

Saumya Gupta

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EDUCATION

Stony Brook University (SUNY Stony Brook) PhD in Computer Science, GPA: 4.00/4.00	Stony Brook, NY 08/2021 – 03/2026
National Institute of Technology Karnataka (NITK) Surathkal BTech in Computer Science and Engineering, GPA: 9.49/10.00	Mangalore, India 08/2014 – 05/2018

WORK EXPERIENCE

Adobe Inc. Research Scientist / Engineer Intern	San Jose, CA 05/2025 – 08/2025
<ul style="list-style-type: none">Trained an AI Agents RL framework using GRPO with hierarchical planning agents and data-driven reward models to improve LLM reasoning for automated short-form social-media video creation from user assets Python, PyTorch, Huggingface, TRL, Unsloth, ffmpegAchieved 63.7% user preference over GPT-4o in video engagement and Pearson correlation >0.7 with human evaluators	
Adobe Inc. Research Scientist / Engineer Intern	San Jose, CA 05/2024 – 11/2024
<ul style="list-style-type: none">Spearheaded curation of VidES, the first dataset linking short-video engagement to editing operations (231 videos, 1042 human responses)Led research efforts on Multimodal LLMs (MLLMs) for social-media video engagement prediction and targeted refinement suggestionsDecomposed engagement prediction into video editing elements (transitions, narration, etc), thereby improving interpretability and outperformed GPT4o by 41.6% on engagement prediction and 24.1% on video editing suggestion quality (ICME'25) Python, PyTorch	
Stony Brook University Graduate Research Assistant	Stony Brook, NY 08/2021 – 03/2026
<ul style="list-style-type: none">Proposed a topology-aware GenAI diffusion model that enforces exact object counts in AI-generated images, achieving 58.8% higher count accuracy over CLIP-based methods for generating images from prompts in COCO dataset (ICLR'25) Python, PyTorch [code]Enhanced image segmentation by proposing structure-wise uncertainty using topology and graph neural networks (GNNs) (NeurIPS'23). Integrated with 3D Slicer, achieving 81.2% better human satisfaction for annotation in NASA TLX evaluation PyTorch, C++ [code]Designed an efficient convolution-based boundary-aware objective function for multi-class image segmentation, reducing topological errors (anatomical violations) across 2D/3D and multiple medical imaging modalities (CT, US) (ECCV'22 Oral) Python, PyTorch [code]	
Samsung Research & Development Institute Senior Software Engineer	Bangalore, India 06/2018 – 06/2021
<ul style="list-style-type: none">Developed a lightweight deep learning model (CNN) to replace the ISP pipeline, improving denoising across scenes/ISO levels. Optimized for mobile via knowledge distillation, pruning, and quantization (commercialized in Samsung Galaxy S21) Tensorflow, TensorFlow LiteImplemented a GAN model for super-resolution of 3D ultrasound ovarian volumes by up to 2x (SPIE'21 Oral) Python, PyTorchIntroduced security measures such as anonymization / deanonymization of PHI data in Samsung's healthcare DICOM platform. Redesigned and secured the image database with encryption to meet the HIPAA compliance requirement C++, PostgreSQL, OpenSSL	
Samsung Research & Development Institute Software Engineer Intern	Bangalore, India 05/2017 – 08/2017
<ul style="list-style-type: none">Designed a tile-based vertical scrolling approach in Vulkan, minimizing GPU load and reducing frame refresh latency by 36.9% C, C++	

SELECTED PUBLICATIONS

SmartEdit: Editing-driven Engagement Prediction and Enhancement of Short-Videos [link]	ICME 2025
Saumya Gupta, Ishita Dasgupta, Stefano Petrangeli, Somdeb Sarkhel	
TopoDiffusionNet: A Topology-aware Diffusion Model [link]	ICLR 2025
Saumya Gupta, Dimitris Samaras, Chao Chen	
Topology-aware Uncertainty for Image Segmentation [link]	NeurIPS 2023
Saumya Gupta, Yikai Zhang, Xiaoling Hu, Prateek Prasanna, Chao Chen	
Learning Topological Interactions for Multi-Class Medical Image Segmentation [link]	ECCV 2022 (Oral)
Saumya Gupta, et al.	

PROFESSIONAL ACTIVITIES & SELECTED AWARDS

Peer Reviewer: ECCV , CVPR , ICLR , NeurIPS , ICML , AAAI, ISBI, DALI, TNNLS, TMI	2023 – Present
Outstanding Reviewer Awards: ECCV , ICLR , CVPR	2024 – Present
Conference Tutorial & Workshop Organizer: MICCAI	2023 , 2024
Course Instructor & Teaching Assistant: Bio-Informatics Bootcamp, and Theory of Computation	2023 , 2024 , 2025
Samsung Spot Award, Samsung Quality Champions Annual Award, Samsung Professional Level Software Certification	2018 – 2020

SKILLS

Languages, Tools, Frameworks: Python, C, C++, Java, PostgreSQL, PyTorch, Keras, TensorFlow, TFLite, Unsloth, TRL, OpenCV, ffmpeg, MATLAB, Git, LaTeX, Huggingface, Adobe After Effects, Photoshop, Sony Vegas Pro
Domain Experience: Computer Vision (CV), Artificial Intelligence, Machine Learning (AI/ML), Large Language Models (LLMs), Multimodal LLMs (MLLMs), Reinforcement Learning (RL), AI Agents / Agentic AI, Generative AI (GenAI), Deep Learning (DL), Healthcare AI, CVML