis, *Constantin Seibold*, Rainer Stiefelhagen, CVPR, 2022, [Paper]

20. *Towards Automatic Parsing of Structured Visual Content through the Use of Synthetic Data*, Lukas Scholch, Jonas Steinhauser, Maximilian Beichter, *Constantin Seibold*, Kailun Yang, Merlin Knäble, Thorsten Schwarz, Alexander Mädche, Rainer Stiefelhagen, ICPR, 2022, [Paper]

21. *Deep Learning-basierte Synthese virtueller monoenergetischer Bilder zur Optimierung einer automatisierten Detektion von Lungenarterienembolien in konventionellen CT-Scans*, Matthias A Fink, *Constantin Seibold*, Hans-Ulrich Kauczor, Rainer Stiefelhagen, Jens Kleesiek, RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren, 2022

22. *Breaking with Fixed Set Pathology Recognition through Report-Guided Contrastive Training*, *Constantin Seibold*, Simon Reiß, Saquib Sarfraz, Rainer Stiefelhagen, Jens Kleesiek, MICCAI, 2022, [Paper]

23. *Graph-constrained Contrastive Regularization for Semi-weakly Volumetric Segmentation*, Simon Reiß, *Constantin Seibold*, Alexander Freytag, Erik Rodner, Rainer Stiefelhagen, ECCV, 2022

24. *Detailed Annotations of Chest X-Rays via CT Projection for Report Understanding*, *Constantin Seibold*, Simon Reiß, Saquib Sarfraz, Matthias A Fink, Victoria Mayer, Jan Sellner, Moon Sung Kim, Klaus H Maier-Hein, Jens Kleesiek, Rainer Stiefelhagen, BMVC, 2022, [Paper]

25. *Every annotation counts: Multi-label deep supervision for medical image segmentation*, Simon Reiß, *Constantin Seibold*, Alexander Freytag, Erik Rodner, Rainer Stiefelhagen, CVPR, 2021, [Paper]

26. *Prediction of low-keV monochromatic images from polyenergetic CT scans for improved automatic detection of pulmonary embolism*, *Constantin Seibold*, Matthias A Fink, Charlotte Goos, Hans-Ulrich Kauczor, Heinz-Peter Schlemmer, Rainer Stiefelhagen, Jens Kleesiek, ISBI, 2021, [Paper]

27. *Pose2Drone: A Skeleton-Pose-based Framework for Human-Drone Interaction*, Zdravko Marinov, Stanka Vasileva, Qing Wang, *Constantin Seibold*, Jiaming Zhang, Rainer Stiefelhagen, EUSIPCO, 2021, [Paper]

28. *Let's Play for Action: Recognizing Activities of Daily Living by Learning from Life Simulation Video Games*, Alina Roitberg, David Schneider, Aulia Djamal, *Constantin Seibold*, Simon Reiß, Rainer Stiefelhagen, IROS, 2021, [Paper]

29. *Self-Guided Multiple Instance Learning for Weakly Supervised Thoracic Disease Classification and Localization in Chest Radiographs*, *Constantin Seibold*, Jens Kleesiek, Heinz-Peter Schlemmer, Rainer Stiefelhagen, ACCV, 2020, [Paper]

30. *Content and Colour Distillation for Learning Image Translations with the Spatial Profile Loss*, Saquib Sarfraz, *Constantin Seibold*, Haroon Khalid, Rainer Stiefelhagen, BMVC, 2019 [Best Industry Paper], [Paper]

Journal Publications

1. *Why does my medical AI look at pictures of birds? Exploring the efficacy of transfer learning across domain boundaries*, Frederic Jonske, Moon Kim, Enrico Nasca, Janis Evers, Johannes Haubold, René Hosch, Felix Nensa, Michael Kamp, *Constantin Seibold*, Jan Egger, Jens Kleesiek, Computer Methods and Programs in Biomedicine, 2025, [Paper]

2. *MedShapeNet--A Large-Scale Dataset of 3D Medical Shapes for Computer Vision*, Jianning Li et al., Biomedical Engineering/Biomedizinische Technik, 2025, [Paper]

3. *De-Identification of Medical Imaging Data: A Comprehensive Tool for Ensuring Patient Privacy*, Moritz Rempe, Lukas Heine, *Constantin Seibold*, Fabian Hörst, Jens Kleesiek, European Radiology, 2025, [Paper]

4. *Three-dimensional Quantification of Macular OCT Alterations Improves the Diagnostic Performance of Artificial Intelligence Models*, Lukas Heine, Anna Vahldiek, Benja Vahldiek, Fabian Hörst, *Constantin Seibold*, Mael Lever, Laurenz Pauleikhoff, Nikolaos Bechrakis, Daniel Pauleikhoff, Jens Kleesiek, Translational Vision Science & Technology, 2025

5. *Fine-grained Classification of Pressure Ulcers and Incontinence-Associated Dermatitis Using Multimodal Deep Learning: Algorithm Development and Validation Study*, Alexander Brehmer, *Constantin Seibold*, Jan Egger, Khadija Majjouti, Merle Tapp-Herrenbrück, Heike Pinnekamp, Veronica Priester, Marc Aleithe, Ursula Fischer, Barbara Hosters, Jens Kleesiek, JMIR AI, 2025

6. *Beyond Benchmarks: Towards Robust Artificial Intelligence Bone Segmentation in Socio-Technical Systems*, Kunpeng Xie, Lennart Johannes Gruber, Martin Crampen, Yao Li, André Ferreira, Elias Tappeiner, Maxime Gillot, Jan Schepers, Jiangchang Xu, Tobias Pankert, Michel Beyer, Negar Shahamiri, Reinier ten Brink, Gauthier Dot, Charlotte Weschke, Niels van Nistelrooij, Pieter-Jan Verhelst, Yan Guo, Zhibin Xu, Jonas Bienzeisler, Ashkan Rashad, Tabea Flügge, Ross Cotton, Shankeeth Vinayahalingam, Robert Ilesan, Stefan Raith, Dennis Madsen, *Constantin Seibold*, Tong Xi, Stefaan Bergé, Sven Nebelung, Oldřich Kodym, Osku Sundqvist, Florian Thieringer, Hans Lamecker, Antoine Coppens, Thomas Potrusil, Joep Kraeima, Max Witjes, Guomin Wu, Xiaojun Chen, Adriaan Lambrechts, Lucia H Soares Cevidanes, Stefan Zachow, Alexander Hermans, Daniel Truhn, Victor Alves, Jan Egger, Rainer Röhrig, Frank Hölzle, Behrus Puladi, Expert Systems with Applications, 2025, [Paper]

7. *Cellvit: Vision transformers for precise cell segmentation and classification*, Fabian Hörst, Moritz Rempe, Lukas Heine, *Constantin Seibold*, Julius Keyl, Giulia Baldini, Selma Ugurel, Jens Siveke, Barbara Grünwald, Jan Egger, Jens Kleesiek, Medical Image Analysis, 2024, [Paper]

8. *Is There a Role of Artificial Intelligence in Preclinical Imaging?*, Alina Küper, Paul Blanc-Durand, Andrei Gafita, David Kersting, Wolfgang P Fendler, *Constantin Seibold*, Alexandros Moraitis, Katharina Lückerath, Michelle L James, Robert Seifert, Seminars in Nuclear Medicine, 2023

9. *Valuing Vicinity: Memory attention framework for context-based semantic segmentation in histopathology*, Oliver Ester, Fabian Hörst, *Constantin Seibold*, Julius Keyl, Saskia Ting, Nikolaos Vasileiadis, Jessica Schmitz, Philipp Ivanyi, Viktor Grünwald, Jan Hinrich Bräsen, Jan Egger, Jens Kleesiek, Computerized Medical Imaging and Graphics, 2023, [Paper]

10. *CT angiography clot burden score from data mining of structured reports for pulmonary embolism*, Matthias A. Fink, Victoria L. Mayer, Thomas Schneider, *Constantin Seibold*, Rainer Stiefelhagen, Jens Kleesiek, Tim F. Weber, Hans-Ulrich Kauczor, Radiology, 2022

11. *Jointly Optimized Deep Neural Networks to Synthesize Monoenergetic Images from Single-Energy CT Angiography for Improving Classification of Pulmonary Embolism*, Matthias A Fink, *Constantin Seibold*, Hans-Ulrich Kauczor, Rainer Stiefelhagen, Jens Kleesiek, Diagnostics, 2022

12. *A reporting and analysis framework for structured evaluation of COVID-19 clinical and imaging data*, Gabriel Alexander Salg et al., npj Digital Medicine, 2021

Preprints

1. *Region-Normalized DPO for Medical Image Segmentation under Noisy Judges*, Hamza Kalisch, *Constantin Seibold*, Jens Kleesiek, Ken Herrmann, Frederic Jonske, Pre-Print, 2026, [Paper]

2. *Foreign object segmentation in chest x-rays through anatomy-guided shape insertion*, *Constantin Seibold*, Hamza Kalisch, Lukas Heine, Simon Reiß, Jens Kleesiek, Pre-Print, 2025, [Paper]

3. *Automatic Fine-grained Segmentation-assisted Report Generation*, Frederic Jonske, *Constantin Seibold*, Osman Alperen Koraş, Fin Bahnsen, Marie Bauer, Amin Dada, Hamza Kalisch, Anton Schily, Jens Kleesiek, Pre-Print, 2025, [Paper]

4. *Good Enough: Is it Worth Improving your Label Quality?*, Alexander Jaus, Zdravko Marinov, *Constantin Seibold*, Simon Reiß, Jens Kleesiek, Rainer Stiefelhagen, Pre-Print, 2025, [Paper]

5. *Tumor likelihood estimation on MRI prostate data by utilizing k-Space information*, Moritz Rempe, Fabian Hörst, *Constantin Seibold*, Boris Hadaschik, Marco Schlimbach, Jan Egger, Kevin Kröninger, Felix Breuer, Martin Blaimer, Jens Kleesiek, Pre-Print, 2024, [Paper]

6. *Towards Synthetic Data Generation for Improved Pain Recognition in Videos under Patient Constraints*, Jonas Nasimzada, Jens Kleesiek, Ken Herrmann, Alina Roitberg, *Constantin Seibold*, Pre-Print, 2024, [Paper]

7. *Accurate Fine-Grained Segmentation of Human Anatomy in Radiographs via Volumetric Pseudo-Labeling*, *Constantin Seibold*, Alexander Jaus, Matthias A Fink, Moon Kim, Simon Reiß, Ken Herrmann, Jens Kleesiek, Rainer Stiefelhagen, Pre-Print, 2023, [Paper]