Arnav Shukla

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Summary

Full-stack and applied-AI engineer building production-grade systems, from row-level-secured healthcare platforms to autonomous, fault-tolerant AI agents and resource-constrained ML pipelines. End-to-end system development: database design, backend APIs, and deployment. Benchmarks performance, latency, memory, and security.

Technical Skills

Languages	Python, Java, C/C++, JavaScript, TypeScript, SQL
Frontend	React, Next.js, Vue.js, HTML5, CSS3, Tailwind CSS, Zod
Backend	FastAPI, Flask, Django, Node.js, REST APIs, WebSockets
Databases	PostgreSQL, MySQL, SQLite, Redis, Supabase, PostGIS, SQLAlchemy, Row-Level Security (RLS)
Cloud / DevOps	AWS (Cloud Fundamentals), Docker, Docker Compose, Vercel, Render
AI / ML	Gemini, Groq, Ollama, scikit-learn, Whisper, spaCy, Prompt Engineering, RAG, MCP
Developer Tools	Git, GitHub, Postman, Playwright, VS Code, Figma

Projects

Rural Healthcare Platform | *Next.js, TypeScript, Supabase, PostgreSQL, PostGIS, Gemini* | Github · Live
- Engineered a multilingual telehealth platform with Row-Level Security across **15 PostgreSQL tables**, server-authoritative role derivation, and user-scoped data isolation to protect patient records
- Optimized PostGIS `ST_DWithin` proximity search across **10,742 healthcare facilities** using a GiST spatial index, achieving **274ms average query latency** (P95: 558ms); integrated Gemini-powered medical triage and teleconsultation
- Architected **22 rate-limited REST API routes** and **8 domain services**; implemented automated CI quality gates and **176 passing unit/integration tests** across 23 suites, with enforced code-size and migration-integrity checks

Eco-Loop: Autonomous Building AI | *FastAPI, React, Ollama/Qwen2.5, FastMCP* | Github Honeywell Hackathon
- Developed a Qwen2.5 (1.5B)-powered HVAC agent that reduced simulated energy use by **50%** while maintaining ASHRAE 55 comfort across 5 office zones
- Exposed a **9-tool** MCP server (avg **0.006ms** execution) so any MCP-compliant AI client can use the simulated building
- Built a fault-tolerant control loop with automatic rule-based fallback, sustaining **100% uptime with zero crashes** across 30 injected disconnect, timeout, and malformed-response failures, streamed over WebSockets to React dashboard

TalentMatch AI v2 | *Python, FastAPI, C++, sentence-transformers, Docker* | Github · Live
- Architected a resume-scoring pipeline combining a custom-compiled C++ scoring engine with sentence-transformer embeddings (`all-MiniLM-L6-v2`), averaging 4.7s end-to-end inference (PDF parse + embedding + scoring) under load
- Engineered a multi-stage Docker pipeline that compiles the C++ engine and pre-bakes the ML model at build, eliminating cold-start model downloads; hardened with fully environment-isolated secrets and error handling on malformed uploads
- Shipped a Web extension that extracts job descriptions from any page and feeds them directly into the scoring pipeline

CampusCart: Multi-Vendor Campus Marketplace | *Python, Flask, SQLAlchemy, SQLite* | Github · Live
- Engineered a multi-tenant marketplace across **3 roles** (Student, Vendor, Admin) using Flask Blueprints, with catalog queries executing in **under 1ms** and **0% error rate** across benchmark testing
- Designed a relational schema with strict foreign-key constraints, Bcrypt-hashed authentication, role-based access decorators, and a simulated campus wallet, running on **under 85MB RAM**

Education

Vellore Institute of Technology - Bhopal — May 2027
Bachelor of Technology, Computer Science and Engineering; CGPA: 8.6 — *Bhopal, MP, India*
- Relevant Coursework: DSA, OOP, OS, DBMS, Computer Networks

Higher Secondary (M.P. Board) – 83.4% — May 2023

Secondary (CBSE) – 94.33% — May 2021

Certifications

- **Oracle Certified Foundations Associate – Agentic AI** — *Aug 2026*
- **ServiceNow Virtual Internship Program** – ServiceNow University, AICTE, SmartBridge — *Jul 2026*
- **AWS Academy Graduate – Cloud Architecting** (60 hrs) — *Jun 2026*
- **Machine Learning** – NPTEL/IIT Madras | **Marketing Analytics** – NPTEL/IIT Kharagpur — *2025–26*
- **AI Knowledge Challenge**(Winner) – IBM Call for Code | **Computer Networking** – Coursera/Google — *2024*

Extracurricular Activities

- Contested for Honeywell Hackathon (Eco-Loop) round 1; pitched HealthSeva AI at Smart India Hackathon 2025 (college round); active participant in VIT Bhopal tech fest