Aditya Tiwari

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writeupsc.app | Portfolio: portfolio-adiiii.vercel.app

Education

International Institute of Information Technology, Naya Raipur — Naya Raipur, India
B.Tech in Data Science and Artificial Intelligence — *Aug 2024 – May 2028*

- **Coursework:** Data Structures, Algorithms, DBMS, Operating Systems, Machine Learning, Probability and Statistics, SQL

Experience

Research Intern — May 2026 – Aug 2026
University of Messina – Prof. Antonio Puliafito — *GitHub*

- Built a **leakage-aware ML pipeline** (scikit-learn: logistic regression, random forest, gradient boosting) to predict **outpatient waiting-time breaches**, using chronological train/validation/test splits; reached **0.98 ROC-AUC** and **0.93 F1** on held-out data from a 39K-request simulated hospital system.
- Modelled 5 specialty queues as a **SimPy discrete-event simulation** and a **Gymnasium** environment for a **PPO reinforcement-learning** agent (Stable-Baselines3); risk-guided allocation of 100 extra slots prevented **∼23% more breaches** than equal allocation.
- Added probability calibration (Brier, ECE), subgroup **fairness audits**, feature ablation and a 45-run sensitivity study; shipped a **Streamlit** dashboard, backed by **89 automated tests**.

Research Intern — Jan 2025 – Jun 2025
RootVestors

- Analysed the EdTech market (user needs, competitor products, AI-enabled learning trends) and turned findings into product insights that shaped feature planning and user research.

Projects

ContribOS | *Python, SQLite, Git, MCP, Anthropic / OpenAI APIs, CLI* — GitHub

- Built an open-source **CLI and Model Context Protocol (MCP) server** with **11 commands** and **9 MCP tools** that guides first-time open-source contributors from issue discovery to a merge-ready **pull request**, without auto-posting on their behalf.
- Designed a **SQLite precedent index** of past merged PRs that recommends files, tests and likely review questions; scored **0.77 hit@5** on Flask history vs. a 0.73 grep-only baseline.
- Added repo-policy parsing with file/line citations, CI-derived setup diagnosis and a pre-submit check that runs tests with and without the change; zero runtime dependencies, covered by **40 unit tests**.

WriteUPSC – AI Answer Evaluation Platform | *Python, FastAPI, React, RAG, OpenAI Embeddings, Vision OCR* — Live

- Took the product from idea to **live launch with 800+ users** practising daily UPSC answer writing; owned the evaluation pipeline, **FastAPI** backend, **React** web app and deployment.
- Built a **retrieval-augmented generation (RAG)** pipeline: text-embedding-3-small embeddings, cosine-similarity **vector search**, top-20 retrieval reranked to a top-5 evidence bundle, grounding every evaluation in **5,497 real topper answers from 122 toppers**.
- Used a **vision model** to extract question, structure and length from photographed handwritten answer sheets.

Praman Setu – AI Evidence Assistant for Govt. Officers | *Python, FastAPI, Splink, React, Vite* — GitHub

- **Winner, Sewa Setu Innovation Hackathon** (Govt. of Chhattisgarh / CHiPS with IIIT-NR). Targeted caste certificates: **22%** of 53.9 lakh applications but **61%** of 3.64 lakh rejections.
- Built **probabilistic record linkage** (Splink, Fellegi-Sunter) across spellings and scripts to surface a relative's earlier certificate as evidence; **0.89 precision** on held-out data, **80 passing tests**, human-in-the-loop officer review.

Technical Skills

Languages: Python, C++, JavaScript, SQL
GenAI / LLMs: RAG, LangChain, LangGraph, LLM Tool Calling, MCP, Prompt Engineering, OpenAI API, Gemini API, FAISS, ChromaDB, RAGAS
ML / Data: scikit-learn, XGBoost, LightGBM, Pandas, NumPy, Feature Engineering, Cross-Validation, ROC-AUC, Splink, Reinforcement Learning (PPO, Gymnasium, Stable-Baselines3), SimPy, Streamlit
CV / OCR: OpenCV, EasyOCR, Tesseract, Document Parsing
Backend & Tools: FastAPI, Flask, Node.js, Express.js, React, REST APIs, SQLite, Prisma, Kubernetes, Git, GitHub
CS Fundamentals: Data Structures, Algorithms, OOP, DBMS, Operating Systems

Achievements

Hackathons (2 wins): Winner, Sewa Setu Innovation Hackathon 2026 (Govt. of Chhattisgarh / CHiPS) – Praman Setu; **1st Prize**, E-Summit 2026 Hackathon (IIIT Naya Raipur) – CSC AI Copilot, an OCR + Gemini validator automating checks across 40+ govt. service workflows
Leadership: College Cultural Secretary, IIIT Naya Raipur (500+ students; coordinated Hack-a-Sol 4.0); Organizing Team, ICISS 2026 and MUN 2026