Susmit Agrawal

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Current Research Interests

NeuroAI, Computer Vision, Multimodal Learning, Interpretability

Education

Max Planck Research School for Intelligent Systems (IMPRS-IS) **Aug. 2025 – Present**
PhD in NeuroAI *Advisor: Prof. Matthias Bethge*

Indian Institute of Technology - Hyderabad **Aug. 2022 – July 2025**
M.Tech. (3-year RA) in Artificial Intelligence *GPA: 9.59/10.0, Advisor: Prof. Vineeth N B*

Academic Research Experience

PhD Researcher (Advisor: Prof. Matthias Bethge) **Aug. 2025 – Present**
Tuebingen AI Center *Tuebingen, Germany*

- Working on modeling aspects of the visual system and their integration with Deep Learning.

Research Assistant (Advisor: Prof. Vineeth N. Balasubramanian) **Aug. 2022 – July 2025**
ML/CV Lab, IIT Hyderabad *Hyderabad, Telangana, India*

- Worked on Continual Learning for interpretable models.
- Worked on formulation and applications of Neuro-Inspired Memory Networks.
- Worked on Spiking Neural Networks for Language Modelling on Neuromorphic Devices, and new SNN and Synapse architectures (Supervisor: Prof. Ayon Borthakur).

Research Assistant (Advisor: Prof. R. Venkatesh Babu) **Sept. 2020 – Jan. 2022**
Video Analytics Lab, Indian Institute of Science. |Verisk Analytics *Bangalore, Karnataka, India*

- Worked on self-supervised learning for image forensics.
- Worked on generative model training with very small datasets (1000 images).
- Worked on Deep HDR Deghosting with minimal/nonexistent labeled data for supervision.

Research Intern (Advisor: Prof. R. Venkatesh Babu) **Jan. 2020 – Aug. 2020**
Video Analytics Lab, Indian Institute of Science *Bangalore, Karnataka, India*

- Worked on HDR Deghosting, Multi-Exposure Fusion, Image Segmentation, Few-Shot learning, and Self-Supervised Learning.

Undergraduate Student Researcher **Jan. 2019 – Jan. 2020**
SMVIT *Bangalore, Karnataka, India*

- Worked with Transformer architectures (BERT and GPT-2) to develop a Medical Question-Answering system.
- Worked with custom-built edge devices to develop a distributed irrigation system.

Publications (* represents equal contribution)

AAAI Conference on Artificial Intelligence 2026
Aanisha Bhattacharya*, **Susmit Agrawal***, Yaman K. Singla*, Nikitha S.R., Tarun Ram Menta, Balaji Krishnamurthy, "ALPHA: Action-Based Learning for Pluralistic Human Alignment in Large Language Models"

Conference on Neural Information Processing Systems (NeurIPS) 2025
Susmit Agrawal*, Krishn Vishwas Kher*, Saksham Mittal, Swarnim Maheshwari, Vineeth N. Balasubramanian, "Memory-Integrated Reconfigurable Adapters: A Unified Framework for Settings with Multiple Tasks"

[Oral] International Conference on Learning Representations (ICLR) 2025 - NFAM Workshop
Susmit Agrawal, Krishn Vishwas Kher, Madhumitha V., Vineeth N. Balasubramanian, "Can memory networks play a role in task-specific modulation of neural circuits?"

[Oral]Association for Computational Linguistics - Nations of the Americas (NAACL) 2025 View
Tarun Ram Menta*, **Susmit Agrawal***, Chirag Agarwal, "Analyzing Memorization in Large Language Models through the Lens of Model Attribution"

AAAI Conference on Artificial Intelligence 2025 **View**
Susmit Agrawal, Deepika Vemuri, Sri Siddarth Chakravarthy, Vineeth N. Balasubramanian, "Walking the Web of Concept-Class Relationships in Incrementally Trained Interpretable Models"

Association for Computational Linguistics (ACL) 2023 **View**
Abhinav Joshi, **Susmit Agrawal**, Ashutosh Modi, "ISLTranslate: Dataset for Translating Indian Sign Language"

European Conference on Computer Vision (ECCV) 2022 **View**
Tejan Karmali, Rishubh Parihar, **Susmit Agrawal**, Harsh Rangwani, Varun Jampani, Maneesh Singh, R. Venkatesh Babu, "Hierarchical Semantic Regularization of Latent Spaces in StyleGANs"

Conference on Computer Vision and Pattern Recognition (CVPR) 2022 - WMF Workshop **View**
Susmit Agrawal, Prabhat Kumar*, Siddharth Seth*, Toufiq Parag, Maneesh Singh, R. Venkatesh Babu, "SISL: Self-Supervised Image Signature Learning for Splicing Detection and Localization"

Winter Conference on Applications of Computer Vision (WACV) 2022 **View**
Tejan Karmali*, Abhinav Atrishi*, Sai Sree Harsha, **Susmit Agrawal**, Varun Jampani, R. Venkatesh Babu, "LEAD: Self-Supervised Landmark Estimation by Aligning Distributions of Feature Similarity"

IEEE Transactions on Computational Imaging **View**
K. Ram Prabhakar*, **Susmit Agrawal***, R. Venkatesh Babu, "Self-Gated Memory Recurrent Network for Efficient Scalable HDR Deghosting"

Conference on Computer Vision and Pattern Recognition (CVPR) 2021 **View**
K. Ram Prabhakar, Gowtham Senthil*, **Susmit Agrawal***, R. Venkatesh Babu, Rama Krishna Sai S Gorthi, "Labeled From Unlabeled: Exploiting Unlabeled Data for Few-Shot Deep HDR Deghosting"

International Conference on Learning Representations (ICLR) 2021 - AI4PH Workshop **View**
Vishal Vinod*, **Susmit Agrawal***, Vipul Gaurav*, Pallavi R., Savita Choudhary, "Multilingual Medical Question Answering and Information Retrieval for Rural Health Intelligence Access"

European Conference on Computer Vision (ECCV) 2020 **View**
K. Ram Prabhakar, **Susmit Agrawal**, Durgesh Singh, Balraj Ashwath, R. Venkatesh Babu, "Towards Practical and Efficient High-Resolution HDR Deghosting with CNN"

Industry Experience

Research Intern **Apr. 2024 – Oct. 2024**
Adobe Media Data Science and Research (MDSR) *Noida, UP, India*

- Worked on alignment of LLMs with Human Opinions using behavioral signals from in-the-wild data.
- Working on Ad content generation with LLMs for targeted audiences.
- Working on prompt-based planning using multiple LLM Agents.

Computer Vision and Display Systems Engineer **Feb. 2022 – July 2022**
Qualcomm *Bangalore, Karnataka, India*

- Worked on building Computer Vision models for Image Super Resolution.
- Worked on model architecture optimization for deployment in restricted environments.
- Worked on finding and fixing failure cases of trained models based on performance on real-world validation sets.
- Worked with traditional image processing algorithms for picture quality enhancement.

Deep Learning Intern (remote) **Mar. 2019 – Jun. 2019**
IGM Software LLP. *Mumbai, Maharashtra , India*

- Trained YOLO v3 and RNN-based optical character recognition models for detecting license plates and reading their content.
- Deployed the system on edge device (Raspberry Pi) connected to security cameras.
- Deployed the system on AWS servers for access over API calls.

Scholarships and Awards

Reliance Postgraduate Scholar 2023 **Aug. 2023**
Reliance Foundation *One among 100 national scholars*

Chhatra Vishwakarma Award **Feb. 2020**
All India Council for Technical Education (AICTE) *Winner*

NASA International SpaceApps Challenge **Oct. 2018**
NASA *National Winner (India)*

Futureskills Hackathon **Sept. 2018**
NASSCOM *Winner*

Projects

DeepDream on Android | *Java, Python, Tensorflow* **View code**

- Implemented DeepDream for InceptionV3, VGG16, VGG19, ResNet-50.
- Used models pre-trained on ImageNet to perform DeepDream on Android devices, without involvement of online server.

Style Transfer with CycleGAN | *Python, Tensorflow* **View code**

- Used CycleGAN with modifications in training method for Style Transfer.
- Trained network on a set of 2000 filtered images taken from a large set of images scraped from the web.

Open-source code editor, ported to Android | *Java, JavaScript* **View code**

- Ported the web-based Ace Editor to Android.
- Mapped keyboard-based controls and shortcuts to on-screen options for better user experience on touchscreen devices.

A basic x86 kernel | *C, C++, x86 assembly* **View code**

- Built to understand how bare-metal programs work.
- Implemented core kernel features - interrupts and display driver.

Teaching

TA: Explainable Machine Learning **Fall 2024 Semester**
Instructor: Prof. Konda Reddy Mopuri

Head TA: Deep Learning **Spring 2024 Semester**
Instructor: Prof. Konda Reddy Mopuri

TA: Operating Systems **Fall 2023 Semester**
Instructor: Prof. Sathya Peri

Volunteering and Community Involvement

Volunteer: ACML 2022, AAAI 2025

Reviewer
NeurIPS 2024, CVPR 2024, ICLR 2024, WACV 2023, IJCAI 2023, CVPR 2022, ECCV 2022, CVPR 2021, IEEE TPAMI

Administrator for Lab 1055 Servers **Jan. 2023 – May 2025**