

# RAJARSHI RAY

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## EDUCATION

### Stony Brook University - SUNY

Master's, Computer Science GPA:3.9/4

Coursework: Computer Vision, Data Science, AI, Natural Language Processing

Stony Brook, NY, USA

Expected December 2025

### Birla institute of Technology and Science, Pilani

Bachelor's, Computer Science GPA:8/10

Coursework: AI, Data Science, Data Visualization

Teaching Assistant: Object Oriented Programming

Goa, India

July 2024

## RESEARCH EXPERIENCE

### Grid Based All-in-one Image Degradation and Restoration

VAIGM-Lab, Stony Brook University

Stony Brook, NY

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

VAIGM-Lab, Stony Brook University

Stony Brook, NY

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 18<sup>th</sup> globally, competing among leading global research teams, contributing models for accurate image upscaling.

### 3D Lung DDPM Synthesis using guided Diffusion Models

VAIGM-Lab, Stony Brook University

Stony Brook, NY

August 2024 - Present

- 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

Software Engineer

Poughkeepsie, NY

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)

Research and Development Intern

Bangalore, KA, India

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