Sahil Mangla

Software Engineer · Backend Systems · Open Source Contributor

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Summary

Computer Engineering student with production experience building backend systems, database infrastructure, and scalable APIs. Merged a correctness fix into PyTorch's MPS backend and diagnosed a call-graph bug in a 33K+ star developer tool. Comfortable across the stack – from PostgreSQL internals and FastAPI services to designing extensible, adapter-based platform architectures.

Education

Thapar Institute of Engineering & Technology — Patiala, India

B.E. in Computer Engineering — *2024 - 2028* | *CGPA: 8.32*

Experience

DCM Infotech Pvt. Ltd. — Hybrid

Database Intern — *Jun 2026 – Jul 2026*

- Built a **Database Auditing & Backup Verification System** using **PostgreSQL, PL/pgSQL, Python, and Docker**, automating audit logging and **checksum-based** backup integrity verification for production database workflows.
- Developed a modular **SQL Server Database Health Dashboard** for production monitoring, using DMVs and Extended Events to track fragmentation, storage, and deadlock telemetry through reusable T-SQL views and a configuration-driven telemetry pipeline.

Open Source Contributions

PyTorch — PR #190481 – Merged

C++, Metal (GPU Kernels), MPS Backend

- Diagnosed and fixed a correctness bug where `torch.nextafter` silently returned its input unchanged for **bfloat16** on Apple's MPS backend; implemented a bitwise stepping kernel fix, merged into `pytorch/pytorch` **main**.

codebase-memory-mcp — 33K+ Stars

Static Analysis, Call Graph Resolution

- Diagnosed a false-positive recursion-detection bug in the **call-graph resolver** of a widely-used code-intelligence tool, eliminating **2,056 spurious CALLS edges** with all 14 recursive functions kept; reworked as PR 1128, merged.

Projects

TraffiTwin AI – Self-Healing Traffic Digital Twin — **GitHub** | **Live Demo**

Python, LightGBM, Google ADK, Spatio-Temporal Forecasting

- Designed a self-healing pipeline (health monitoring, LightGBM reconstruction agent, digital-twin state) that **reconstructs 97% of failed-sensor readings** at **40% simulated failures**, plus a **Google ADK** analyst agent.
- Benchmarked a spatio-temporal **LightGBM** model on the real-world **METR-LA** dataset, achieving **2.48 mph MAE / 6.06% MAPE** – a **78.55% average improvement** over a historical-mean baseline.

Atlas – AI-Native Engineering Operating System — **GitHub** *(In Active Development)*

Python, Pydantic, Model Context Protocol (MCP), Multi-Provider AI Orchestration

- Designed a **layered platform architecture** — capability layer, versioned contracts, adapter protocol, and a uniform `Atlas.handle()` envelope-dispatch entry point — spanning **6 declared client-adapter kinds** (CLI, IDE, MCP, AI, REST, Desktop), with CLI implemented and live today.
- Built a **request-observability and evaluation layer** — contextvar-based latency/token/capability tracing with zero overhead when disabled, a **22-task benchmark suite**, and automated regression detection — achieving a **100% pass rate** end-to-end against a local LLM (**Ollama qwen2.5-coder:7b**, zero mocking); caught a real live regression during validation and shipped fixes for **2 production bugs** found via real-model testing that unit tests alone had missed.

Technical Skills

Languages: Python, C++, JavaScript, SQL

Backend & Databases: FastAPI, REST APIs, Next.js, PostgreSQL, Oracle Database, PL/pgSQL, Database Design & Auditing

Systems & Engineering Practices: Static Analysis, Call Graph Resolution, Git, GitHub Actions (CI/CD), Code Review, Open Source Contribution

Additional: Docker, MLflow, LightGBM, Scikit-learn, Data Pipelines

Achievements

2nd Runner Up — Bharatiya Antariksh Hackathon (ISRO) — NRSC Hyderabad, 2026

- Advanced from **15,000+ registered teams** to the **Top 30** national finalists; secured **2nd Runner-Up** at ISRO's **30hrs** national space-tech innovation hackathon.

Winner — International AI For Sustainability — Dubai, UAE, 2026

- Led a team that secured **1st place** among **200+ international teams** for an end-to-end AI sustainability solution.

Top 100 — Google AI Agent Builder — Google Office, Bengaluru, 2026

- Ranked in the national **Top 100** on the leaderboard among AI agent builders across India, earning a seat at the Google Office Grand Finale Hackathon.