Vishaal Udandarao

✉ vu214@cam.ac.uk
vishaal27.github.io
Github: vishaal27

Education

Oct'2022–present **University of Tübingen, Tübingen, Germany**.
PhD, Machine Learning

Sep'2021–Aug'2022 **University of Cambridge, Cambridge, UK**.
MPhil, Machine Learning and Machine Intelligence
Percentage – 77.21/100 (Distinction)

Aug'2016–May'2020 **IIIT Delhi, India**.
BTech, Computer Science and Engineering
GPA – 9.17/10

Publications

- ***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", ICLR (DPFM workshop) 2024 [paper][code]
- ***V. Udandarao****, A. Prabhu*, P.H.S. Torr, M. Bethge, A. Bibi, S. Albanie, "Lifelong Benchmarks: Efficient Model Evaluation in an Era of Rapid Progress", ICLR (DMLR workshop) 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]
- ***V. Udandarao****, S. Nath*, J. Shukla, "It's LeVAsa not LevioSA! Latent Encodings for Valence-Arousal Structure Alignment", CODS-COMAD 2021 [paper][code]
- ***V. Udandarao****, A. Maiti*, D. Srivatsav*, S.R. Vyalla*, Y. Yin, R.R. Shah, "COBRA: Contrastive Bi-Modal Representation Algorithm", IJCAI (TUSION workshop) 2020 [paper][code]
- ***V. Udandarao****, A. Agarwal*, A. Gupta, T. Chakraborty, "InPHYNet: Leveraging Attention-based Multitask Recurrent Networks for Multi-label Physics Text Classification", Knowledge Based Systems 2020 [paper][code]
- ***V. Udandarao****, M. Agrawal*, R. Kumar, R.R. Shah, "On the Inference of Soft Biometrics from Typing Patterns Collected in a Multi-device Environment", BigMM 2020 [paper][code]
- ***V. Udandarao****, S. Bhagat*, S. Uppal*, "DisCont: Self-Supervised Visual Attribute Disentanglement using Context Vectors", ICML (MLI4SD workshop) 2020, ECCV (PTSGM workshop) 2020 [paper][code][slides]
- ***V. Udandarao****, S.R. Vyalla*, T. Chakraborty "Memeify: A Large-Scale Meme Generation System", CODS-COMAD 2020 [paper][code][slides]
- ***V. Udandarao****, A. Agarwal*, N. Sachdeva*, R. K. Yadav*, V. Mittal*, A. Gupta, A. Mathur, "EDUQA: Educational Domain Question Answering System Using Conceptual Network Mapping", ICASSP 2019 [paper][poster]

Research Experience

Oct'22 – present **Computational Neuroscience and Machine Learning Group, University of Tuebingen**.
Advisors: Prof Dr Matthias Bethge, Dr Samuel Albanie

- Research area involves understanding the generalisation properties of foundation models through a data-centric lens.
- Goal is to 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

- Research area involves investigating the visual few-shot performance potential of large scale multi-modal foundation models
- Goal is to 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

- Research area involves empirical investigation of slot-based and box-based approaches to object centric representation learning.
- Goal is to 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

- Research area involves discovery of privacy leaks from behavioural biometric data.
- Goal is to 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

- Research area involves the unsupervised learning of disentangled representations
- Goal is to 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

- Research area involves the creation of self-learning chatbots for assisting teachers in understanding pedagogical content in a constructive and efficient manner.
- Proposed an educational-domain QA system using concept-network mapping
- Proposed a multi-task multi-label deep learning model for efficient classification of educational-domain corpora.

Industry Experience

June'24 – Nov'24 **Google Research, Zurich, Switzerland**.
(Incoming) Student Researcher

- Research on vision-language models

July'20 – Aug'21 **Myntra, Bengaluru, India**.
Software Engineer

- Worked in the Myntra Insider team in the Engagement and Retention Labs unit
- 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
- Leveraged deep learning models for scene classification, object detection and aesthetic scoring
- Deployed the model solution on AWS Lambda with an S3 bucket trigger
- Received a pre-placement offer for work done during the internship
- This was **not** a mandatory internship for obtaining the B.Tech qualifications

Invited Talks and Podcasts

- ELLIS Flagship Conference, Helsinki, 06/2024
- University of Washington (upcoming), 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

- 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

- ECCV-2024
- CVPR-2023
- 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