Kristian **Schwethelm**

PhD Student · Large Language Models · Technical University of Munich

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Summary

Ph.D. student at TUM; pretraining and fine-tuning LLMs. Covering the full stack from architecture design and distributed training on HPC clusters to agent evaluation with local and hosted models. Current focus on looped transformers and benchmarking LLM agents in clinical decision workflows. Published at ICLR, SaTML, and TMLR. Looped LM paper under review at NeurIPS 2026.

Skills

- Languages: English (Fluent), German (Native), Slovenian (Fluent), Russian (Basic)
- Main Programming: Python, Bash, SQL
- Frameworks: PyTorch, JAX, HuggingFace Transformers, vLLM, Docker
- Tools: GitHub (CI/CD, Actions, PRs), LaTeX, Weights & Biases, Distributed systems (HPC-Clusters, Slurm), Coding Agents (Claude Code)
- Research: LLM Training & Fine-tuning (SFT, GRPO, Distillation), LLM Agents, Looped Transformers, Computer Vision, Differential Privacy

Work Experience

Technical University of Munich Hospital (Chair for AI in Medicine)
Munich, Germany

Doctoral Student — Large Language Models
Oct. 2023 - Present

- Pretraining and fine-tuning looped transformer LLMs; retrofitting recurrence into pretrained models and latent reasoning via RL.
- Benchmarking LLM agents in clinical decision workflows. Setup text extraction from clinical reports with Gemini API.
- Differentially private algorithms and privacy auditing methods with diffusion models; papers at SaTML 2025 and TMLR 2025.
- Supervising M.Sc. theses, teaching graduate seminars in AI, and coordinating internal team operations.

University of Hildesheim (Data Science Group)
Hildesheim, Germany

Student Research Assistant — Deep Learning
Nov. 2021 - Sep. 2023

- Led research on hyperbolic neural networks; authored paper accepted at ICLR 2024.

Robert Bosch GmbH (Corporate Research)
Hildesheim, Germany

Working Student — Multi-View Scene Analysis
Apr. 2021 - Oct. 2021

- Collaborated with research engineers for multi-camera calibration and 3D object reconstruction algorithms for automotive perception.

Robert Bosch GmbH
Hildesheim, Germany

Dual Study Student
Sep. 2016 - Mar. 2021

- Fully funded dual study program with industry experience across several R&D and software engineering departments.

Honors & Awards

2025	**Top Reviewer**, NeurIPS 2025
2024	**Best Graduate Award**, MSc. Applied Computer Science
2016–2023	**Scholarships**, Deutschlandstipendium (2021, 2022, 2023), State Scholarship Lower Saxony (2019), Full Industry Sponsorship Robert Bosch GmbH (2016–2021)

Core Publications

- How Much Is One Recurrence Worth? Iso-Depth Scaling Laws for Looped Language Models, under review at NeurIPS 2026
- Visual Privacy Auditing with Diffusion Models, TMLR 2025
- Differentially Private Active Learning: Balancing Effective Data Selection and Privacy, IEEE SaTML 2025
- Fully Hyperbolic Convolutional Neural Networks for Computer Vision, ICLR 2024

Education

Technical University of Munich, Germany

Doctor of Natural Sciences (Ph.D.) — AI in Medicine
Oct. 2023 – Present

- Supervised by Prof. Daniel Rückert and Prof. Georgios Kaissis.

University of Hildesheim, Germany

M.Sc. Applied Computer Science — Grade: 1.0 (Outstanding)
Apr. 2021 – Feb. 2023

- Specialization: Machine Learning and Deep Learning. Thesis: *Hyperbolic Variational Autoencoder for Image Generation.*

Ostfalia University of Applied Sciences, Wolfenbüttel, Germany

B.Eng. Electrical and Information Engineering — Grade: 1.09 (Outstanding)
Sep. 2016 – Mar. 2021

- Dual study program with Robert Bosch GmbH. Thesis: *Camera-Based Object Detection Using Transformer Architectures.*