ANKIT RANJAN DAS

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EXPERIENCE

Tata Steel   **Web Developer Intern**

EdCare | *Predictive Health Diagnostics Engine* | Live Demo | Code
Python, Scikit-Learn, React 19, PostgreSQL

- **Predictive Diagnostic Engine:** Engineered a real-time analysis backend using Python (Flask) & Scikit-Learn, deploying a trained Gradient Boosting Classifier to process biological markers in under 100ms for instant risk assessment.
- **Database Security & Optimization:** Implemented a secure PostgreSQL schema with strict Row Level Security (RLS) and accelerated query performance by 40% via compound SQL indexing and Zod schema validation.

PROJECTS

GitMetrix | *Real-Time Developer Velocity Dashboard*   Live Demo | Code
Next.js 16, GraphQL, Redis, Recharts, Server Actions

- **High-Performance System Architecture:** Engineered a real-time analytics engine processing 10,000+ annual GitHub events via GraphQL API; implemented **Redis Edge Caching** to deduplicate redundant network requests, effectively reducing data retrieval latency by 90% and ensuring sub-50ms load times under high concurrency.
- **Algorithmic Logic & Server Actions:** Developed a proprietary "Velocity Score" algorithm in strict TypeScript that normalizes commit frequency and PR impact into a 0-100 productivity index; utilized **Next.js 16 Server Actions** for type-safe, zero-client-bundle data mutations.
- **Resilient UI Engineering:** Designed a fail-safe "Obsidian" visualization layer using Tailwind CSS v4 and Recharts; integrated a robust **Manual Auth Fallback** mechanism that resolves public GitHub identities even when OAuth providers fail, ensuring 100% service availability.

NexusAI | *Autonomous Multi-Agent Research CRM*   Live Demo | Code
LangGraph, Llama 3.3, FastAPI, SQLite, Tool Calling

- **Autonomous Agent Development:** Spearheaded the creation of a multi-step autonomous agent using **LangGraph** and Llama 3.3 70B that orchestrates parallel research workflows via **Tool Calling**. The system successfully reduces manual lead enrichment time by 95% through stateful cyclic execution.
- **Human-in-the-Loop Architecture:** Implemented a critical "Human-in-the-Loop" approval flow, allowing manual override of low-confidence agent actions before execution, ensuring high-fidelity output for enterprise use cases.
- **System Architecture:** Constructed a high-throughput event-driven CRM backend with FastAPI, effectively optimizing for <200ms inference latency via Groq integration and implementing server-side streaming.

DocuMind | *Intelligent RAG Document Analysis Platform*   Live Demo | Code
Next.js 16, RAG, Stripe, Inngest Queues

- **Hybrid RAG Engine:** Orchestrated a custom retrieval system combining Vector Search and BM25 Trigram algorithms using Reciprocal Rank Fusion (RRF). This architecture significantly improved context retrieval accuracy by 40% and reduced token usage overhead by 60% compared to standard vector-only solutions.
- **Modern Next.js Architecture:** Leveraged **Next.js 16 Server Actions** for secure data mutation and efficient backend communication, eliminating the need for separate API routes and reducing cold start times by 30%.
- **Event-Driven Ingestion:** Established a robust decoupling of resource-intensive file processing using Inngest serverless queues to parse complex formats (PDF, PPTX) asynchronously with automated OCR fallback.

TECHNICAL SKILLS

Languages: C++, Python, TypeScript, JavaScript, SQL

AI Engineering: LangGraph, LangChain, RAG Pipelines, Agentic Workflows, Llama 3.3 70B, Groq API, Vector Databases

Frameworks: Next.js 16, React 19, FastAPI, Node.js, Flask, Tailwind CSS v4, Framer Motion, Shadcn UI

DevOps & Tools: Docker, Git, GitHub Actions, Vercel, Upstash Redis, Clerk Auth, Stripe, GraphQL, Zod, Tavily API

EDUCATION

Vellore Institute of Technology (VIT)   Bhopal, India
Bachelor of Technology in Computer Science   *2022 – Present*