RAJARSHI RAY

Nationality: USA | +1 (631) 949-3136 | rajarshi5675@gmail.com | Stony Brook, New York | https://rajarshi-ray29.github.io

EDUCATION

Stony Brook University - SUNY **Stony Brook, NY, USA**
Master's, Computer Science GPA:3.9/4
Coursework: Computer Vision, Data Science, AI, Natural Language Processing *Expected December 2025*

Birla institute of Technology and Science, Pilani **Goa, India**
Bachelor's, Computer Science GPA:8/10
Coursework: AI, Data Science, Data Visualization
Teaching Assistant: Object Oriented Programming *July 2024*

RESEARCH EXPERIENCE

Grid Based All-in-one Image Degradation and Restoration **Stony Brook, NY**
VAIGM-Lab, Stony Brook University *May 2025 - Present*
- Working on All-in-One Image Restoration model across degradations such as rain, haze, noise and snow.
- Curated a dataset of 80,000+ grid images by synthesizing degradations on clean images.
- Designing a transformer-based restoration model using these grid images to perform multi-degradation restoration tasks.

NTIRE 2025 Image Super Resolution 4x CVPR 2025 Proceedings **Stony Brook, NY**
VAIGM-Lab, Stony Brook University *January 2025 - May 2025*
- Led Team VAI-GM in the challenge, achieving 30.86 dB PSNR on validation datasets (DIV2K, Flickr2K, Unsplash2K).
- Designed the Multi-step Dense Residual Connected Transformer (MDRCT), improving upon the DRCT baseline with multi-step residual connections for enhanced gradient flow and feature preservation.
- Ranked 18th globally, competing among leading global research teams, contributing models for accurate image upscaling.

3D Lung DDPM Synthesis using guided Diffusion Models **Stony Brook, NY**
VAIGM-Lab, Stony Brook University *August 2024 – May 2025*
- Conducting research under Prof. Klaus Mueller on advanced medical imaging and image synthesis, focusing on generating high-fidelity 3D lung CT images for clinical and research applications.
- Encoded medical images into latent space using VQ-VAE to generate high-quality synthetic images with diffusion models.
- Developed and manage an Orthanc-based DICOM server in Docker for scalable, secure medical image storage and analysis.

INDUSTRY EXPERIENCE

IBM **Poughkeepsie, NY**
Software Engineer *June 2025 - Present*
- Published a paper documenting microservices deployment across x86 and s390x architectures using OpenShift Pipelines.
- Engineered a JMeter-based pipeline for automated workload testing, achieving 98% success rate in simulating real-world usage.
- Contributed to the WatsonX Challenge by designing an AI Persona driven synthetic transaction data generation framework.

IUDX, Indian Institute of Science(IISc) **Bangalore, KA, India**
Research and Development Intern *January 2024 - July 2024*
- Developed a secure workflow for pneumonia classification using AMD SEV-SNP, improving data privacy and code integrity with a 20% performance gain over similar Confidential Computing technologies like Intel SGX and Amazon Nitro.
- Designed a confidential medical image analysis workflow integrating TPM-based storage and remote inference.
- Leveraged Tensorflow, Keras, C++, Docker, and cloud infrastructure to create a production-ready, secure solutions.

SKILLS

Technical Proficiencies: Python, Machine Learning, Deep Learning, Neural Networks, Generative AI, Image Synthesis, Diffusion Models, VAE, GANs, Computer Vision, TensorFlow, Keras, PyTorch, OpenCV, YOLO, Hugging Face Transformers, Large Language Models, Knowledge Distillation ,Cyber Security, Raspberry Pi, Git, Java, C/C++, Docker, Systems Engineering, DICOM File Management, Data Science, Data Structures & Algorithms, Kotlin, Operating Systems, Linux/Unix, Pi OS