

# SHAURYA PUNJ

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## Experience

**Element 8** | *Co-founder & CTO, Technical Lead* 2026 – Present

- Own the ESP32 firmware (sensor manager, ring buffer, watchdog, OTA) for a premium AI air-purifier.
- Built a FastAPI serverless backend on Vercel & Supabase authenticating every ESP32 via hashed API keys.

**Collab47** | *Co-founder & CTO* 2026 – Present

- Lead architecture and engineering for an India-first professional network; scoped a **15-feature** MVP.

**Dr. B.R. Ambedkar NIT Jalandhar** | *Winter Research Intern* Dec 2025 – Jan 2026

- Delivered NyayaSetu, an offline-first multilingual AI governance platform, under Dr. Vijay Kumar.
- Engineered a FastAPI + RAG/FAISS backend (**80+** endpoints) with voice AI across **12** Indian languages.

**Thapar Institute of Engineering and Technology** | *Project ML Engineer* 2024 – 2025

- Designed an end-to-end ML pipeline for non-invasive glucose monitoring (microwave S-parameters, CatBoost).
- Built a real-time React dashboard hitting **95% accuracy** on **10,000+** samples with sub-second feedback.

## Projects

**DOMINION** | Real-Time Authoritative Multiplayer Platform GitHub

- A server-authoritative online multiplayer board game with a deterministic, replayable engine.
- Engineered an authoritative Fastify + Socket.IO server (**72** tiles) on a deterministic seeded-RNG engine.
- Architected Postgres snapshots every **25 actions** for full replay, secured with Zod, rate limits, and HMAC.

**SupplyMind** | OpenEnv Agentic RL Environment GitHub

- An OpenEnv RL environment where a trained LLM agent forecasts supply-chain risk (*Meta Grand Finalist*).
- Built an OpenEnv RL environment modeling supply-chain risk from **20** live data feeds in sub-**90s**.
- Hardened a PPO/DPO/GRPO reward against 6 hacking vectors, **257/257** blocked at Cohen d +**4.77**.

**Deflated Alpha** | Reproducible Quant Research Infrastructure GitHub

- Quant research infrastructure that backtests strategies and stress-tests them for overfitting.
- Shipped a walk-forward backtest engine (**252/21** split) with a 26-feature LightGBM signal on the S&P 500.
- Implemented Deflated Sharpe and CSCV overfitting tests, exposing survivorship bias (**1.73** to **1.11**).

**APEX** | Real-Time Formula 1 Data Platform GitHub

- A real-time Formula 1 platform: schedule, results, drivers, and live timing across every season since 1950.
- Developed a Next.js 15 + Turborepo monorepo shipping **13** routes with strict TypeScript.
- Designed OpenF1 polling workers on Fly.io for sub-**2-second** live timing over a Supabase + Drizzle archive.

## Skills

**Languages:** Python, TypeScript, JavaScript, SQL, C/C++, Bash

**Backend & Data:** FastAPI, Node.js, Fastify, Flask, REST, WebSocket, PostgreSQL, TimescaleDB, Redis, MongoDB, SQLite, Supabase, MQTT

**ML & AI:** PyTorch, TensorFlow Lite, Scikit-learn, LightGBM, CatBoost, Pandas, NumPy, OpenCV, LLMs, RAG, FAISS, Edge AI / TinyML, Ollama, Groq

**Frontend:** React, Next.js, Tailwind, Three.js, GSAP, Framer Motion

**DevOps & Tools:** Docker, Git, CI/CD, Linux, Vercel, Fly.io, Railway, Turborepo, Drizzle, Meilisearch, pytest, Vitest

## Education

**Thapar Institute of Engineering and Technology** 2023 – 2027

B.Tech in Electronics & Communication Engineering

**CGPA: 8.47 / 10**

Minor in Computer Science

## Achievements & Certifications

- Meta PyTorch OpenEnv Hackathon, Grand Finalist:** Top 1% of **52,000+** developers (Scaler, Bangalore).
- Google The Big Code 2026, Top 1,500 of 15,000;** advanced to Round 2 of the flagship contest.
- IEEE EAIC 2025, Two Accepted Papers** (glucose monitoring oral, breast-tumor poster); patent under review.
- Qualcomm Edge AI Finalist** (SolarSage) and **International Agentic-AI Hackathon Winner**.
- TIET Merit Scholarship**, Top **10%** of cohort; **INR 1 Lakh** biomedical-AI research funding.