Maitreya Suin

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Homepage | Google Scholar

Research Scientist | Computer Vision | Generative AI | Computational Imaging

Research Areas and Interests

Diffusion Model, Personalized Image Generation and Editing, VLM/LLM, Reinforcement Learning, Face Restoration, Face Recognition, Biometric, Camera ISP, Computational Imaging, Image and Video Enhancement, Agentic AI.

Experience

Samsung AI Center Toronto **2024 – 2026**
Senior Research Scientist, AI Research *Toronto, Canada*

- Worked on research and commercial projects spanning image super-resolution, quality enhancement using multi-modal generative models, HDR/burst imaging, and camera ISPs, for real-world imaging pipelines.

Johns Hopkins University **2022 – 2024**
Postdoctoral Researcher, Computer Vision. Research Advisor: Prof. Rama Chellappa *Baltimore, MD, USA*

- Worked on diffusion models for extreme image and video quality enhancement targeted at downstream detection and recognition tasks, personalized generation from prompts.
- Contributed deliverables to multiple IARPA projects, including BRIAR and WRIVA.

Education

Indian Institute of Technology Madras **2017 – 2022**
M.S. + Ph.D., Image Processing and Computer Vision *Chennai, India*

- Research advisor: Prof. A. N. Rajagopalan CGPA: 8.59/10

Institute of Engineering and Management, Kolkata **2012 – 2016**
B.Tech., Electronics and Communication Engineering *Kolkata, India*

- CGPA: 9.04/10

Under Review

- A. Roy, **M. Suin** *et al.* "*MultLFG: Training-free Multi-LoRA composition using Frequency-domain Guidance*"
- **M. Suin** *et al.* "DegradeSense-VLM: Tool-Augmented VLM Post-Training for Image Quality Reasoning"
- D. Huo, T. Armstrong, S. Rangrej, **M. Suin**, *et al.* "*BurstGP: Enhancing RAW Burst SR with Generative Priors*"
- A. Roy, **M. Suin**, *et al.* "*Zero-shot Customizing of Objects via Textual Inversion*"
- **M. Suin** *et al.* "Spatially-Attentive Patch-Hierarchical Network with Adaptive Sampling for Motion Deblurring"

Publications

- (**CVPR**-2026) Amirhossein Kazerouni, **Maitreya Suin**, Tristan Ty Aumentado-Armstrong, Sina Honari, Amanpreet Walia, Iqbal Mohomed, Konstantinos G. Derpanis, Babak Taati, Alex Levinshtein "*Face2Scene: Using Facial Degradation as an Oracle for Diffusion-Based Scene Restoration*"
- (**FG**-2025) Nithin Gopalakrishnan Nair, Kartik Narayan, **Maitreya Suin**, Ram Prabhakar Kathirvel, Jennifer Xu, Soraya Stevens, Joshua Gleason, Nathan Shnidman, Rama Chellappa, Vishal M. Patel "*Improved Representation Learning for Unconstrained Face Recognition* "
- (**TMLR**) Aniket Roy, **Maitreya Suin**, Anshul Shah, Prithviraj Dhar, Ketul Shah, Rama Chellappa "*DIFFNAT: Improving Diffusion Image Quality Using Natural Image Statistics*"
- (**IJCAI**-2024) **Maitreya Suin** and Rama Chellappa "*CLR-Face: Conditional Latent Refinement for Blind Face Restoration Using Score-Based Diffusion Models*"
- (**WACV**-2024) **Maitreya Suin**, Nithin Gopalakrishnan Nair, Chun Pong Lau, Vishal M. Patel and Rama Chellappa "*Diffuse and Restore: A Region-Adaptive Diffusion Model for Identity-Preserving Blind Face Restoration* "

- (**IJCB**-2023) Chun Pong Lau, **Maitreya Suin**, and Rama Chellappa "*ATDetect: Face Detection and Keypoint Extraction at Range and Altitude*"
- (**AAAI-SA**-2023) Snehal Singh Tomar, **Maitreya Suin**, AN Rajagopalan "*Exploring the Effectiveness of Mask-Guided Feature Modulation as a Mechanism for Localized Style Editing of Real Images*"
- (**IEEE-TCSVT**) Praveen Kandula, **Maitreya Suin** and A.N. Rajagopalan "*Illumination-adaptive unpaired low-light enhancement*", Impact Factor 8.4
- (**ECCVW**-2022) Snehal S. Tomar, **Maitreya Suin** and A.N. Rajagopalan "*Hybrid Transformer based Feature Fusion for Self-Supervised Monocular Depth Estimation*"
- (**ICCV**-2021) **Maitreya Suin**, Kuldeep Purohit and A.N. Rajagopalan "*Distillation Guided Image Inpainting*"
- (**ICCV**-2021) Kuldeep Purohit, **Maitreya Suin**, A.N. Rajagopalan and Vishnu Naresh Boddeti "*Spatially-Adaptive Image Restoration using Distortion-Guided Networks*"
- (**CVPR**-2021) **Maitreya Suin** and A.N. Rajagopalan "*Gated Spatio-Temporal Attention-Guided Video Deblurring*"
- (**CVPR**-2020) **Maitreya Suin**, Kuldeep Purohit and A.N. Rajagopalan "*Spatially-Attentive Patch-Hierarchical Network for Adaptive Motion Deblurring*"
- (**AAAI**-2020 (Oral)) **Maitreya Suin** and A.N. Rajagopalan "*An Efficient Framework for Dense Video Captioning*"
- (**IEEE-JSTSP**) **Maitreya Suin**, Kuldeep Purohit and A.N. Rajagopalan "*Degradation Aware Approach to Image Restoration Using Knowledge Distillation*", Impact Factor: 13.7
- (**ICCVW**-2019) Kuldeep Purohit, **Maitreya Suin**, Praveen Kandula and A.N. Rajagopalan "*Depth-guided Dense Dynamic Filtering Network for Bokeh Effect Rendering*"

Technical Skills

Programming: Python, C/C++, CUDA, MATLAB
Frameworks/Libraries: PyTorch, TensorFlow, Torch, AWS, LoRA, PEFT, RAG.

Patents

- A. Roy, **M. Suin**, A. Shah, K. Shah, J. Liu, R. Chellappa. *"Improving Diffusion Image Quality Using Natural Image Statistics"* (**US Patent Filed**)
- A. Kazerouni, **M. Suin**, T. T. Armstrong, S. Honari, A. Walia, I. Mohomed, K. G. Derpanis, B. Taati, A. Levinshtein. *"Using Facial Degradation as an Oracle for Diffusion-Based Scene Restoration"* (**CAN Patent Filed**)
- D. Huo, T. T. Armstrong, S. Rangrej, **M. Suin**, A. Ye, Z. Hu, A. Walia, A. Kazerouni, K. G. Derpanis, I. Mohomed, A. Levinshtein *"Enhancing RAW Burst Image Super Resolution with Generative Priors"* (**CAN Patent Filed**)

Awards and Achievements

- Institute Research Award, IIT Madras, for Ph.D. thesis.
- Our research work has been featured on *Ministry of Education, India* and *News Websites*
- Our team from IPCV Lab, IITM developed Mixed-reality segment for the *2020 Virtual Convocation of IIT Madras*.
- Winner, NTIRE Image Colorization Challenge, CVPR 2019.
- 1st runner-up, Bokeh Effect and Image Super-Resolution Challenges, AIM Workshop at ICCV 2019.
- 2nd runner-up, Image Relighting Challenge (Track 3), AIM Workshop at ECCV 2020.
- Travel grant from Google Research to attend AAAI 2020.

Professional Activities

- Reviewer for CVPR, NeurIPS, TPAMI, IJCV, AAAI, TIP, JSTSP and TMI.
- Invited talk at Voxel51, IIT Madras.