

Abhiraj Singh

[LinkedIn](#) • [GitHub](#) • [Portfolio](#) • itsabhiraj27@gmail.com • +91 7439272007

EDUCATION

Bachelor of Technology (B.Tech CSE - AI/ML Specialisation)

Polaris School of Technology

2025 - 2029
Merit Scholar - ₹7,00,000 Scholarship + MacBook Pro

Class XII - CBSE

Army Public School, Barrackpore, West Bengal

2024 - 2025
91% | CS: 97%

Class X - CBSE

Air Force Bal Bharati School, Lodhi Road, New Delhi

2022 - 2023
92% | CS: 97%

EXPERIENCE

AI Engineering Intern

Aatra

Jul 2026 - Sept 2026
Remote

- Built a production system that monitors tax-law changes across all 50 US states for SaaS companies, tracking rate changes, taxability shifts, and nexus updates
- Designed a flexible multi-category data model and Postgres schema (jurisdiction, tax category, rate, change event) supporting per-state data adapters
- Implemented diff-based change detection to classify each change (rate up/down, taxability flip, new tax, rescission) before it reaches the customer-facing report

Open Source Contributor

Multiple Organisations

2025 - Present
Remote

- Active contributor to multiple international open-source projects, including Learning Equality, Kiwix, CircuitVerse, Learning Unlimited, and krkn, working on bug fixes, feature improvements, refactoring, and migrations across Python, JavaScript, TypeScript, Vue.js, and other codebases, and collaborating with maintainers through code reviews and PR discussions on large-scale production code

PROJECTS

SaaS Support Agent

2026

- Built an agentic tool-calling support agent (FastAPI, PostgreSQL, Gemini, Docker) that routes customer queries across 5 tools over a bounded orchestration loop and maintains conversation context across turns
- Designed a code-enforced spend gate that blocks payment retries until a separate confirmation turn, enforced in code, not the prompt
- Injected customer identity server-side to resist prompt injection, with Pydantic-validated tool args and a JSONB audit trail of every action

108 EMS - Voice PCR

2026

- Built a voice-first patient care report (PCR) prototype that converts Hinglish and English ambulance handoffs into editable, structured PCR data using Groq Whisper for speech-to-text
- Added AI uncertainty flags to surface low-confidence fields, plus saved drafts and one-click JSON export for downstream systems
- Built with React 19 + TypeScript + Tailwind CSS frontend, FastAPI backend, Groq Whisper + Groq Llama 3.3 70B

DebugX - AI-Powered Coding Practice Platform

2026

- Built a full-stack coding practice platform (Next.js 14, FastAPI, Neon PostgreSQL, Firebase Auth) with real-time code execution, test judging, and AI feedback on every submission
- Built a line-by-line Python execution visualiser (sys.settrace in a sandboxed subprocess), plus streaks, heatmaps, and bookmarks

BTC Next-Hour Predictor

2026

- Built a Bitcoin price prediction system using Geometric Brownian Motion with FIGARCH(1,1) conditional volatility and Student-t shocks for fat-tail modelling
- Ran 10,000 Monte Carlo simulations per prediction; achieved 95.1% coverage across a 720-prediction, 30-day rolling backtest evaluated with Winkler score
- Deployed a live Streamlit dashboard with prediction persistence, candlestick visualisation, and hit/miss tracking via the Binance public API

Chain Lens - Bitcoin Protocol Analyzer

2026

- Full-stack tool that decodes raw Bitcoin transactions and block files into structured JSON reports with SegWit parsing, address derivation, and fee analysis
- Built with Python and Flask, featuring an interactive dark-mode web visualiser

SKILLS

Languages: Python, Go, JavaScript, TypeScript, SQL

AI & LLMs: LLM Integration, Agentic Tool Calling, Structured Outputs (Pydantic), Prompt Injection Mitigation, Speech-to-Text Pipelines

ML & Data: NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, Monte Carlo Simulation, Time Series Analysis

Frontend: React, Next.js, Vue.js, Tailwind CSS, Streamlit, Chart.js

Backend: FastAPI, Django, Flask, Node.js, Express.js, SQLAlchemy, REST APIs

Databases: PostgreSQL, MySQL, SQLite, MongoDB, Firebase

Tools: Git, GitHub, Docker, pytest, Vercel, Render, Postman

EXTRA-CURRICULAR ACTIVITIES

- School Captain, Army Public School, Barrackpore**, led student council and coordinated school-wide events, workshops, and cultural campaigns
- Stray Dogs Welfare Initiative**, organised vaccination drives and community education programs for animal welfare