Saumya Gupta

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Education

Stony Brook University, Stony Brook, NY, USA 08/2021 – 03/2026
PhD in Computer Science, GPA: 4.00/4.00

National Institute of Technology Karnataka (NITK) Surathkal, India 08/2014 – 05/2018
BTech in Computer Science and Engineering, GPA: 9.49/10.00

Experience

Research Scientist Intern | Adobe Inc., CA, USA 05/2025 – 08/2025
- Agentic AI workflow to improve large language models (LLM) reasoning and planning for short social-media video editing using reinforcement learning (RL) | Python, PyTorch, Huggingface, TRL, Unsloth

Research Scientist Intern | Adobe Inc., CA, USA 05/2024 – 11/2024
- Multi-modal LLMs for short social-media video engagement prediction and edit suggestions. Outperformed GPT-4o by 41.6% on engagement prediction and 24.1% on video editing suggestion quality (ICME'25) | Python, PyTorch

Graduate Research Assistant | Stony Brook University, NY, USA 08/2021 – 03/2026
- Topology-preserving diffusion model that enforces exact object counts in images (ICLR'25) | Python, PyTorch
- Enhanced image segmentation by proposing structural uncertainty using topology and graph neural networks (NeurIPS'23). Integrating into MONAI's active learning pipeline to optimize annotation | Python, PyTorch, C++
- Topology and boundary-aware loss function for multi-class image segmentation (ECCV'22 Oral) | Python, PyTorch

Senior Software Engineer | Samsung R&D Institute, Bangalore, India 06/2018 – 06/2021
- Developed a lightweight deep learning model to replace the ISP pipeline, optimizing denoising across scenes/ISO levels (commercialized in Samsung Galaxy S21) | Python, PyTorch, Tensorflow, TensorFlow Lite
- Super-resolution of 3D Ultrasound ovarian volumes upto 2x (SPIE'21 Oral) | Python, PyTorch
- Introduced security measures such as encryption and anonymization/deanonymization of PHI data in Samsung's DICOM platform to ensure HIPAA compliance | C++, PostgreSQL, OpenSSL

Intern | Samsung R&D Institute, Bangalore, India 05/2017 – 08/2017
- Rendered a tile-based vertical scrolling approach in Vulkan to minimize the load on GPU | C, C++

Selected Publications

SmartEdit: Editing-driven Engagement Prediction and Enhancement of Short-Videos
***Saumya Gupta**, Ishita Dasgupta, Stefano Petrangeli, Somdeb Sarkhel* ICME 2025

TopoDiffusionNet: A Topology-aware Diffusion Model
***Saumya Gupta**, Dimitris Samaras, Chao Chen* ICLR 2025

Topology-aware Uncertainty for Image Segmentation
***Saumya Gupta**, Yikai Zhang, Xiaoling Hu, Prateek Prasanna, Chao Chen* NeurIPS 2023

Learning Topological Interactions for Multi-Class Medical Image Segmentation
***Saumya Gupta**, et al.* ECCV 2022 (Oral)

Professional Activities

Peer Reviewer: AAAI, ECCV, CVPR, ICLR, NeurIPS, ICML, ISBI, DALI, TNNLS, TMI 2023-Present

Conference Tutorial & Workshop Organizer: MICCAI 2023, 2024

Instructor/Teaching Assistant: Bio-Informatics Bootcamp, Stony Brook University 2023, 2024,2025

Skills

Languages, Tools, Frameworks: Python, C, C++, Java, PostgreSQL, PyTorch, Keras, TensorFlow, Unsloth, TRL, OpenCV, MATLAB, Git, LaTeX, Huggingface, Adobe After Effects, Photoshop

Domain Experience: Computer Vision (CV), Artificial Intelligence, Machine Learning (AI/ML), Large Language Models (LLMs), Reinforcement Learning (RL), Topological Data Analysis (TDA), Deep Learning