Shubham Gajjar

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Education

Northeastern University *Sept 2025 – Present*
Master of Science (M.S.) – Artificial Intelligence

LDRP Institute of Technology and Research, Gandhinagar, Gujarat *May 2025*
Bachelor of Engineering (B.E.) – Computer Engineering
CGPA: 8.41/10.0

VPMP Polytechnic, Gandhinagar, Gujarat *May 2022*
Diploma – Computer Engineering
CGPA: 9.22/10.0

Experience

BigCircle (UPSAAS Technologies LLP), Gandhinagar, Gujarat *Jan 2025 – Aug 2025*
AI Intern (Jan–Feb) & AI Engineer (Mar–Aug)

- Optimized AI-powered research platform by restructuring multi-agent API workflows, cutting report generation time from **20 min → 5 min**. **(Python, Firecrawl, Gemini API)**
- Enhanced client web app with efficient paging, improving server performance by **80%** and reducing login from **3 min → 2 sec**, while securing sensitive data. **(JavaScript, Web APIs)**
- Delivered a pixel-perfect iOS mobile app from Figma designs using React Expo. **(React Native, Expo)**
- Fixed performance bottlenecks and critical data bugs, ensuring data integrity and scalability in production systems.

Projects

Brain Tumor Segmentation using Hybrid Deep Learning (Research Paper Under Review)

- Designed VGG16-MCA UNet (VGG16 encoder + Multi-Channel Attention decoder) for precise segmentation from FLAIR MRI.
- Reached **99.59% accuracy** and **99.71% specificity** on LGG MRI dataset with Focal Tversky Loss.
- **Tech:** TensorFlow, Keras, Albumentations, CUDA, HPC.

Skin Cancer Classification with Hair Occlusion Handling (IEEE − Accepted)

- Proposed Hybrid ResNet50 + Vision Transformer model for robust 7-class skin lesion classification on HAM10000 dataset.
- Achieved **96.3% accuracy**, **macro F1 = 0.961**, and **AUC** *approx* **1.00** across classes.
- Published as: *"A Hybrid ResNet-ViT Architecture for Skin Cancer Classification."* (IEEE, 2025).

Reinforcement Learning Agent for TrackMania

- Applied Implicit Quantile Network (IQN) for autonomous racing agent with real-time TMRL + TMInterface integration.
- Trained PyTorch agent achieved lap times comparable to human players on default tracks.
- **Tech:** PyTorch, TMRL, TMInterface, CUDA.

Technical Skills

- **Languages:** Python, Java, JavaScript
- **ML/DL:** TensorFlow, Keras, PyTorch, Scikit-learn, CUDA
- **Data:** Pandas, NumPy, Matplotlib, OpenCV, Albumentations
- **Web:** Flask, Node.js, React.js, REST APIs, HTML/CSS
- **Databases:** MySQL, Neo4J
- **Tools:** Git, Google Colab, HPC, AWS
- **Concepts:** ML, DL, CV, Reinforcement Learning, Model Optimization

Achievements & Publications

- **Accepted:** Gajjar, S., Rathod, O., Joshi, D., Joshi, H., Barot, V.
  "A Hybrid ResNet-ViT Architecture for Skin Cancer Classification." IEEE, 2025.
- **Under Review:** Gajjar, S., Joshi, D., Poptani, A., Barot, V.
  "VGG16-MCA UNet: Hybrid Deep Learning for Brain Tumor Segmentation in FLAIR MRI." Elsevier, 2024.
- Certifications: Python For Data Science (NPTEL, 2023), Python Data Structures (Coursera, 2023)