

N A Adarsh Pritam

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OVERVIEW

I am currently a **Research Intern at the Centre for Brain Research (CBR), Indian Institute of Science (IISc)**, where I work on **machine learning and statistical learning methodologies for dementia research** (for early detection of cognitive decline). My research experience includes **Representation Learning, Generative Models, Computer Vision, Multimodal Learning, NeuroAI and Medical AI**.

RESEARCH EXPERIENCE

J: Journal C: Conference W: Workshop P: Preprint

CBRAIN Research Intern

May 2026 – Present

Centre for Brain Research (CBR) @ Indian Institute of Science (IISc), Bangalore

Principal Investigator: Dr. Thomas Gregor Issac

- Developed machine learning and statistical models for early identification of **Mild Cognitive Impairment (MCI)** using multimodal longitudinal data from the **TLSA** and **SANSCOOG** cohorts (> 10,000 participants); improved prediction accuracy by $\approx 6\%$ over penalized logistic regression through BORUTA feature selection and Bayesian hyperparameter optimization.
- Evaluated **Kaplan–Meier, Cox Proportional Hazards, Random Survival Forests**, and **DeepSurv** for longitudinal risk prediction; co-authoring a clinical dementia study through statistical analyses and hypothesis testing.

Graduate Research Student

Aug 2025 – May 2026

Alliance University, Bangalore

Supervisor: Dr. Jeba Shiney

- Proposed a **hierarchical brain-to-latent alignment framework**, demonstrating nonlinear decoders improve semantic alignment ($\Delta \approx +0.47$) with limited gains for diffusion latents ; Mapped **fMRI** signals to **Stable Diffusion** and **CLIP** latent spaces using hierarchical linear and nonlinear decoders, achieving $\approx 85\%$ CLIP semantic similarity.
- Benchmarked **StyleGAN2-ADA** and **DDPM** for dermoscopic image augmentation across **14k+ melanoma images** ; Improved melanoma detection by 8–15% absolute F1 (ROC-AUC ≈ 0.98) and evaluated synthetic image quality using FID, KID, and downstream classification metrics.

Publications: [P1](#) , [P2](#) , [C1](#)

Summer ML Research Intern

May 2025 – Sep 2025

i2CS Research Group @ Indian Institute of Information Technology (IIIT) Kottayam

Supervisor: Dr. Kala S

- Designed a multimodal plant disease diagnosis framework integrating CLIP (ViT-L) visual representations with InternLM2 language models ; Implemented projection-based vision-language alignment, scalable PyTorch training pipelines, and contributed to experimental evaluation and manuscript preparation.

PUBLICATIONS

J: Journal C: Conference W: Workshop P: Preprint

P1 [Brain2VLM: Hierarchical Alignment Between Cortical Representations and Vision-Language Latent Spaces](#)

N A Adarsh Pritam, Jeba Shiney O, Sanyam Jain.
bioRxiv Preprint, 2026 (Currently under review).

P2 [SkinGenBench: Generative Model and Preprocessing Effects for Synthetic Dermoscopic Augmentation in Melanoma Diagnosis](#)

N A Adarsh Pritam, Jeba Shiney O, Sanyam Jain.
arXiv Preprint, 2025 (Currently under review).

C1 [American Sign Language to Fluent English Detection and Translation Using T5](#)

N A Adarsh Pritam, Asha Kurian.
IEEE International Conference on Emerging Technologies in Computing and Communication (IEEE - ETCC), 2025.

OPEN SOURCE PROJECTS

- **LLaMA LLM Reimplementation** — Reimplemented a decoder-only **LLaMA** architecture from scratch with custom tokenization, transformer layers, and **QLoRA** fine-tuning for personalized conversational modeling. [GitHub](#) / [Blog](#)
- **PyTorch Classification Extended** — Extended the **bearpaw image classification** framework repository with **Grad-CAM** visualization and expanded architecture support. [GitHub](#)

EDUCATION

Alliance University, Bangalore 2024 – 2026
Master of Science in Data Science **CGPA: 8.6**

Bengaluru City University, Bangalore 2024 – 2026
Bachelor of Science in Mathematics and Statistics **CGPA: 6.5**

Relevant Coursework: Machine Learning I & II, Deep Learning, ML Techniques for Image Processing, Mathematical Foundations for Data Science, Natural Language Processing, Inferential and Descriptive Statistics, Foundations of Data Science, Applied Mathematics, Probability, Operations Research, ML-Operations (MLOps), Research Methodology

SKILLS

Programming: Python, R, SQL

Research Areas: Representation Learning, Generative Models, Computer Vision, NeuroAI, Medical AI, Deep Learning, Machine Learning, Statistical Learning

Core Libraries: PyTorch, Torchvision, Transformers, Scikit-learn, Optuna, Shap, Pandas, Numpy

Tools: Git, Docker, MLflow, ZenML, AWS, Weights&Biases, Latex

CERTIFICATIONS

- AIF-C01: AWS Certified AI Practitioner - Amazon Web Services (2024)
- Fundamentals of Deep Learning - NVIDIA (2025)
- Mathematics for Machine Learning and Data Science – DeepLearning.AI (2024)

ACHIEVEMENTS

- Invited to serve on the Board of Studies (BoS) curriculum committee for the MSc Data Science program, contributing to curriculum design for subsequent (2026 onward) student cohorts.
- Invited to deliver seminars on machine learning research methodology for MSc Data Science students.