

Work Experience

- 01/2023– **PhD researcher, NCT Dresden**
Present **Topic:** Generation of training data for surgical applications
- Surgical video synthesis with diffusion models for rare complications
 - Adversarial diffusion approach for reducing Sim2Real domain gap in surgical applications
- 05/2022– **Master thesis student, Helmholtz Zentrum Dresden**
11/2022 **Topic:** Equivariant neural networks for image segmentation
- Investigation on group equivariant neural networks (GCNN) to reduce data dependency in segmentation tasks
- 05/2021– **Machine learning Student Intern, Helmholtz Zentrum Dresden**
04/2022 Investigation on GAN model evaluation and robustness studies on ML model
- Assessment on evaluation of generated images via GAN models and its application to detect adversarial examples

Education

- 01/2023 **Doctorate, Generative modelling, TU Dresden, Germany**
- 10/2019– **Master of Science, Computational Material Science, TU Bergakademie, Freiberg**
12/2022 *Grade – 1.4 (German grading system)*
Specialization: Deep learning, Image classification & segmentation

Contributions & Publications

- 09/2024 **Synthesizing multi-class surgical images with anatomy-aware diffusion models**
Accepted at Winter Conference on Applications of Computer Vision (WACV), <https://arxiv.org/abs/2410.07753>
- 08/2024 **Generating surgical images with latent consistency diffusion models**
Article in European Conference on Computer Vision workshop (ECCVw), <https://arxiv.org/abs/2408.09822>
- 02/2024 **Exploring semantic consistency in unpaired image translation**
Journal article in International Journal of Computer Assisted Radiology and Surgery (IJCARS), <https://link.springer.com/article/10.1007/s11548-024-03079-1>
- 07/2022 **Equivariant neural networks for image segmentation**
Contribution talk given at Swiss Equivariant Learning workshop, <https://www.hzdr.de/publications/Publ-34917>
- 06/2022 **Detection of adversarial samples - a geometrical approach**
The research work conducted during internship available as preprint, <https://arxiv.org/abs/2206.08738>
- 12/2021 **Geometric identification of adversarial samples, Helmholtz AI**
Contribution talk at ML symposium (HZDR), <https://zenodo.org/record/5788483>