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Portfolio: adarsh-crafts.github.io Scholar: [Google Scholar](#)

OVERVIEW

I am currently a Master's student (2024–26) at Alliance University and currently researching Computer Vision and NLP for Healthcare. I enjoy working with Prof. Jeba Shiney (supervisor) where I studied Generative models and the impact of image preprocessing complexity on the same. Some of my other work and projects also determine my interest in Deep Learning for Computer Vision and Explainable AI. In my Master's, I studied Classical ML, Computer Vision, Natural Language Processing, and Deep Learning taught by Dr. Jeba Shiney, Dr. Vijayalakshmi Nanjappan, and Dr. Raj Dash. Conversely, I was a part of i2cs lab at IIIT-Kottayam, where my focus was to provide deep learning edge to the team for Plant Disease Detection and Diagnosis. I belong to the south part of India, from a city called Bangalore which lies in Karnataka.

EDUCATION

2024 – 2026	Master of Science, Data Science Deep Learning, Machine Learning, ML for Image Processing, Data Science, Research Methodology, MLOps.	Alliance University Bangalore, India 8.9/10 SGPA (Sem 3) (Currently in sem 4)
2021 – 2024	Bachelor of Science, Mathematics and Statistics Mathematical Statistics, Probability, Applied Mathematics.	Bangalore University Bangalore, India (CGPA: 6.5/10)

RELEVANT EXPERIENCE

08.2025 – Present	Student Researcher (Master's Thesis) Developed SkinGenBench, a systematic framework benchmarking StyleGAN2-ADA and DDPM architectures for synthetic dermoscopic augmentation. My research demonstrated that generative architecture choice outweighs preprocessing complexity, achieving 8–15% absolute gains in melanoma F1-scores and an ROC-AUC of 0.98.	Alliance University, Bangalore Supervisor: Dr. Jeba Shiney
05.2025 – 09.2025	Summer ML Research Intern Studied Visual Language Models for Plant Disease Detection. Integrated CLIP ViT-L with InternLM2, designed new projection architecture, applied scalable training. Contributed to manuscript.	IIIT Kottayam, i2CS Research Group Supervisor: Dr. Kala S

Glimpse of MSc. Thesis

Title: SkinGenBench: Generative Model and Preprocessing Effects for Synthetic Dermoscopic Augmentation in Melanoma Diagnosis

Supervisor: Prof Jeba Shiney

Abstract: This work introduces SkinGenBench, a systematic biomedical imaging benchmark that investigates how preprocessing complexity interacts with generative model choice for synthetic dermoscopic image augmentation and downstream melanoma diagnosis. Using a curated dataset of 14,116 dermoscopic images from HAM10000 and MILK10K across five lesion classes, we evaluate the two representative generative paradigms: StyleGAN2-ADA and Denoising Diffusion Probabilistic Models (DDPMs) under basic geometric augmentation and advanced artifact removal pipelines. Synthetic melanoma images are assessed using established perceptual and distributional metrics (FID, KID, IS), feature space analysis, and their impact on diagnostic performance across five downstream classifiers. Experimental results demonstrate that generative architecture choice has a stronger influence on both image fidelity and diagnostic utility than preprocessing complexity. StyleGAN2-ADA consistently produced synthetic images more closely aligned with real data distributions, achieving the lowest FID (≈ 65.5) and KID (≈ 0.05), while diffusion models generated higher variance samples at the cost of reduced perceptual fidelity and class anchoring. Advanced artifact removal yielded only marginal improvements in generative metrics and provided limited downstream diagnostic gains, suggesting possible suppression of clinically relevant texture cues. In contrast, synthetic data augmentation substantially improved melanoma detection with 8–15% absolute gains in melanoma F1-score, and ViT-B/16 achieving $F1 \approx 0.88$ and $ROC-AUC \approx 0.98$, representing an improvement of approximately 14% over non-augmented baselines. Our code can be found at <https://github.com/adarsh-crafts/SkinGenBench>

ONGOING RESEARCH PAPERS AND PROJECTS

- **List of Publications:** https://scholar.google.com/citations?user=Sm8_hWgAAAAJ&hl=en
- **ICPR 2026 (submitted):** SkinGenBench: Generative Model and Preprocessing Effects for Synthetic Dermoscopic Augmentation in Melanoma Diagnosis. Available at: <https://arxiv.org/abs/2512.17585>
- **ETCC 2025, IEEE:** American-Sign-Language to Fluent-English Detection and Translation Using T5. Available at: <https://ieeexplore.ieee.org/document/11108641/>
- **Project LLaMA LLM Reimplementation:** Built an LLM from scratch to mimic communication style using personal chat logs. Implemented tokenizer, transformer, and QLoRA-based fine-tuning. Available at: <https://github.com/adarsh-crafts/llama-llm-from-scratch> and [Medium Blog](#)

SKILLS

Programming: Python (Advanced), R, SQL, Java

Libraries: PyTorch, Transformers, OpenCV, Scikit-learn, MLFlow, Pandas, NumPy, Matplotlib, Seaborn

Cloud/Data: AWS, Apache Kafka, BigQuery, PostgreSQL

Visualization: Tableau, Power BI, Jupyter Notebook

CERTIFICATIONS

- AWS Certified AI Practitioner (2024)
- Mathematics for Machine Learning and Data Science – DeepLearning.AI (2024)
- Google Data Business Intelligence Specialization (2023)
- Google Data Analytics Specialization (2023)

AWARDS & ACHIEVEMENTS

- Project Lead, Academic Review Paper

- Two-time Winner, Battle of the Bands (Musical Competition)
- High Achiever's Award, Distinction in Grade 4 Rock Guitar (London College of Music)

REFERENCES

1. Dr. Jeba Shiney (jeba.shiney@alliance.edu.in), Professor at Alliance University.
2. Dr. Kala S (kala@iiitkottayam.ac.in), Head of i2CS Research Group at Indian Institute of Information Technology (IIIT) Kottayam.
3. Dr. Raj Dash (raj.dash@alliance.edu.in), Assistant Professor at Alliance University.
4. Mr. Mihir Dash (mihir@alliance.edu.in), Associate Professor and Interim Associate Dean at Alliance University.
5. Dr. Vivek Mishra (vivek.mishra@alliance.edu.in), Associate Professor at Alliance University.
6. Dr. Asha Kurian (asha.kurian@alliance.edu.in), Assistant Professor at Alliance University.