Leander Lauenburg

leander.lauenburg@gmail.com | lauenburg.github.io | github.com/lauenburg | linkedin.com/in/lauenburg

Research Interests

Accelerating neuroscientific discovery through **open-source tools** for scalable connectomics. Advancing **3D segmentation** for emerging image modalities and annotation-scarce settings. Focusing on **structurally consistent domain adaptation**, **cross-domain pretraining**, and **semi-supervised learning**, paving the way for connectomics foundation models.

Publications

"SynAnno: Interactive Guided Proofreading of Synaptic Annotations", IEEE VIS, ®* — 2025
Leander Lauenburg, Jakob Troidl, Adam Gohain, Zudi Lin, Hanspeter Pfister, Donglai Wei — * replicability stamp

"3D Domain Adaptive Instance Segmentation via Cyclic Segmentation GANs", IEEE JBHI — 2023
Leander Lauenburg*, Zudi Lin*, Ruihan Zhang, Márcia dos Santos, Siyu Huang, Ignacio Arganda-Carreras, Edward S. Boyden, Hanspeter Pfister, Donglai Wei — * equal contribution

Education

M.Sc. Robotics, Cognition, Intelligence, Technical University of Munich, Germany — 2019–2022
Thesis: "3D Instance Segmentation of an Unlabeled Modality via Cyclic Segmentation GANs"

B.Sc. Engineering Science, Technical University of Munich, Germany — 2014–2018
Thesis: "Energy-based Condition Monitoring for Industry 4.0";

Research Experience

Research Affiliate, Visual Computing Group, Harvard University, USA — 11/24–06/25
Designed SynAnno, an interactive tool for neuron-centric proofreading, integrating guided workflows, path planning, 3D visualization, and ML-based error correction. IEEE VIS 2025; GitHub-SynAnno.

Research Fellow, Visual Computing Group, Harvard University, USA — 10/21–07/22
Developed CySGAN, a single-network, end-to-end approach for joint 3D nuclei segmentation and cross-modal image translation between EM and expansion microscopy. IEEE JBHI 2023; GitHub-CySGAN.

Industry Experience

Senior Specialist - AI & Software, DB Systel, Berlin — 12/23–Present
R&D project on train traffic simulation and dispatching automation. Leading core logic development for simulation, disruption handling, and delay mitigation. Supporting national rollout and operation.

Research Software Engineer, Merantix Momentum, Berlin — 02/23–06/23
Built an MLOps stack (Terraform, K8s, Helm, Docker) and CI/CD pipelines for safety-critical ML.

Working Student, Agile Robots AG, Munich — 11/20–06/21
Implemented secure IAM infrastructure using OAuth2, OIDC, LDAP, and PKI for robotics platforms.

WATTx / **deevio** / **fortiss**, Berlin & Munich — 2017–2019
Led the MVP development at an early-stage startup; built PyTorch image anomaly detection pipelines.

Honors and Awards

DAAD IFI Scholarship, International Research Stays for Computer Scientists (full stipend) — 01/22–07/22

TechChallenge BEFIVE, 1st Place, Innovation Challenge by UnternehmerTUM — 2021

References

Hanspeter Pfister, An Wang Professor of Computer Science, Harvard, pfister@seas.harvard.edu

Donglai Wei, Assistant Professor, Computer Science Faculty, Boston College, donglai.wei@bc.edu

Ed Boyden, Y. Eva Tan Professor in Neurotechnology, Massachusetts Institute of Technology, edboyden@mit.edu

Languages		Libraries		Software / Infrastructure		Key Lectures & Seminars
Python	●●●	PyTorch	●●●	Systems	Docker, K8s, Helm	Advanced Topics in 3D CV
Java	●●○	OpenCV	●●○	DevOps	Git, SLURM, Prefect	Computational Aspects of ML
C++	●○○	Neuroglancer	●●○	Cloud	GCP, AWS, Terraform	DL for Medical Applications
LaTeX	●●○	CloudVolume	●●○	ML Tools	MLflow, Ray, W&B	Cloud-Based ML in Robotics

Legend: ●●● advanced ●●○ intermediate ●○○ basic