MANAV CHOUDHARY

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EDUCATION

Birla Institute of Technology & Science, Pilani — Expected 2027
Bachelor of Science, Computer Science {*GPA: 8.7/10* }
Relevant Coursework : Data Structures & Algorithms, Operating Systems, Computer Networks

Kalinga Institute of Industrial Technology — Expected 2027
Bachelor of Technology, Computer Science & Engineering {*GPA: 8.5/10* } — *Bhubaneswar, India*
Relevant Coursework : Distributed Systems, DBMS, OOPs

SKILLS

Languages	C++20, Python, TypeScript, JavaScript, SQL
AI	Google GenAI SDK, Pinecone, Vector Embeddings, PyTorch, LangGraph
Web & Backend	Next.js 15, React 18/19, FastAPI, Node.js, REST APIs, Pydantic, AsyncPG, WebAssembly
Infrastructure	AWS (S3, IAM, EC2), Docker, GitHub Actions CI/CD, Redis, CMake, Emscripten
Databases	PostgreSQL, SQL Schema Design, Pinecone Vector DB
Tools & Systems	Git, Linux, std::thread / multithreading, TailwindCSS, NextAuth, JWT, Framer Motion

EXPERIENCE

Software Engineering Intern — August 2025 - Present
Internal Quality Assurance Cell, KIIT University — *Bhubaneswar*

- Rebuilt the official IQAC portal on **Next.js 15 with React Server Components**, achieving **0.4s FCP (reduced from 3.2s) and 0 ms Total Blocking Time** (Lighthouse); eliminated client-side data waterfalls via server-side rendering for 8,000 active university users *IQAC Website*
- Authored and edited institutional publications; led design and brand execution for international events and accreditation collateral spanning outreach to **30 Schools under KIIT-DU**.
- Consolidated and standardized contribution data across 30 academic departments to support KIIT's submissions for **Times Higher Education, QS World University Rankings, and NAAC / NBA accreditation cycles**.

PROJECTS

Kortex - Enterprise Data Classification & Audit Platform — Python · FastAPI · Next.js 15 · PostgreSQL · Pinecone · AWS S3 · Google GenAI *GitHub*

- Architected a decoupled full-stack platform for bulk ingestion and AI-driven classification of institutional records (research papers, patents, MoUs) against **17 UN SDGs**; backed by a normalized 6-table PostgreSQL schema with UUID PKs and cascading FK constraints.
- Built an **async classification pipeline** (FastAPI background tasks + Google GenAI SDK) that ingests CSV uploads, classifies each record with **confidence scoring (NUMERIC 5,4); *avg. classification confidence 0.91+ across internal test corpus*** , and persists results with human-override tracking in a dedicated classifications table.
- Implemented **4-role RBAC** (admin / reviewer / contributor / viewer) with dual-layer auth - NextAuth session middleware on the Next.js edge + FastAPI JWT Depends() guard; secured document storage via **AWS S3 presigned URLs** (boto3) preventing public file indexing.

BioGraphRAG - Agentic Pathway Orchestrator — Python · LangGraph · Neo4j · FastAPI · React 19 · AWS ECS

- Architected a **6-agent LangGraph orchestration pipeline** for autonomous literature synthesis, utilizing **GraphRAG** over a **Neo4j knowledge graph** to retrieve and reason over multi-hop biological networks (compound → protein → pathway) rather than flat vector chunks.
- Built an async ingestion engine to parse PubMed BioC/XML at **60+ articles/minute**, applying BioBERT Named Entity Recognition (NER) to extract 5 entity classes and 14 relationship types, scoring interaction confidence and normalizing targets to UniProt/ChEBI standards.
- Engineered a **FastAPI** backend that streams multi-step agent execution states in real-time via Server-Sent Events (SSE) to an interactive **React 19 / Cytoscape.js** frontend; provisioned the full containerized infrastructure via **AWS CDK** targeting **ECS Fargate**.

PUBLICATIONS & LEADERSHIP

- **Research Publication :** A Machine Learning-Driven Approach to Identify Phytochemical Inhibitors of the Pseudomonas aeruginosa Quorum Sensing Regulator LasR · AESPC 2025 *Read*
- **Institutional Communications :** Authored, designed, and published the university's industrial relations book, K-Kollaborations, and 3 issues of the IQAC magazine, Kommunique. *Read*
- **Cybersecurity Domain Lead, GDG KIIT :** Organized "GDG SecLabs," a 3-month bootcamp training 500+ students in network security and CTF strategies.