

Pranjal Sailwal

CS graduate, 2026 | Dehradun, India

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SUMMARY

I build products end to end: from the question worth asking to the thing that ships. Heading toward technical product and programme work, plus the consulting and implementation roles next to it.

EDUCATION

Graphic Era Hill University, B.Tech, Computer Science & Engineering

Jul 2022 - Jul 2026

Provisional certificate issued July 2026; the degree is awarded at the next convocation.

CGPA 7.36/10 over eight semesters, 185 credits earned, every subject passed.

Coursework: Data Structures and Algorithms, Database Management Systems, Operating Systems, Computer Networks, Software Engineering.

EXPERIENCE

Python Programming Internship, Yantra Byte

Jan 2026 - Apr 2026

- Completed a Python programming internship of 3 months. The certificate states the duration and a completion date of 1 April 2026.

PROJECTS

Growth Intelligence Lab | Python, FastAPI, JavaScript, HTML, Render, Vercel

2026

- Found that 98.1% of the cost increase happened after the click, using a three-factor bridge (CPM, CTR, conversion) with no reconciliation residual, on a campaign that spent 19.2x more.
- Built the analysis, backend API and dashboard on 100% public data, with 44 tests, segment fragility checks, z-tests with confidence intervals and a prioritised backlog of five experiments.

AetherScan | FastAPI, Python 3.11, SQLAlchemy, NumPy, HTTPX, Next.js 14, TypeScript, SQLite

2026

- Built the async FastAPI backend (53 route handlers) that pulls from 11 documented air-quality data sources through HTTPX.
- Scored every reading for freshness, distance, sensor type and validity, and combined sources with a confidence that falls as they disagree; a missing value shows as unavailable, never as a guess.
- Wrote the data-quality method, the source registry and a limitations file that states what the platform cannot do. Four-person team.

Appwrite Migration Guard | Go, GitHub Actions, Appwrite

2026

- Built amg, a Go command-line tool that inventories an Appwrite project and reports PASS, WARN or BLOCK with a reason for every finding; 8 commands run against live Appwrite Cloud.
- Caught 11 of 11 planted changes in a live regression pass with no false positives, and made it never collect passwords, emails or environment variables, which a test checks.

NitroDB | Java, Shell scripting

2026

- Built a single-node embedded key-value store in Java 21: write-ahead log, SSTables, leveled compaction, crash recovery and snapshot-isolated reads (MVCC).
- Verified it with 68 unit and integration tests and 42 JCTest stress concurrency outcomes with none failing; benchmarked with JMH.
- Wrote the design before the code and a claim-by-claim verification matrix after it, and documented the limits: one node, no replication, no compression.

NeuroTract | Python, FastAPI, Next.js, TypeScript, Three.js

2026

- Built a web workstation for diffusion MRI: dataset validation, preprocessing, tensor and fibre fitting, probabilistic tractography and connectome graph metrics, on a FastAPI back end with a Next.js and Three.js viewer.
- Streamed job progress live with server-sent events and stored checksums, parameters, the random seed and software versions beside every result so a run can be reproduced; 31 pytest tests.

Geodesic Flow and Spectro-Geodesic Explorer | C++, WebAssembly, JavaScript, HTML

2025

- Built a WebAssembly engine in C++ that computes geodesic flow, Christoffel symbols and curvature on parametric surfaces in real time, with 4th-order Runge-Kutta integration and adaptive stepping.
- Built a second explorer that couples wavelength-dependent refraction to curvature across 10 surfaces and 12 wavelengths, and published 2 preprints on ResearchGate.

Also built: SyncState; Spectral Monte Carlo Path Tracer; SecureHost Control Suite. All public on github.com/sailwalpranjal.

PUBLICATIONS (RESEARCHGATE PREPRINTS)

- AetherScan: A Quantum-Classical Hybrid Platform for Heterogeneous Air Quality Sensor Fusion and Real-Time Environmental Intelligence (2026).
- Implementation and Performance Analysis of a Spectral Monte Carlo Path Tracer with Physical Optics Simulation and Adaptive Variance Reduction (2025).
- Geodesic Flow Computation on Parametric Surfaces via WebAssembly: A Differential Geometry Engine with Adaptive Numerical Integration (2025).
- Wavelength-Resolved Geodesic Propagation on Parametric Surfaces: Coupling Differential Geometry with Spectral Dispersion (2025).

TECHNICAL SKILLS

FastAPI, Python, SQLAlchemy, NumPy, HTTPX, Next.js, TypeScript, SQLite, Java, Shell scripting, React, Yjs, WebRTC, Supabase, Clerk, C++, BVH acceleration, Monte Carlo integration, Spectral rendering, Three.js, Go, GitHub Actions, Appwrite, JavaScript, HTML, Render, Vercel, WebAssembly, C#, .NET, WPF, PowerShell.

CERTIFICATIONS

71 certificates, each with a credential ID, including Career Essentials in Project Management (Microsoft) and Managing Project Stakeholders (LinkedIn Learning).