Satya Akhil Galla

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Education

Boston University — **Sep 2024 – Dec 2025**
Masters in Artificial Intelligence — *GPA: 3.7/4.0*

IIIT Sri City — **Dec 2020 – May 2024**
B.Tech in Computer Science — *GPA: 8.0/10*

Experience

Aaizel International Tech Pvt Ltd — **Feb 2024 – May 2024**
Deep Learning Intern — *India*

- Built the company's first scene-graph pipeline for IR + RGB satellite imagery: adapted RelTR to identify objects and relations.
- Deployed a Gradio web app that lets analysts upload a satellite tile and instantly view its semantic graph, accelerating remote-sensing intelligence workflows.

Terrafic Inc — **June 2023 – Nov 2023**
Machine Learning Research Intern — *India*

- Built the startup's first satellite-imagery ML pipeline; implemented 4× / 6× super-resolution for a defense-mapping demo.
- Added SAM-based segmentation of maritime and urban features, delivering a live geospatial proof-of-concept for founders.

ISRO - Indian Space Research Organisation — **Dec 2022 – May 2023**
Machine Learning Research Intern — *India*

- Built a Graph-Convolution pipeline for Chandrayaan-1/2 hyperspectral data and research on adaptive graph strategies.

Spatial Analytics and Machine Intelligence(SAMI) Lab - IIIT Sri City — **Aug 2022 – May 2024**
Undergraduate Researcher — *India*

- Developed graph-based models that raised lunar hyperspectral-image classification to 98 % accuracy.
- Authored an IEEE WHISPERS 2023 paper and NASA NESF 2023 poster; work funded by ISRO.

Projects

Text-to-Music Generation with Transformers and Diffusion Models | *PyTorch, HuggingFace* | GitHub — **Jan 2025 – May 2025**

- First comparative study of transformer-first vs. diffusion-first cascades; showed MusicGen boosts semantic alignment while AudioLDM enriches audio detail—complementary, non-overlapping strengths.
- On the MusicCaps dataset, the best AudioLDM→MusicGen cascade kept semantic match (CLAP **0.35**) and cut audio distance (FAD 6.68 → **6.55**), outperforming both standalone models.

Layer-Residual Co-Attention Networks (LRCN) for VQA | *PyTorch* | GitHub — **Jan 2025 – May 2025**

- Open-sourced the first full PyTorch replication of all three LRCN variants and added a cross-attention visualisation tool.
- Matched the paper's VQA-v2 result and extending to CLEVR in upcoming work

Multimodal Skin Cancer Detection | *PyTorch, TensorFlow* | GitHub — **Sep 2024 – Dec 2024**

- Handled extreme class imbalance (0.1%) with resampling and weighted loss; trained image and tabular models separately.
- Fused both views in a voting ensemble raising ROC-AUC to **0.96**— 15 pts higher than the best single-modal baseline.

Minimizing Hallucination in Medical LLMs | *LLaMa, LangChain, FAISS* | GitHub — **Sep 2024 – Dec 2024**

- Built a medical RAG stack indexing 207 K verified Q–A pairs to ground responses and curb hallucinations.
- Raised SBERT sentence similarity from 0.63 to **0.87** (+38 %) over vanilla LLaMA-3, delivering more accurate patient-care answers.

Publications

Efficient Graph Formulation and Latent Space Integration for Lunar Hyperspectral Image Classification | ***IEEE WHISPERS 2023, Athens*** | **Publication**

- First study on Chandrayaan-1 and 2 hyperspectral data: benchmarked six graph-construction schemes; baseline handcrafted cosine graph scored 94 % accuracy, while a non-linear spectral–spatial graph lifted GCN accuracy to **97 %** (+3 pp).
- Integrated autoencoder latents with the best graph, pushing accuracy to **98.4 %** (+1.4 pp) and forming the core of an ISRO-funded mineral-mapping pipeline.

Enhancing Hyperspectral Classification through GCNs with Adaptive Graph Construction | ***NASA NESF 2023 Poster #38, Maryland*** | **Poster**

- First work on Chandrayaan-2 IIRS data to compare six graph-construction schemes for GCNs; introduced a non-linear spectral-spatial graph that lifted overall accuracy from 91 % to **97 %**.
- Showed adaptive graphs outperform handcrafted layouts and provide more interpretable mineral maps—insight.

Skills

Frameworks: PyTorch, TensorFlow, Keras, Scikit-learn, LangChain
Languages: Python, C++, SQL, JavaScript
Tools & Libraries: Git, FAISS, HuggingFace, OpenCV, Bash
Data & Visualization: NumPy, Pandas, Matplotlib, Seaborn