

# Ankit Sinha

Backend Developer | TypeScript, Node.js, PostgreSQL | Open Source

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## Education

**Maharaja Agrasen Institute of Technology**

New Delhi

B.Tech in Information Technology — CGPA: 7.69/10.0

Sept 2023 – June 2027

## Technical Skills

**Languages:** Python, TypeScript, JavaScript, SQL

**Backend:** Node.js, Express.js, FastAPI, REST API Design, Zod, Pydantic, JWT, AuthN/AuthZ

**AI & Evaluation:** FastMCP, Tool Calling, Structured Outputs, Multi-turn Evaluation, LLM-as-Judge

**Data & Infrastructure:** PostgreSQL, Redis, Drizzle ORM, Supabase Storage, Docker Compose, Render

**Async & Observability:** BullMQ (Message Queues), Workers, JSON Logging, Health Checks

**Reliability & Security:** Transactions, Row Locking, Idempotency, Retries, Argon2, Rate Limiting

**Testing & Tooling:** pytest, Vitest, node:test, Integration Testing, CI/CD (GitHub Actions), Docker, Git

## Open-Source Contributions

**Faker.js — Merged PR #4020, v11.0 Milestone**

TypeScript, Vitest, CI/CD

- Decoupled `romanNumeral` parameterized tests from internal `faker.number.int` spies using public `{min, max}` inputs.
- Improved regression-test maintainability while preserving 98.98% project coverage across CI.

**Agenta - Merged PR #6453**

Python, pytest

- Fixed Python SDK URL parsing to default schemeless `AGENTA_API_URL` values to `http://`, preventing malformed OTLP trace endpoints.
- Added 7 unit tests covering scheme defaults, localhost/network modes, HTTPS URLs, and trailing slashes.

## Projects

**AgentTrace — Multi-Turn LLM Agent Evaluation Harness**

- Python, FastAPI, FastMCP, Pydantic, LLM Evaluation, Tool Calling
- Built a model-agnostic harness with scripted personas, reproducible scenarios, complete trajectories, and structured results.
- Exposed mock CRM, lead qualification, pricing, and scheduling tools via FastMCP and FastAPI workflows.
- Combined deterministic, state-based, and LLM-assisted graders for task success, tool use, and conversation constraints.
- Added red-team scenarios for prompt-injection data export and destructive database wipe; reports pass rate, tool calls, and latency. Suite: 6 scenarios (2 red-team) and 27 pytest tests.

**GateKeep — Encrypted Content-Sharing App — GitHub — Live**

- TypeScript, Node.js, Express.js, PostgreSQL, Drizzle ORM, Supabase Storage, Docker Compose, Render
- Built and deployed an encrypted notes app with JWT sessions, private uploads, and a browser UI.
- Created expiring, passphrase-protected links with atomic read limits and burn-on-read behavior.
- Secured note content with AES-256-GCM and Supabase files with short-lived signed URLs.
- Added analytics, HMAC webhooks with retries, rate limits, and 28 unit/E2E tests plus integration tests.

**IdleForge — Idle-Game Economy Backend — GitHub**

- TypeScript, Node.js, Express.js, PostgreSQL, Drizzle ORM, Redis, BullMQ, Docker Compose
- Built atomic offline collection and transactional upgrades with guarded SQL and row locks to prevent double credit or spend.
- Added persisted idempotency for client retries and duplicate-delivery protection for BullMQ scheduled events.
- Built a Redis sorted-set leaderboard reconciled from PostgreSQL, with defined behavior during Redis outages.
- Designed separate API and workers; added correlation logs, health checks, and graceful shutdown.
- Load-tested authenticated reads at 10 concurrent (p95 114 ms on `/player/me`, 33 ms on `/leaderboard`, 0 errors, ~246 req/s mixed); CI runs typecheck, build, Docker build, and Postgres/Redis services.

## Achievements & Recognition

**Winner — GenAI Track, Code Kshetra 2.0** — Led backend development for the winning application.

**Pre-Finalist** — BVP HEX Hackathon and HackWithMAIT 6.0.