Sameer Ambekar

Aspiring Deep Learning, Computer Vision Researcher

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ACADEMIC QUALIFICATION

Doctoral Researcher - PhD, TU Munich (TUM), Munich; September 2023 – Present. Advised by Prof. Dr. Julia Schnabel at Computational Imaging and AI in Medicine Lab, TUM

Masters In Artificial Intelligence (AI), University of Amsterdam (UvA), Amsterdam, Netherlands; September 2021 – June 2023. Advised by Prof. dr. Cees Snoek, Prof. Xiantong Zhen at AI for Medical Imaging Lab, University of Amsterdam [Thesis grade: Excellent]

Bachelor of Engineering in Computer Science and Engineering, Visvesvaraya Technological University (VTU), India; July 2014 - June 2018 (Thesis: Indian Council of Medical Research - ICMR NITM)

PUBLICATIONS

1. "Learning Variational Neighbor Labels for Test-Time Domain Generalization"- [Under Review - Conference]

Authors: **Sameer Ambekar**, Zehao Xiao, Jiayi Shen, Xiantong Zhen, Cees G. M. Snoek

MSc AI thesis – Proposed method 1 at AIM lab, University of Amsterdam

Preprint: https://arxiv.org/abs/2307.04033

2. Work on Surrogate update of model without backpropagation - [Under Review - Conference]

Authors: **Sameer Ambekar**, Zehao Xiao, Xiantong Zhen, Cees G. M. Snoek

MSc AI thesis – Proposed method 2 at AIM lab, University of Amsterdam

3. "Variational Pseudo Labeling for Test Time Domain Generalization"- **ICLR 2023** Domain Generalization [Workshop]

Authors: **Sameer Ambekar**, Zehao Xiao, Jiayi Shen, Xiantong Zhen, Cees G. M. Snoek

Work done recently during my Summer internship 2022 at AIM lab, University of Amsterdam

4. "Unsupervised Domain Adaptation for Semantic Segmentation of NIR Images through Generative Latent Search" - 16th European Conference On Computer Vision, **ECCV 2020 (Spotlight- Top 5% of accepted papers)** [Conference]

Authors: Prashant Pandey*, Aayush Kumar Tyagi*, **Sameer Ambekar**, Prathosh AP

Paper: https://link.springer.com/chapter/10.1007/978-3-030-58539-6_25

5. "SKDCGN: Source-free Knowledge Distillation of Counterfactual Generative Networks using cGANs" - **ECCV 2022** [Workshop] [UvA Course project – Deep learning 2]

Authors: **Sameer Ambekar***, Matteo Tafuro*, Ankit*, Diego van der Mast*, Mark Alence*, Christos Athanasiadis

Preprint: https://arxiv.org/abs/2208.04226 Code: https://github.com/ambekarsameer96/SKDCGN

6. "[Re] Counterfactual Generative Networks" - MLRC 2021

Authors: Ankit, **Sameer Ambekar**, Baradwaj Varadharajan, Mark Alence

Paper: https://zenodo.org/record/6574625#.YvIUD3ZByUl

7. "Twin Augmented Architectures for Robust Classification of COVID-19 Chest X-Ray Images"

Authors: Kartikeya Badola, **Sameer Ambekar**, Himanshu Pant, Sumit Soman, Rajiv Narang, Anuradha Sural, Jayadeva

Paper: https://arxiv.org/abs/2102.07975

RESEARCH / WORK EXPERIENCE

TU Munich (TUM), Munich, Germany - *Wissenschaftlicher Mitarbeiter, CompAI lab*

September 2022 – Present

- Working under the guidance of Prof. Dr. Julia Schnabel, Chair of Computational Imaging and AI in Medicine, TUM

University of Amsterdam (UvA), Amsterdam, Netherlands - *Research Intern and Master Thesis Student (Domain generalization)*

June 2022 - Present

- Worked under the guidance of Prof. Cees Snoek, Prof. Xiantong Zhen and Zehao Xiao (PhD Student) as a Research Intern and Master thesis student for Domain Generalization, meta learning and Variational Inference.

RESEARCH INTERESTS

Domain Generalization, Domain Adaptation, Meta learning, Medical Imaging, Variational Inference

SCHOLARSHIPS

DigiCosme Full Master Scholarship of 12,000 Euros, Université Paris Saclay, France, 2021

SKILLS

Programming Languages: Python, C, C++

Machine Learning / Deep Learning:

PyTorch, Tensorflow, Keras, Numpy

Computer Vision:

OpenCV, PIL

Tools:

LaTeX, Google Cloud Platform (GCP), git, Ubuntu Bash

AWARDS

Google Conference Grant for ECCV 2020 Spotlight paper

Secured 6th Rank in National Science Talent Search Examination at National level.

MASTER COURSES

Deep Learning 2, Advanced Computer Vision, Interpretability and Explainibility, etc

PROFESSIONAL ACTIVITIES

Reviewer for IETE Journal of Research (Taylor & Francis), ICCV 2023.

Indian Institute of Technology Delhi (IITD), Delhi, India - *Research Assistant (Deep Learning, Computer Vision)*

January 2019 - July 2021

- Worked on a Project which uses Self Supervision for segmentation of Histopathological Images by collaborating with well-known AIIMS hospital for head and neck cancer under the guidance of Prof. Prathosh A.P.
- Worked on Domain Adaptation and Action recognition that are published at reputed journals/conferences
- Contributed to '**Guided weak supervision for action recognition with scarce data to assess skills of children with autism', Published in AAAI-20** https://arxiv.org/abs/1911.04140 , **'Target-Independent Domain Adaptation (TIGDA) for WBC Classification using Generative Latent Search', Published in IEEE Transactions on Medical Imaging (IEEE TMI), 2020** https://arxiv.org/abs/2005.05432

Indian Council of Medical Research (ICMR) NITM Bioinformatics Division, Belgaum, India - *Research Trainee*

October 2017 - December 2018

- Worked under the guidance of Dr.Subarna Roy (Scientist G and Director) ICMR-NITM, Pramod Kumar (Scientist C) ICMR-NITM. The project involved us working on cancer and diabetes prediction and classification using ML.

DbCom Inc., New Jersey, USA - *Remote Intern* (June 2015 - December 2016)

MACHINE LEARNING SCHOOLS / BOOTCAMPS ATTENDED

Oxford Machine Learning Summer School (OxML 2022), Deep Learning - University of Oxford

Regularization Methods for Machine Learning 2021 (RegML 2021) - University of Genoa.

PRAIRIE/MIAI PAISS 2021 Machine Learning Summer Learning - INRIA, Naver Labs

Oxford Machine Learning Summer School (OxML 2020), Deep Learning - University of Oxford

Machine Learning Summer School - Indonesia (MLSS-Indo 2020), Deep Learning - Telkom University

Medical Imaging MONAI 2020 bootcamp

PROJECTS

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

- Work done during the final project of the Deep Learning - 2 course at the University of Amsterdam. We published the work at ECCV 2022 VI Priors workshop.

Semantic Segmentation of Head and Neck cancer Histopathological Images Using Self Supervision, IIT Delhi and AIIMS Hospital.

- Self-supervised techniques, with finite labels show enormous potential, hence worked on context specific task

Unsupervised Domain Adaptation (UDA) for Semantic Segmentation of NIR Images through Generative Latent Search, IIT Delhi (Paper published in ECCV, 2020)

- We cast the problem of skin segmentation from NIR images as a UDA segmentation task. The proposed method also achieves SoTA on standard dataset such as Synthia to Cityscapes and secured global rank of #3 for UDA segmentation on the publicly available dataset Paper: https://arxiv.org/abs/2006.08696

Target-Independent Domain Adaptation (TIGDA) for WBC Classification using Generative Latent Search, IIT Delhi (Paper published in IEEE TMI 2020)

- I have been acknowledged in the paper for the contributions made.
  Paper: https://ieeexplore.ieee.org/document/9139471

Guided weak supervision for action recognition with scarce data to assess skills of children with autism, IIT Delhi (Paper Published in AAAI-20)

- Solves the problem of overfitting on a tiny dataset for the action recognition task
  Paper: **https://ojs.aaai.org//index.php/AAAI/article/view/5383**

REFERENCES

Prof. Cees Snoek, Video & Image Sense Lab and Director ELLIS Amsterdam Unit, UvA

Prof. Xiantong Zhen, United Imaging Healthcare, Co., Ltd, Previously UvA

CONFERENCES

Attended ECCV 2020, Glasglow and UAI 2021

TEST SCORES

IELTS BAND 7

POSITIONS OF RESPONSIBILITY

President (2016) and Charter Secretary (2015) of Rotaract Club of Gogte Institute of Technology, Belgaum, India

LANGUAGES

English, Hindi, Kannada, Marathi.