Aditya Chunduri

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Summary

GenAI and machine learning practitioner building reproducible LLM evaluation, RAG, and multimodal pipelines end-to-end, from data and retrieval to inference, scoring, and deployment. Strong in PyTorch, LangChain, and vector databases, with a research-driven mindset focused on trustworthy, scalable systems, rigorous experimentation, and measurable real-world impact.

Technical Skills

- **Languages & Frameworks:** Python (Advanced), SQL, C++, PyTorch, TensorFlow, Scikit-learn, LangChain, Hugging Face.
- **GenAI & ML Systems:** LLM Evaluation, RAG Architectures, Prompt Engineering, Multimodal ML, Model Benchmarking, Human-in-the-Loop Systems.
- **Data, Audio & Vision:** Pandas, NumPy, Spark, Librosa, Whisper, Demucs, OpenCV, CNNs, U-Net, YOLOv5.
- **Databases & Infra:** PostgreSQL, Pinecone, ChromaDB, SQLAlchemy, AWS SageMaker, Azure.
- **Tools & Platforms:** Git, GitHub, Docker, Flask, Gradio, Selenium, UiPath, Power Platform (Apps, Automate, PowerBI, Virtual Agents), Copilot.

System-Level Projects

LLM Evaluation & Analysis Platform – Model Behavior Lab *July 2025 – Aug 2025*

- Designed and built an automated evaluation framework to benchmark LLMs across reasoning accuracy, hallucination propensity, emotional alignment consistency, and code correctness.
- Implemented JSON-driven test pipelines enabling reproducible experiments across Phi-3, Mistral, and Samantha models.
- Developed visualization dashboards to surface behavioral tradeoffs, failure modes, and consistency gaps across models.
- Used evaluation results to inform prompt strategies and deployment-oriented model selection for downstream GenAI applications.

Retrieval-Augmented LLM Insight Engine – AI Health Journal *May 2025 – June 2025*

- Built a privacy-aware journaling assistant using LangChain, Pinecone, and Flask to generate structured mental-health insights.
- Implemented RAG pipelines to ground responses in user-specific historical context, reducing hallucination risk in personalized responses.
- Integrated Whisper-based voice transcription, enabling a seamless voice-to-analysis workflow.
- Designed prompts and retrieval logic to balance empathy, factual grounding, and interpretability.

Multimodal Audio Intelligence System – AI RemixMate *Jan 2025 – April 2025*

- Engineered an intelligent music remixing system combining audio signal processing with ML-driven tempo and harmonic alignment.
- Extracted MFCCs, tempo, and harmonic features to align tracks algorithmically before remixing.
- Integrated Demucs for stem separation and Whisper for lyrical alignment.
- Achieved ∼90% perceived transition smoothness across 50+ evaluated remixes through iterative testing.

Automated GenAI Media Pipeline – Akashic Tree *Aug 2025 – Present*

- Architected a multi-stage content generation pipeline using LangChain, Ollama, Stable Diffusion, and Coqui TTS.
- Automated script → image → audio → video workflows for marketing and storytelling use cases.
- Introduced human-in-the-loop review mechanisms to reduce generative errors and enforce brand consistency.
- Delivered 10+ production-ready reels used in live campaigns.

Natural Language to SQL / NoSQL Query Engine – ChatDB *Aug 2024 – Dec 2024*

- Built an NLP-driven query system translating natural language into optimized database queries.
- Combined spaCy-based parsing with schema-aware retrieval to improve intent resolution and query correctness.
- Prototyped a RAG-based assistant to assist developers with query formulation.
- Improved translation accuracy by ∼25% through iterative refinement.

Research Experience

University of Southern California **Los Angeles, CA**
Research Assistant – Computer Vision *Aug 2024 – Dec 2024*

- Built data preprocessing and segmentation pipelines for 10K+ retinal fundus images.
- Fine-tuned U-Net architectures using research-backed augmentation strategies.
- Improved downstream disease detection performance by ∼20%.
- Led weekly technical discussions aligning model metrics with clinical research goals.

SSN College of Engineering **Chennai, India**
Research Assistant – ML Engineering *June 2021 – July 2021*

- Developed YOLOv5-based object detection models for aerial imagery, achieving 92%+ precision on small-object detection tasks.
- Optimized large-scale video preprocessing and ETL pipelines, reducing runtime by ∼25%.
- Built visualization dashboards to accelerate analysis and decision-making.

Education

University of Southern California **Los Angeles, CA**
M.S. in Applied Data Science *Jan 2024 – Present*

- **Relevant Coursework:** Machine Learning, Information Retrieval, Data Mining, Analysis of Algorithms, Data Management, Research Methods

SRM Institute of Science and Technology **Chennai, India**
B.Tech in Computer Science & Engineering *June 2019 – July 2023*

- **Specialization:** Artificial Intelligence & Machine Learning