

Ashish Ramayee Asokan

MS IN MACHINE LEARNING, CARNEGIE MELLON UNIVERSITY

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Education

Carnegie Mellon University

MASTERS OF SCIENCE IN MACHINE LEARNING

Pittsburgh, PA

Aug. 2024 - Present

PES University

B.TECH (HONORS) IN COMPUTER SCIENCE AND ENGINEERING (TOP 2%)

Bangalore, India

Aug. 2018 - Sept. 2022

Research Interests

My current research focuses on model diagnosis and analysis of failure modes in Vision-Language Models (VLMs). I am interested in creating novel evaluation methodologies for VLMs, investigating how semantic image and text perturbations reveal robustness gaps between models, and developing frameworks for interpretable model comparisons.

My previous work focused on domain adaptation and generalization for image classification. I developed novel transformer-based architectures to enhance domain adaptation performance and investigated how language supervision can improve vision model generalization across domains. Additionally, I explored training strategies for vision transformers on long-tailed datasets and federated learning approaches for efficient CLIP model fine-tuning.

Publications (* indicates equal contribution)

WORKSHOP PROCEEDINGS

Distilling from Vision-Language Models for Improved OOD Generalization in Vision Tasks

Shravanti Addepalli*, Ashish Ramayee Asokan*, Lakshay Sharma, R Venkatesh Babu

CVPR Workshop on Open-Domain Reasoning Under Multi-Modal Settings (ODRUM), 2023

CONFERENCE PROCEEDINGS

Leveraging Vision-Language Models for Improving Domain Generalization in Image Classification

Shravanti Addepalli*, Ashish Ramayee Asokan*, Lakshay Sharma, R Venkatesh Babu

IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR), 2024

DeiT-LT: Distillation Strikes Back for Vision Transformer Training on Long-Tailed Datasets

Harsh Rangwani, Pradipto Mondal, Mayank Mishra, Ashish Ramayee Asokan, R Venkatesh Babu

IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR), 2024

Aligning Non-Causal Factors for Transformer-based Source-Free Domain Adaptation

Sunandini Sanyal*, Ashish Ramayee Asokan*, Suvaansh Bhambri, Pradyumna YM, Akshay Kulkarni, Jogendra Kundu, R Venkatesh Babu

IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024

Domain-Specificity Inducing Transformers for Source-Free Domain Adaptation

Sunandini Sanyal*, Ashish Ramayee Asokan*, Suvaansh Bhambri*, Akshay Kulkarni, Jogendra Nath Kundu, R Venkatesh Babu

IEEE/CVF International Conference on Computer Vision (ICCV), 2023

Interpretability for multimodal emotion recognition using concept activation vectors

Ashish Ramayee Asokan, Nidarshan Kumar, Anirudh V Ragam, Shylaja Sharath

IEEE International Joint Conference on Neural Networks (IJCNN), 2022

Awards & Recognition

2024 **Outstanding Reviewer Award**, Awarded to top 2% of reviewers at ECCV 2024

Milan, Italy

2024 **Outstanding Reviewer Award**, Awarded to top 2% of reviewers at CVPR 2024

Seattle, WA

2023 **Kotak IISc AI-ML Predoctoral Fellowship**, Competitive research fellowship at the Indian Institute of Science

Bangalore, India

2018-22 **Prof. CNR Rao Scholarship**, Awarded for academic excellence (top 2% of Computer Science department)

Bangalore, India

2018-22 **Prof. MRD Scholarship**, Awarded for academic performance (top 20% of Computer Science department)

Bangalore, India

Experience

Human Sensing Lab, Carnegie Mellon University

Pittsburgh, PA

GRADUATE RESEARCHER (ADVISED BY PROF. FERNANDO DE LA TORRE)

Oct 2024 - Present

- Developing a novel problem setting for interpretable comparisons of foundation models via semantic text perturbations of image-text datasets.
- Conducting collaborative research with **Apple's ML Research Team** on vision-language model robustness and evaluation.
- Designing novel evaluation methodologies and benchmarks for assessing VLM robustness across diverse semantic modifications.

Vision and AI Lab, Indian Institute of Science

Bangalore, India

PREDOCTORAL FELLOW (ADVISOR: PROF. VENKATESH BABU)

May 2022 - July 2024

- Conducted research on Domain Generalization and Vision-Language Models (CVPRW'23, CVPR'24), Long-Tail Learning (CVPR'24), Domain Adaptation (ICCV'23, WACV'24), and Federated Learning.
- Led a research collaboration with **Boeing, Wipro, and HCL** on Airport Ground Management Analytics.
- Supervised and mentored 3 undergraduate interns across multiple research projects.

Intel Corporation

Bangalore, India

RESEARCH INTERN - VERTICAL SOLUTIONS AND SERVICES GROUP (SUPERVISED BY RAGHAVENDRA BHAT)

Aug. 2021 - Jan. 2022

- Developed *Continual Learning* solutions for automated supermarket checkout systems using image classification.
- Designed a multi-head network architecture with a decoupled training framework to enable incremental addition of new product classes.
- Implemented weight regularization and exemplar replay methods to mitigate catastrophic forgetting on proprietary client datasets.

Academic Service

Reviewer CVPR - 2024, 2025; ECCV/ICCV - 2023, 2024; NeurIPS - 2023, 2024, 2025; ICLR - 2024, 2025; ICML - 2024, 2025

Program Committee AI-ML Systems 2023, 2024

Skills

Programming Python, C/C++, C#, JAVA, LaTeX, MATLAB

Machine Learning PyTorch, Keras, Tensorflow, Tensorflow Lite, OpenCV, W&B

Big Data Analytics Hadoop, Spark, Spark Streaming

Relevant Coursework

Carnegie Mellon University: 10715 - Advanced Introduction to Machine Learning (PhD), 10725 - Optimization for Machine Learning (PhD), 10708 - Probabilistic Graphical Models (PhD), 10703 - Deep Reinforcement Learning, 36700 - Probability and Statistics, 16824 - Visual Learning and Recognition, 10718 - Machine Learning in Practice.

PES University: Linear Algebra, Machine Intelligence, Topics in Deep Learning, Algorithms for Information Retrieval, Data Analytics, Big Data, Operating Systems, Data Structures and Algorithms.

Additional Experience

Indian Institute of Science

Bangalore, India

TEACHING ASSISTANT: DS265 - DEEP LEARNING AND COMPUTER VISION

May 2023 - May 2024

- Prepared lecture materials on Vision Transformers for an undergraduate-level course.
- Conducted lectures on LSTMs and Image Classification using CNNs for working professionals in the online version of the course.

Niramai Health Analytix

Bangalore, India

UNDERGRADUATE ML INTERN

Mar. 2021 - May 2021

- Worked on XraySetu - AI driven COVID intervention through WhatsApp
- Developed a chatbot for XraySetu with *Kaleyra* and *WhatsApp Business APIs* in Python
- Implemented X-Ray classification in OpenCV for images received through the chatbot