Swaroop Bhowmik

Matri Bhaban, Old Thana Road Banamalipur, Agartala, Tripura - 799001
(+91) 7383196306 | swaroopbhowmik7@gmail.com |
linkedin.com/in/swaroop-bhowmik-8907b52a0 | github.com/Aragog540

Professional Profile

AI/ML engineer with a record of creating and advancing deep learning architectures for real-world impact. Delivered 99% image dehazing accuracy, improved segmentation mIoU by 4%+, and launched research adopted by global teams. Proficient in Python, TensorFlow, PyTorch, and benchmarking on large datasets.

Technical Skills

- Programming Languages: Python, Java, TensorFlow, NumPy, Pandas
- Deep Learning Frameworks: TensorFlow, PyTorch
- Libraries & Tools: NumPy, Pandas, OpenCV, Git, CUDA, Cursor
- ML Concepts: Model Optimization, Data Augmentation, Semantic Segmentation, Image Classification, Performance Benchmarking

Projects

Satellite Image Dehazer Jan 2023 – Present
Deep Learning / GAN Project *Python, TensorFlow, NumPy, OpenCV, CUDA*

- Architected an Enhanced U-Net CNN with dilated convolutions and Leaky ReLU, achieving 99% image dehazing accuracy with a PSNR uplift of 4 and SSIM improvement of 0.03
- Engineered a conditional GAN model with Cross-Scale Feature Fusion Blocks to enhance RGB satellite images for disaster assessment and segmentation
- Accelerated model training process by 24% with optimized batch normalization and parameter tuning
- Improved segmentation accuracy by 6% and reduced model error by 8% for building footprint detection
- Analyzed and benchmarked on a dataset of 3,000+ satellite images, exceeding state-of-the-art benchmarks by 8%
- Published research in IEEE SCEECS 2025 [Paper Link]; code available at github.com/Aragog540/DeHazer-CED and github.com/Ardhze

Enhanced Mamba Decoder Jan 2023 – Present
Segmentation Project *Python, TensorFlow, OpenCV, CUDA*

- Initiated UNetMamba with multi-scale spatial attention, achieving a 2–4% gain in mean IoU on high-res datasets
- Boosted throughput by 34% with crypto-efficient computation and automated Test Time Augmentation

Experience

Student Researcher Sep 2023 – Present
VIT Bhopal University *Bhopal, India*

- Conducted research on computer vision and deep learning projects, leading to publication in IEEE SCEECS'25
- Collaborated with faculty peers to present research results at academic conferences and seminars

Achievements

- Launched high-impact research recognized at IEEE SCEECS'25, IEEE MANIT Student Branch)
- Advanced manuscript to final review in Signal Processing Journal following multi-stage revision
- Developed model secured second place among others driven upon adoption of segmentation solutions

Education

VIT Bhopal University Bhopal, India
Bachelor of Technology, Computer Science and Engineering, CGPA: 8.63 *Sep 2023 – Present*

Delhi Public School, Vadodara Vadodara, India
Class 12th: 78% *Passed 2023*

Delhi Public School, Vadodara Vadodara, India
Class 10th: 92% *Passed 2021*

Certifications

- Python for Data Science, AI & Development (IBM)
- Git (IBM)
- Cloud Computing (NPTEL)
- Oracle Generative AI