Sakhinala Sanjay Bhargav

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Summary — Entry-level AI/ML developer with hands-on experience building and deploying production ML systems. Shipped a multilingual RAG pipeline supporting 10+ Indian languages with a full evaluation framework, and reduced antenna simulation cost by 70% using uncertainty-aware reinforcement learning, producing 2 IEEE publications and a filed patent. Seeking a role where strong engineering fundamentals and a track record of building real systems translate into immediate contributions.

Skills

– **Languages:** Python, SQL

– **Machine Learning:** PyTorch, TensorFlow, Scikit-Learn, LightGBM, OpenCV, Stable-Baselines3

– **NLP & GenAI:** HuggingFace Transformers, LangChain, RAG pipelines, multilingual embeddings, OCR

– **MLOps & Backend:** FastAPI, Docker, Redis, ChromaDB, FAISS, Git, Linux, Google Cloud Platform

– **Data:** Pandas, NumPy, Matplotlib, Optuna

Projects

IndicRAG — Multilingual Document QA System   **GitHub — Blog Post**
– Designed and shipped a production RAG system for 10+ Indian languages end-to-end: PDF ingestion, E5 multilingual embeddings, ChromaDB vector store, NLLB-200 translation, and Gemini LLM — deployed as a FastAPI service versioned to v1.2.0.
– Evaluated against 4 benchmark queries: **Precision@5 1.00**, **Recall@5 0.92**, **Citation Grounding Accuracy 0.94**; methodology and reproducible results documented in docs/evaluation.md.
– Production features include Prometheus metrics endpoint, structured logging, API key auth, drag-and-drop web UI for PDF management, and a CLI purge utility.
– **Tech:** HuggingFace Transformers, ChromaDB, FastAPI, NLLB-200, Redis, Docker, Gemini API.

Reinforcement Learning for Antenna Design Optimization   **Blog Post**
– Cut electromagnetic simulation cost by **70%** (420 CST calls vs. 1,200–1,500 for GA/PSO) by training a Soft Actor-Critic agent against a blended surrogate ensemble (LightGBM + MLP + RidgeCV) with uncertainty-aware reward shaping.
– Resulting 28 GHz antenna achieved **–52.2 dB** return loss and **8.93% fractional bandwidth** — outperforming GA (7.1%) and PSO (7.4%) while enforcing PCB fabrication constraints throughout optimization.
– Work produced 2 IEEE conference publications (ICMOCE 2025, ICCCNT 2025) and a filed Indian patent (Application No. 202541014595 A).
– **Tech:** PyTorch, Stable-Baselines3, LightGBM, Optuna, CST Studio API.

EuroSAT Land Use Classification   **GitHub**
– Trained a transfer-learning CNN to **89% test accuracy** across 10 land-use classes on 27,000 satellite images; applied Grad-CAM to visualize which spatial features drive each class prediction.
– **Tech:** PyTorch, TorchVision, OpenCV, Grad-CAM.

CipherChat — Secure Encrypted Messenger   **GitHub**
– Built a multi-user CLI chat system from scratch using AES-256 + RSA-2048 hybrid encryption with Diffie-Hellman key exchange, SHA-256 integrity checks, and multi-threaded TCP socket handling for concurrent sessions.
– **Tech:** Python, Socket Programming, Cryptography, TCP/IP, Multi-threading.

Training Programs

SkillHive Connect — Generative AI   **Aug 2025 – Dec 2025**
– Built and fine-tuned LLM-based applications (chatbots, semantic search, RAG pipelines, voice medical assistant) using Transformers, LangChain, and LLaMA-derived models.

Google for Developers — AI/ML   **Jan 2025 – Mar 2025**
– Built end-to-end ML deployment pipelines on Vertex AI; developed real-time inference workflows integrating ML models into application backends using Python and OpenCV.

Palo Alto Networks — Cybersecurity   **Oct 2024 – Dec 2024**
– Firewall policy optimization, SIEM log analysis for anomaly detection, and secure network architecture fundamentals.

Altair — Data Science Training Program   **Apr 2024 – Jun 2024**
– First hands-on ML experience: built automated pipelines in RapidMiner for data preprocessing, feature engineering, and model evaluation; benchmarked SVM and Random Forest classifiers.

Education

B.Tech in Electronics and Communication Engineering **May 2025**
Bapatla Engineering College, Bapatla, Andhra Pradesh
Diploma in Electronics and Communication Engineering **Oct 2021**
Aditya College of Engineering, Surampalem, Andhra Pradesh

Publications & Patent

- **Bandwidth Enhancement of Slotted Hexagonal Patch Antenna for 6G Ultra-Fast Data Transfer and Brain-Computer Interface**
  ICMOCE 2025, IIT Bhubaneswar — DOI: 10.1109/ICMOCE64100.2025.11076991 — Published July 2025
- **Bandwidth Optimization of Slotted Circular Patch Antenna for 6G Ultra-Fast Data Transfer and Brain-Computer Interface Application**
  ICCCNT 2025, IIT Indore — IEEE Xplore submission pending
- **Uncertainty-Aware Reinforcement Learning System with Blended Surrogate Models for Electromagnetic Structure Optimization**
  Under Review
- **Patent:** Design of Hexagonal Patch Antenna at 28 GHz — Application No. 202541014595 A — Published Mar 2025 (India)

Certifications

- **AI & Machine Learning:** AI For Everyone — DeepLearning.AI (Feb 2025) — Google Prompting Essentials (May 2024) — Google Cloud Skill Badges: TensorFlow, Image Classification, Object Detection, ML Pipelines (10+ badges)
- **Data & Analytics:** Google Data Analytics Professional Certificate (Mar 2024) — SQL, R, Tableau, Statistical Analysis — NPTEL: Cloud Computing
- **Infrastructure & Security:** Google Cybersecurity Professional Certificate (May 2024) — Network Security, Python for Security, Linux, Cloud Security — NPTEL: Computer Networks & Internet Protocols