Ganesharpan Annajirao Nookala

Austin, TX arpan.nookala@rutgers.edu +1 732-470-6390 LinkedIn GitHub

Technical Skills

LLM & AI Research: Multi-Model Orchestration, RAG Pipelines, Prompt Engineering, Model Fine-tuning
ML/AI Frameworks: PyTorch, TensorFlow, LangChain, HuggingFace Transformers, LangGraph, Ollama, LlamaIndex
Full-Stack Development: Python (FastAPI, Flask), TypeScript, React, Next.js, REST APIs, Microservices
Vector & Databases: LanceDB, Qdrant, PostgreSQL, PostGIS, BigQuery, Semantic Search, Embedding Models
Cloud & Tools: AWS, GCP, Docker, Git, Cursor, Claude, Apache Spark, Performance Optimization

Experience

Full-Stack AI Engineer (Founding Team) *Aug 2025 - Present*
Syndnet (3-person AI startup) - Austin, TX

- Designed and built 2 research-driven POCs from concept to working demo, experimenting with various LLM architectures, multi-model orchestration strategies, and intelligent routing mechanisms to optimize performance and cost
- Architected multi-model routing pipeline using DistilBERT (intent classification) → BERT-NER (entity recognition) → Llama 3.2 (SQL generation) for deterministic text-to-SQL-to-map retrieval system, achieving 67% latency reduction (30s to under 10s) through specialized model selection and prompt caching optimization
- Developed full-stack applications with React/Next.js frontends and Python FastAPI microservices, integrating PostgreSQL+PostGIS for geospatial intelligence
- Created comprehensive technical documentation, system architecture diagrams, and POC demo presentations for stakeholders, establishing engineering best practices and onboarding processes as founding technical team member

Machine Learning Research Engineer *Feb 2024 - Present*
Rutgers Urban and Civic Informatics Laboratory - New Brunswick, NJ

- Conducting research on ensemble meta-learning architectures, building stacked XGBoost models with feature transfer mechanisms achieving 15 percentage point performance improvement and R^2 of 0.85-0.9 across 40,000+ geographic units
- Engineered custom NumPy vectorized implementations with parallel processing for Iterative Proportional Fitting, systematically analyzing performance optimizations that reduced computation time by 80% for large-scale synthetic data generation
- Researching domain-adaptive adversarial neural networks using CTABGANs for synthetic microdata generation and copula-IPF frameworks for small-area estimation, processing TB-scale mobility datasets via Apache Spark

Data Scientist *Jul 2021 – Jul 2022*
Google via DKSH Smollan - Mumbai, India

- Built automated data pipelines on Google Cloud Platform processing 100+ smartphone products using Python and SQL, implementing data quality validation frameworks and scalable reporting infrastructure
- Created analytics dashboards with Looker Studio and optimized BigQuery queries reducing dashboard load times by 50%, leading junior analysts to ensure timely delivery of business-critical insights

Projects

ChatMap - Multi-Agent Geospatial AI System GitHub *2025*

- Built intelligent agent orchestration system with LangChain for query classification and routing, implementing SimpleQueryAgent and MultiStepQueryAgent with automatic complexity detection and coordinated multi-step reasoning
- Developed full-stack application with Next.js 15/TypeScript and serverless API routes, integrating Ollama (Llama 3.2) for local inference, Qdrant vector database for semantic memory, and OpenRouteService for isochrone generation

Academic Paper Recommendation System GitHub *Oct 2024 – Dec 2024*

- Developed hybrid ML recommendation system processing 99,942 papers with TF-IDF, Sentence-BERT, and AllenAI-Specter embeddings achieving 78.9% accuracy, implementing RAG pipeline with LanceDB vector storage and Docker deployment
- Conducted systematic performance analysis across ranking algorithms with Precision@k and MRR metrics for explainability

Education

Rutgers University – New Brunswick, NJ *Sep 2023 – May 2025*
Master of Science in Statistics and Data Science, GPA 3.8/4.0

Sardar Patel Institute of Technology – Mumbai, India *Aug 2019 – Jun 2023*
Bachelor of Technology in Electronics Engineering, Minor in Computer Engineering, GPA: 8.81/10

Publications

Deep Reinforcement Learning for Intelligent Traffic Control IEEE *Aug 2023*
Deep Reinforcement Learning for Automated Stock Trading Springer *Oct 2022*