

# Yash Agarwal

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## EDUCATION

### Graphic Era Hill University

B.Tech. in Computer Science & Engineering; Honors in ML & AI

Uttarakhand, India

Aug 2023 – July 2027

## EXPERIENCE

### Full-Stack / Product Engineer

Graphic Era Hill University (Campus Deployment)

Aug 2025 – Present

Dehradun, India

- Led the system architecture and operational deployment of a production portal engineered for high availability and horizontal scaling to support 1,600+ users with planned scale to 4,000 users; focused on stateless service patterns and efficient data partitioning.
- Architected Firestore data model with role-based access control, atomic transactions, composite indexes, and strict security rules; authored test suites using the Firestore emulator to validate rules and transactions.

### Software Engineering Intern (IoT & Full-Stack)

May 2025 – Nov 2025

DataCulture Technologies Pvt. Ltd.

Remote

- Engineered an end-to-end IoT irrigation system spanning embedded C++ firmware, reliable cloud ingestion, and a Next.js dashboard; implemented token-based authentication and deterministic retry/backoff to ensure resilient telemetry ingestion.
- Designed REST and WebSocket APIs for live telemetry and control, implemented client-side buffering and idempotent ingestion to tolerate intermittent connectivity, and established CI checks and integration tests for core flows.
- Defined deterministic, state-driven control logic for hardware fault handling and safety interlocks; co-authored a patent application for the system architecture and remote control methodology.

### Full Stack Developer Intern (Part-Time)

May 2025 – July 2025

Arterns Technologies Pvt. Ltd.

Remote

- Delivered production frontends with performance and accessibility in mind using Next.js and Tailwind; implemented server-side rendering and client hydration strategies to improve perceived load times.
- Built a horizontally scalable real-time chat system using Socket.io and Firebase, with message ordering, reconnection handling, and backpressure controls to maintain correctness under load.
- Managed end-to-end delivery including automated deployments on Vercel, lightweight backend integrations, and consistent authentication flows verified through integration tests.

## PROJECTS

### Interactive 3D Portfolio | React, Three.js, Spring Boot, MongoDB

Feb 2025 – May 2025

- Developed an immersive 3D experience using Three.js, optimizing scene graph design, GPU instancing, and texture atlasing to reduce draw calls and frame stalls.
- Designed a Spring Boot REST API backend with JWT-secured CRUD operations and rate-limited endpoints; structured APIs for predictable latency under client load.
- Optimized asset orchestration, lazy loading, and startup sequencing to improve initial render times and overall runtime performance.

### Real-time Community Finance Tracker | React PWA, Firestore, Tailwind

Oct 2025 – Present

- Built an offline-first Progressive Web App using service workers and local persistence to ensure reliable writes while offline and correct sync on reconnect.
- Designed Firestore data model and security rules to enforce RBAC and ensure idempotent ledger entries; implemented transactions and optimistic concurrency control for consistent financial state.
- Implemented an in-browser SheetJS export engine and automated reporting tools to produce auditable monthly reports and to simplify reconciliations.

## TECHNICAL SKILLS

**Languages:** JavaScript (ES6+), TypeScript, Python, Java, C++, SQL

**Frontend:** React, Next.js, Tailwind CSS, Three.js, Vite

**Backend & Cloud:** Node.js, Express, Spring Boot, Firebase (Auth/Firestore), MongoDB, Redis, Docker

**Tools:** Git, GitHub Actions, Docker Compose, Selenium, PlatformIO, Postman