PRANAV DHIRAN

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PROFILE

AI/ML engineer researching efficient model architectures and neurosymbolic reasoning — how symbolic knowledge (knowledge graphs, causal constraints, formal verification) can be integrated into small language models to make them more sample-efficient and trustworthy. Currently leading a 5-person team as a Research Intern at AIISC (University of South Carolina), taking a neurosymbolic SLM from dataset creation through pre-training and post-training. LFX '26 Mentee at Hyperledger Cello and open-source contributor to CNCF's Meshery. Looking for an internship building production ML/LLM systems.

EDUCATION

B.Tech — Electronics & Telecommunication Engineering (Minor in IT) *2023 – 2027*
SGGS Institute of Engineering & Technology, Nanded

EXPERIENCE

Research Intern *Apr 2026 – Present*
AIISC, University of South Carolina

- Leading a 5-person team on an agriculture-domain small language model, owning the project end to end — dataset creation, custom tokenizer design, pre-training, and post-training.
- Designing a neurosymbolic SLM architecture that integrates symbolic reasoning constraints into pre-training: custom BPE tokenizer with AGROVOC entity injection, Z3-based causal knowledge-graph verification, and a Triple Transformer Encoder.
- Built the full pre-training and evaluation pipeline for a 140M-parameter Qwen3-style transformer (GQA, RoPE, RMSNorm, SwiGLU, factorized embeddings) on a 6.5GB / 266K-document domain corpus, including a training-health, domain-validation, and safety evaluation framework.
- Taught two 1-hour sessions in the IAIRO-affiliated SLM Bootcamp 2026: Vanilla GPT-2 Architecture and Scaling Laws & Cost Accounting.

LFX Mentee *Jun 2026 – Present*
Hyperledger Cello · Linux Foundation

- Building an AI agent that takes natural-language input, reasons over the correct sequence of Cello REST API calls, and executes them — turning Fabric network operations and chaincode debugging into a conversational workflow.

Open Source Contributor *Mar 2026 – Jul 2026*
Meshery — CNCF Sandbox Project

- Shipped 5+ merged PRs across the Go backend and React frontend (service mesh management features, UI components, API integrations); active in code reviews, issue triage, and community discussions under CNCF contributor guidelines.

PROJECTS

GNU Radio MCP Server — LLM-to-SDR Bridge · *Python · FastMCP · ZMQ · XML-RPC · GNU Radio* pypi github

- Built and published a provider-agnostic MCP server to PyPI bridging LLMs to live GNU Radio SDR flowgraphs via stdio transport — 13 tools for flowgraph lifecycle, frequency/gain control, and signal monitoring, with Pydantic v2 validation, ZMQ IQ streaming (Welch PSD), and an XML-RPC control plane for natural-language control of HackRF One and RTL-SDR hardware through Claude Desktop.

Small Language Model from Scratch · *PyTorch · Hugging Face · AMP · NLP* github

- Pre-trained a GPT-style autoregressive transformer (6 layers, 6 heads, 384-dim) on TinyStories with a custom BPE tokenizer, mmap data pipelines, AMP mixed precision, gradient accumulation, and cosine LR scheduling; ran systematic depth/embedding ablations to characterize scaling behavior.

Medaura — Agentic Pharmacy System · *FastAPI · LangChain · ChromaDB · Langfuse · React* live github

- 5-agent autonomous pharmacy system (Ordering, Safety, Forecast, Procurement, UI) with semantic RAG via ChromaDB, plus Langfuse observability — live on the web, zero human intervention, 4 languages.

RF Watch — Open-Source RF Spectrum Monitor · *Python · GNU Radio · HackRF One · Signal Processing* github

- Real-time RF spectrum analyzer with FFT-based feature extraction and a lightweight ML classifier for passive transmitter detection, grown out of SIH 2025 anti-drone work for ITBP.

TECHNICAL SKILLS

Languages & Frameworks: Python, Go (learning), PyTorch, TensorFlow, Hugging Face Transformers, TRL

APIs & Protocols: REST, gRPC, GraphQL, OpenAI/Gemini/Ollama APIs, FastMCP, XML-RPC, ZMQ

LLM Engineering: Instruction Fine-Tuning, LoRA, PEFT, GRPO, RLHF, INT4/INT8 Quantization, Unsloth, LangChain, LangGraph, ChromaDB, FAISS, RAG

Agentic & Infra: Multi-Agent Systems, Tool-Use, Function Calling, MCP Servers, LangSmith, Langfuse, Docker (basic), Kubernetes (basic)

CERTIFICATIONS

- Fine-tuning & RL for LLMs: Intro to Post-training — DeepLearning.AI
- AI Agents in LangGraph — DeepLearning.AI
- Quantization Fundamentals — Hugging Face
- MCP: Build Rich-Context AI Apps — Anthropic

AWARDS & RECOGNITION

- International Finalist (Top 6) — UWA Hack 2026
- National Finalist — SIH 2024 & 2025
- Regional Qualifier — Nxt Wave × OpenAI Buildathon