

Sameer Ambekar

Ph.D. Researcher @ TU Munich | Vision-Language Models, Reasoning & Robustness
Visiting Researcher @ UBC, Canada & Stanford, USA

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🦋 **Open for Internships, Starting 2027**, always excited to collaborate on VLM Reasoning, Distribution Shift, and Test-Time Adaptation.

★ **Recent Acceptance: NeurIPS 2026 Spotlight (Top 3.7%), main track**, co-first authored “*Entropy Minimization without Model Collapse*”

RESEARCH INTERESTS

Deep learning, Computer vision, RL: Adapting Vision-Language Models (VLMs) with reasoning abilities using GRPO (Group Refinement Policy Optimization) and Test-time strategies.

EDUCATION

Technical University of Munich (TU Munich) Munich, Germany
Konrad Zuse School of Excellence in Reliable AI (relAI)
Ph.D. student in Deep learning and Computer vision 2023 - present
Supervisor: Prof. Dr. Julia Schnabel
Funded by the DAAD Konrad Zuse AI Excellence Program

Stanford University San Francisco, California, USA
Research stay as a Ph.D. student 2026
Test-time Reasoning and Scaling for Medical imaging
Supervisor: Prof. Dr. Akshay Chaudhari

University of British Columbia (UBC) Vancouver, Canada
Research stay as a Ph.D. student 2026
Reasoning with Vision-Language Models
Supervisor: Prof. Dr. Xiaoxiao Li

University of Amsterdam (UvA) Amsterdam, Netherlands
Research Master's in Artificial Intelligence (MSc AI) (Thesis grade: Excellent, 48 ECTS) 2021 - 2023
Thesis: Test-time Adaptation: Generating labels and models
Supervisors: Prof. Dr. Cees Snoek & Zehao Xiao

RESEARCH EXPERIENCE

University of Amsterdam Amsterdam, Netherlands
Research Intern during MSc AI June 2022 - June 2023
Supervisors: Prof. Cees Snoek, Prof. Xiantong Zhen & Zehao Xiao

Indian Institute of Technology Delhi (IIT Delhi) Delhi, India
Research Assistant in Deep learning, before MSc AI January 2019 - July 2021
Supervisor: Prof. Prathosh AP

Indian Council of Medical Research (ICMR), NITM Belgaum, India
Research Trainee and Bachelor Thesis 2017 - 2018
Supervisors: Dr. Subarna Roy (Scientist G) & Pramod Kumar (Scientist B)

PUBLICATIONS

Entropy Minimization without Model Collapse: Mitigating Prediction Bias in Medical Imaging
Tim Nielen*, Sameer Ambekar*, Johannes Kiechle, Daniel M. Lang, Julia A. Schnabel
Conference on Neural Information Processing Systems (NeurIPS), 2026 ★ Spotlight, Top 3.7%

The Mean is the Mirage: Entropy-Adaptive Model Merging under Heterogeneous Domain Shifts in Medical Imaging

Sameer Ambekar, Reza Nasirigerdeh, Lina Felsner, Daniel M. Lang, Julia A. Schnabel
arXiv preprint

Hierarchical Adaptive networks with Task vectors for Test-Time Adaptation

Sameer Ambekar, Daniel M. Lang, Julia A. Schnabel
Winter Conference on Applications of Computer Vision (WACV), 2026 [Algorithms track]

Precise Test-time Detection

Sameer Ambekar, Cosmin I. Bercea, Julia A. Schnabel
Preprint soon

Selective Test-Time Adaptation for Unsupervised Anomaly Detection using Neural Implicit Representations

Sameer Ambekar, Cosmin I. Bercea, Julia A. Schnabel
MICCAI 2024 ADMSI 🏆 Best Paper Award

Non-Parametric Neighborhood Test-Time Generalization: Application to Medical Image Classification

Sameer Ambekar, Daniel M. Lang, Julia A. Schnabel
MICCAI 2024 EMERGE

GeneralizeFormer: Layer-Adaptive Model Generation across Test-Time Distribution Shifts

Sameer Ambekar, Zehao Xiao, Xiantong Zhen, Cees G. M. Snoek
Winter Conference on Applications of Computer Vision (WACV), 2025.

Learning Variational Neighbor Labels for Test-Time Domain Generalization.

Sameer Ambekar*, Zehao Xiao*, Jiayi Shen, Xiantong Zhen, Cees G. M. Snoek
Conference on Lifelong Learning Agents (CoLLAs), 2024.

Unsupervised Domain Adaptation for Semantic Segmentation of NIR Images through Generative Latent Search.

Prashant Pandey*, Aayush Kumar Tyagi*, **Sameer Ambekar**, Prathosh AP
European Conference on Computer Vision (ECCV), 2020 ★ Spotlight, Top 5%

Variational Pseudo Labeling for Test Time Domain Generalization.

Sameer Ambekar, Zehao Xiao, Jiayi Shen, Xiantong Zhen, Cees G. M. Snoek
International Conference on Learning Representations workshop (ICLR), 2023 ★ Spotlight

SKDCGN: Source-free Knowledge Distillation of Counterfactual Generative Networks using cGANs.

Sameer Ambekar*, Matteo Tafuro*, Ankit*, Diego van der Mast*, Mark Alence*, Christos Athanasiadis
European Conference on Computer Vision workshop (ECCV), 2022.

Thesis

Test-time adaptation: Generating Variational labels and Models.

Sameer Ambekar

Masters in AI Thesis, AI for Medical Imaging lab, University of Amsterdam

Supervisors: Prof. Cees Snoek, Prof. Xiantong Zhen, Zehao Xiao

TEACHING & SUPERVISION AT TU MUNICH

- **MSc Thesis & Project Supervision**, TU Munich. Current students: **Tim Nielen**, MSc Informatics, TU Munich (Grade: 1.0 - highest as per German academia), *The Dynamics of Entropy Minimization for Medical Imaging*; **Andras Gaspar**, BSc, TU Munich.
- **From General to Clinical: Adapting Foundation Models for Medical Images**, seminar for master's students, TU Munich *Summer 2026*
Slides
- **From General to Clinical: Adapting Foundation Models for Medical Images**, seminar for master's students, TU Munich *Winter 2025/26*

SELECTED AWARDS AND HONORS

- ★ **Spotlight Paper [Top 3.7%]** at NeurIPS 2026 main track for *Entropy Minimization without Model Collapse* (co-first author) 2026
- ★ **Spotlight Paper [Top 5%]** at ECCV 2020 for *Unsupervised Domain Adaptation for Semantic Segmentation of NIR Images* 2020
- ★ **Spotlight Paper** at ICLR 2023 Domain Generalization workshop 2023
- 🏆 **Best Paper Award** at MICCAIw ADSMI for Selective Test-time Adaptation 2024
- 🎓 **ICML Gold Reviewer Award** for paper reviewing contributions 2026
- 🎓 **BaCaTeC Grant**, Bavaria-California seed grant funding a Ph.D. Research Stay at Stanford University 2026
- DigiCosme **Full Master Scholarship** of €12,000 Université Paris Saclay, France 2021
- Google Conference Grant for ECCV 2020 Spotlight paper 2020
- Secured 6th Rank (National Level) in the National Science Talent Search Examination, India.

PROFESSIONAL RESPONSIBILITIES

- **Reviewer:** NeurIPS, ICML, CVPR, ECCV, ICCV, IEEE TNNLS, Elsevier's Applied soft computing, Springer Nature's Journal of Translational Medicine

MACHINE LEARNING SUMMER SCHOOLS

- International Computer Vision summer school (ICVSS), Italy 2024
- Eastern European Machine Learning summer school by Google Deepmind, Slovakia 2024
- Oxford Machine Learning summer school (OxML 2022), Deep Learning by University of Oxford, UK 2020, 2022
- Regularization Methods for Machine Learning 2021 (RegML 2021) 2021
- PRAIRIE/MIAI PAISS 2021 Machine Learning Summer Learning, by INRIA & NAVER labs, France 2021
- Machine Learning Summer School (MLSS-Indo 2020, Indonesia) 2020

SELECTED RESEARCH PROJECTS

Knowledge Distillation of Counterfactual Generative networks, DL-2 Course Project, UvA April 2022

- Deep learning 2 course final project at UvA, published at the ECCV 2022 VIPriors workshop, requiring 'no edits'

Semantic Segmentation of Head and Neck Histopathological Images Using Self Supervision 2020 - 2021

Supervisor: Prof. Prathosh AP, IIT Delhi

- Self-supervised techniques show enormous potential with limited labels; applied here to a context-specific task.

Target-Independent Domain Adaptation (TIGDA) for WBC using Generative Latent Search 2020 - 2021

Supervisor: Prof. Prathosh AP, IIT Delhi

- Acknowledged for contributions to the IEEE-TMI 2020 paper

SKILLS

- **Programming Languages:** Python, C, C++
- **Machine Learning, Deep Learning:** PyTorch, Tensorflow, Keras, Numpy, OpenCV, PIL
- **Tools:** LaTeX, Google Cloud Platform (GCP), git, Ubuntu Bash
- **Languages:** English, German, Kanada, Hindi & Marathi

REFERENCES

- **Prof. Dr. Julia Schnabel**, Director IML Helmholtz Munich & CompAI TU Munich
- **Prof. Dr. Cees Snoek**, Head, Video & Image Sense Lab & Director ELLIS Amsterdam Unit, University of Amsterdam
- **Prof. Dr. Xiantong Zhen**, Research Scientist, United Imaging Healthcare, Co., Ltd, Previously University of Amsterdam