Sourav Singh

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Education

Birla Institute of Technology, Mesra **Dec 2021 – Jun 2026**
IMsc in **Mathematics and Computing** (CGPA 7.8) Ranchi, Jharkhand

Technical Skills

Languages: C++, Python, Java, JavaScript

Tools: Git, GitHub, GitHub Actions, AWS-EC2, REST APIs, Splunk, GCP, Claude Code

Technologies/Frameworks: React.js, TypeScript, Node.js, PostgreSQL, MongoDB, Docker, Kubernetes, ASP.NET Core, Zod, Vitest

AI/ML: Kaggle, Hugging Face, MCP, Multi-Agent Orchestration, RAG, NLP, Langchain, Machine Learning, Deep Learning

Academic Courseworks: OOPs, Operating System, Design Patterns, DSA, Computer Networking, DBMS

Experience

Software Development Engineer Intern **Jan 2026 – Jul 2026**
UKG (Ultimate Kronos Group) Pune, Onsite

- Resolved **6+** production defects across UKG Pro Recruiting's multi-tenant **SaaS** platform, fixing offer-letter PDF rendering, duplicate offer prevention, search re-indexing, **iText8** workflows, and **MongoDB** aggregates.
- Delivered **14+** merged PRs on production code, engineered 80+ end-to-end UI tests using **C#/NUnit**, and contributed to migration of legacy Knockout.js templates to **React.js** while improving **WCAG/ARIA** accessibility.

Backend Developer Intern **May 2025 – Jul 2025**
Go Quant US, Remote

- Designed a **cryptocurrency** exchange gateway by integrating **Bitget** exchange using **C++ WebSocket APIs**, enabling real-time market data streaming and order execution across **750+** trading pairs for institutional clients.
- Optimized low-latency trading infrastructure with **SIMDJSON**-based market data codecs and an order management system, achieving **0.5** ms per-message processing latency while reducing parsing overhead.

AI-ML Intern **Jun 2024 – Jul 2024**
Tata Motors Jamshedpur, Onsite

- Developed an **LSTM**-based fleet optimization engine delivering 16% efficiency improvement and 12% cost reduction under carbon-emission compliance constraints.
- Collaborated with a team of 2 members to integrate vehicle, fuel, and cost datasets, improving **decision-making** accuracy by 15% and aligning analytical outputs with **supply-chain** requirements.

Data Analyst Intern **May 2023 – Jul 2023**
Tata Steel Jamshedpur, Onsite

- Built a Python-based **ETL** pipeline using **pandas** and **SQL** to ingest, clean, and engineer blast-furnace sensor and operational data, improving data consistency and enabling 3× faster analytical workflows.
- Implemented predictive-maintenance models using **Random Forest** and **Logistic Regression**, achieving 87% accuracy in failure detection and supporting furnace maintenance decisions.

Projects

Custodian | Python, FastAPI, Docker, ACME (RFC 8555), X.509, Pytest | **Source Code** **Aug 2026**

- Architected a **TLS** certificate lifecycle service implementing **ACME (RFC 8555)** from the specification, issuing real certificates through **JWS**-signed requests and HTTP-01 domain validation against Let's Encrypt's **Pebble** CA.
- Built a two-pass **TLS** probe that reads expired and self-signed certificates a verifying handshake rejects, feeding a deterministic **X.509** risk engine that scores expiry urgency and hygiene independently; **118 tests**, **84%** coverage.

MCP-X | TypeScript, Node.js, MCP SDK, Zod, Gemini, Vitest | **Source Code** **May 2025**

- Constructed a **multi-agent orchestrator** compiling natural-language goals into a **Zod**-validated task **DAG**, dispatching topological waves concurrently to capability-scoped **MCP** specialists with runtime-enforced tool ownership.
- Engineered **bounded replanning** over an **append-only event log** with derived state, so **JSONL** replay reuses the live execution path; scored on 15 golden scenarios; **391 tests**, **98.7%** coverage.

Achievements

- Ranked under **Top 50** in Unstop Talent Park for engineering a personalized job recommendation platform.
- Excelled at Machine Learning Specialization training at Tata Steel and ukg-ai-coach training on **Claude Code**.