

MANAV CHOUDHARY

+91 8758588488 ♦ Surat/Bhubaneshwar, India
manavc.3103@gmail.com ♦ [LinkedIn](#) ♦ [Portfolio](#) ♦ [GitHub](#)

EDUCATION

Birla Institute of Technology & Science, Pilani

Bachelor of Science, Computer Science {GPA: 8.66/10}

Expected 2027

Kalinga Institute of Industrial Technology

Bachelor of Technology, Computer Science & Engineering {GPA: 8.5/10}

Expected 2027

Bhubaneswar, India

RESEARCH & PUBLICATIONS

- **A Machine Learning-Driven Approach to Identify Phytochemical Inhibitors of the *P. aeruginosa* Quorum-Sensing Regulator LasR** · IEEE AESPC 2025 — developed a **CatBoost QSAR regression model** predicting LasR–ligand binding affinity at **R² 0.52 / RMSE 1.10 kcal/mol** on held-out data, by screening a phytochemical library through molecular docking and ADMET filtering. [Read](#)
- **Network-Propagated Inhibition: From Receptor Docking to Quorum-Sensing System Collapse in *P. aeruginosa*** · Working Paper 2026 — built an end-to-end framework mapping single-receptor docking scores to system-level virulence collapse across **20,825 compound combinations**, achieving **mean Spearman 0.944** (5 seeds) with a gradient-boosted ranker over a 21-node calibrated Boolean model of the Las/Rhl/PQS circuits, outperforming affinity-only screening (Kendall τ 0.065).
- **Co-Editor & Co-Author, *The KIIT Model: Pioneering Higher Education towards the SDGs*** · Forthcoming Jun 2026 — 12-chapter institutional research volume on university contributions to the UN SDGs; ISBN 978-81-686145-2-9.

SKILLS

Languages

C++20, Python, TypeScript, JavaScript, SQL

AI & ML

CatBoost, PyTorch, Gradient Boosting, Google GenAI SDK, Pinecone, Vector Embeddings, LangGraph

Web & Backend

Next.js 15, React 18/19, FastAPI, Node.js, REST APIs, Pydantic, AsyncPG, WebAssembly

Infrastructure

AWS (S3, IAM, EC2, ECS), Docker, GitHub Actions CI/CD, Redis, CMake, Emscripten

Databases

PostgreSQL, SQL Schema Design, Pinecone Vector DB, Neo4j

Tools & Systems

Git, Linux, std::thread / multithreading, TailwindCSS, NextAuth, JWT, Framer Motion

EXPERIENCE

Software Engineering & Research Intern

Internal Quality Assurance Cell, KIIT University

August 2025 - Present

Bhubaneswar

- Rebuilt the official IQAC portal on **Next.js 15 with React Server Components**, cutting First Contentful Paint to **0.4s (from 3.2s)** at **0 ms Total Blocking Time** (Lighthouse) for 8,000 active university users, by eliminating client-side data waterfalls through server-side rendering. [IQAC Website](#)
- Trained and mentor **13 early-stage researchers across two cohorts** (8 completed, 5 ongoing high-potential candidates) in research methodology, experimental design, and SDG-aligned project execution, driving publication-oriented outputs.
- 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 - RAG-Based Institutional Impact Classification Platform — Python · FastAPI · Next.js 15 · Pinecone · PostgreSQL · Google GenAI [GitHub](#)

- Architected a **Retrieval-Augmented Generation** classification platform mapping institutional records (papers, patents, MoUs) to **17 UN SDGs and Viksit Bharat 2047 pillars**, reaching **macro-F1 0.92 (SDG) and 0.89 (national-pillar)** on 500 expert-annotated records; underpins a manuscript in preparation.
- Built an **async ingestion + Human-in-the-Loop pipeline** with confidence-threshold routing, immutable audit logging, **4-role RBAC** (NextAuth session + FastAPI JWT guards), and AWS S3 presigned-URL document security over a normalized PostgreSQL schema.

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

- Built a **6-agent LangGraph orchestration pipeline** performing **GraphRAG** over a **Neo4j knowledge graph** to reason across multi-hop biological networks (compound → protein → pathway), ingesting PubMed BioC/XML at **60+ articles/minute** with **BioBERT NER** over 5 entity and 14 relationship types normalized to UniProt/ChEBI.
- Engineered a **FastAPI** backend streaming real-time agent execution states via Server-Sent Events (SSE) to an interactive **React 19 / Cytoscape.js** frontend, deployed on **AWS ECS Fargate** via AWS CDK.

LEADERSHIP & SERVICE

- **Cybersecurity Domain Lead, GDG KIIT** : Organized "GDG SecLabs," a 3-month bootcamp training **500+ students** in network security and CTF strategies.