K N Anantha Nandanan

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Technical Skills

Languages: Python, TypeScript, SQL, BASH, AWK, HTML/CSS
Backend/AI: Django (DRF), FastAPI, Celery, Langchain, LiteLLM, ChromaDB, Pinecone
Infra/LLMOps: Docker, RabbitMQ, Redis, Nginx, Coolify, MinIO, Langfuse, Promptfoo, MLflow
Tools/Ops: uv, Git, PostHog, PyMuPDF, OpenCV, Piston API, Linux (Ubuntu/Debian)

Experience

Lead Engineer
August 2024 – Present

QuestCraft (AI-first EdTech Platform) — *Kollam, Kerala, India*

- Architected a **3-phase AI Exam Generation engine** that fulfills complex allocation constraints (topic × type × difficulty) while ensuring chunk-level diversity and 100% unique question variants.
- Engineered a **Finite State Automata (FSA)** approach for the Exam Review system, establishing a robust, state-based approval workflow for end-semester exams to ensure data integrity and process compliance.
- Developed a resilient material ingestion pipeline supporting chunked uploads (PDF/Video) with **pre-hash duplicate detection** and OCR, achieving an **85% reduction in memory consumption**.
- Led the migration from Huey to **Celery + RabbitMQ**, implementing multi-queue prioritization and memory-aware auto-restarts, resulting in **50% faster build speeds** and **20% lower infra overhead**.
- Implemented secure multi-tenant authentication using **Logto** with custom middleware for role-aware API context handling and token-based authorization.
- Integrated automated coding-question validation via **Piston API** and established performance monitoring using **Langfuse** and **PostHog** to track LLM accuracy and user engagement.
- Standardized infrastructure with **Docker** and **Coolify** on self-hosted VPS, managing automated periodic backups and optimizing Django ORM for high-concurrency production environments.
- **Tech Stack: Django, Celery, RabbitMQ, Langchain, ChromaDB, Docker, Nginx, MinIO, PostgreSQL**

LLM Researcher & Backend Developer
November 2023 – August 2024

Traboda CyberLabs — *Hybrid – Kollam, India*

- Led LLM research and prompt engineering for Prodago, boosting domain expert efficiency by 30% in generating AI governance playbooks.
- Developed scalable APIs using **Azure Functions** and **FastAPI**, resolving long-running task issues through **Azure Durable Functions** and batch processing optimization.
- Implemented LLMOps pipelines with **Agiflow** and **Promptfoo** for model evaluation, reducing iteration cycles by 25%.
- **Skills: FastAPI, Azure Functions, Pinecone, MLflow, OpenAI API, Claude API, LiteLLM**

MLOps Engineer
July 2022 – November 2023

TexNano — *Remote*

- Designed MLOps infrastructure for a deep learning tool focused on pancreatic tumor diagnosis, streamlining model deployment and training workflows.
- Conducted research on novel CNN/Transformer approaches to enhance diagnostic accuracy for endoscopic ultrasound-guided aspirations.
- **Skills: Python, Bash, Docker, CI/CD, Linux Server Administration**

Associate Technology Engineer
June 2021 – August 2021

Spoon — *Remote*

- Developed serverless backend infrastructure using **Firebase Cloud Functions** and GCP, improving API response times by 20% through asynchronous invocations.
- Integrated KYC verification and billing systems, ensuring data security via **Skyflow** data privacy vaulting.

Leadership and Mentorship

inCTF | *Core Organiser*
May 2020 – June 2023

- Led a team of volunteers to execute one of India's largest hacking competitions, managing logistics and venue coordination for international participants.

amFOSS | *Member and Mentor*
August 2019 – Present

- Mentored junior developers in open-source contributions and full-stack development practices.