Vishaal Udandarao

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Github: vishaal27

Education

Oct'22 – present **ELLIS / University of Tübingen / University of Cambridge**.
PhD, Machine Learning

Sep'21 – Aug'22 **University of Cambridge**.
MPhil, Machine Learning and Machine Intelligence
Percentage – 77.21/100 (Distinction)

Aug'16 – May'20 **IIIT Delhi**.
BTech, Computer Science and Engineering
GPA – 9.17/10

Featured Publications

- O. Press*, A. Hochlehnert*, A. Prabhu, ***V. Udandarao***, O. Press, M. Bethge, "CiteME: Can Language Models Accurately Cite Scientific Claims?", NeurIPS 2024 [paper][code][benchmark]
- ***V. Udandarao****, K. Roth*, S. Dziadzio, A. Prabhu, M. Cherti, O. Vinyals, O. Henaff, S. Albanie, M. Bethge, Z. Akata, "A Practitioner's Guide to Continual Multimodal Pretraining", NeurIPS 2024 [paper][code]
- ***V. Udandarao****, A. Prabhu*, A. Ghosh, Y. Sharma, P.H.S. Torr, A. Bibi, S. Albanie, M. Bethge, "No "Zero-Shot" Without Exponential Data: Pretraining Concept Frequency Determines Multimodal Model Performance", NeurIPS 2024 [paper][code]
- ***V. Udandarao****, A. Prabhu*, P.H.S. Torr, M. Bethge, A. Bibi, S. Albanie, "Efficient Model Evaluation in an Era of Rapid Progress", NeurIPS 2024 [paper][code]
- ***V. Udandarao****, M. Burg, S. Albanie, M. Bethge, "Visual Data-Type Understanding does not emerge from Scaling Vision-Language Models", ICLR 2024 [paper][code]
- ***V. Udandarao***, A. Gupta, S. Albanie, "SuS-X: Training-Free Name-Only Transfer of Vision-Language Models", ICCV 2023 [paper][code]

Research Experience

Oct'22 – present **Computational Neuroscience and Machine Learning Group, University of Tübingen**.
Advisors: Prof Dr Matthias Bethge, Dr Samuel Albanie
- Understanding the generalisation properties of foundation models through a data-centric lens.
- Understand and build strong inductive biases into foundation models to equip them for continual generalisation.

Mar'22 – Dec'22 **Machine Intelligence Lab, University of Cambridge**.
Advisors: Dr Samuel Albanie, Dr Ankush Gupta
- Investigating the visual few-shot performance potential of large scale multi-modal foundation models.
- Understand the abilities of two particular few-shot adaptation techniques – adapters and prompt learning.

Jul'20 – Jul'21 **Rutgers Machine Learning Lab (RUML), Rutgers University**.
Advisor: Dr Sungjin Ahn
- Empirical investigation of slot-based and box-based approaches to object centric representation learning.
- Understand the abilities of slot and box approaches to improve downstream task performance pertaining to different abilities extending to complex morphological scenes.

Mar'20 – Jul'20 **MIDAS Lab, IIIT Delhi**.
Advisors: Dr Rajiv Ratn Shah, Rajesh Kumar
- Discover privacy leaks from behavioural biometric data.
- Understand the extent of privacy leakage factors that can be exposed based on per-user typing/swipe/gait features using machine/deep learning.

Jul'19 – Aug'20 **Infosys Center for Artificial Intelligence (CAI) Lab, IIIT Delhi**.
Advisor: Dr Saket Anand
- Unsupervised learning of disentangled representations.
- Learn well disentangled, statistically independent latent factors of variation helping to reduce sample complexity of downstream tasks and generate high fidelity reconstructions.

Aug'18 – Aug'20 **Signal Processing and Biomedical Imaging (SBI) Lab, IIIT Delhi**.
Advisors: Dr Anubha Gupta, Dr Tanmoy Chakraborty
- Creation of self-learning chatbots for assisting teachers in understanding pedagogical content.
- Proposed an educational-domain QA system using concept-network mapping.

Industry Experience

June'24 – Oct'24 **Google (DeepMind), Zürich, Switzerland**.
Student Researcher
- Research on distillation of vision-language models

July'20 – Aug'21 **Myntra, Bengaluru, India**.
Software Engineer
- Built and deployed scalable APIs to serve a target customer base of around 15m consumers around India.
- Mentored 5 software engineering interns on an end-to-end log anomaly detection project.

May'19 – Jul'19 **Expedia Group, Gurugram, India**.
Software Development Intern
- Created and deployed a scalable image ranking solution for images of destination locations.
- Conducted extensive statistical tests on a dataset of 10k+ images.

Invited Talks and Podcasts

- Google AR, Zürich, 11/2024
- ELLIS Flagship Conference, Helsinki, 06/2024
- University of Washington, 06/2024
- AI'N Stuff Podcast, 04/2024
- DatologyAI, 04/2024
- Workshop on Scaling Laws, NeurIPS, 12/2023
- Explainable Machine Learning Group, University of Tübingen, 11/2023
- LAION, 08/2023

Honors & Awards

- Google PhD Fellowship for Machine Intelligence, 2024
- ELLIS PhD Scholarship, 2022
- Recipient of HRH The Prince of Wales Commonwealth Scholarship from the Cambridge Trust, 2021-22
- IIIT-Delhi Dean's Award for Academic Excellence 2016-17, 2018-19
- Was the topper across all schools in the Gulf region in CBSE AISSCE 2016 exams (All India Rank 7)

Reviewing Experience

- ICLR-2025
- NeurIPS-2024
- ECCV-2024
- CVPR-2023/2024 (Outstanding reviewer)
- WACV-2020/2022/2023
- IJCV-2023

Teaching Experience

- TA, Deep Learning, Prof. Saket Anand, Spring'20
- TA, Machine Learning, Prof. Jainendra Shukla, Fall'19
- TA, Introduction to Engineering Design, Prof. Aman Parnami, Spring'19
- TA, Linear Algebra, Prof. Samaresh Chaterjee, Fall'18