

AARYAN BAIRAGI

☎ +919850088559 ✉ aaryanbairagi1108@gmail.com 🌐 GitHub 🔗 LinkedIn 📖 Leetcode 📍 Pune, India

WORK EXPERIENCES

Software Engineering Intern | Internship

Jan 2025 - Feb 2025

IBN Technologies Limited

Remote • Pune

- **Designed and shipped a multi-stage AI video pipeline** transforming JSON prompts into fully rendered videos — handling script generation, scene-wise asset creation, caption generation, and final video composition using **Remotion**.
- **Integrated 4+ external AI services (AssemblyAI, Google Cloud TTS, HuggingFace)** with custom async orchestration and fault-tolerant failure handling to ensure pipeline reliability under partial service failures.
- **Built a Stripe subscription and credit billing system** with webhook-driven event handling for real-time user access control, automating plan upgrades, downgrades, and credit top-ups.

Technologies / Skills Used : Next.js, PostgreSQL, Stripe, AssemblyAI, Google Cloud TTS, HuggingFace, Tailwind CSS, TypeScript

PROJECTS

D-SHIELD : Digital Twin based Stampede Hazard Identification, Estimation & Live Detection | 📺 YouTube Oct 2025 - Jun 2026

Final Year Project

- **Architected a digital twin-based crowd monitoring system** to detect stampede risks and fall events in real-time, integrating **ML inference models** with **physics-based crowd behavior analysis** in a unified hybrid backend.
- **Developed low-latency edge data ingestion** on **Raspberry Pi** utilizing **MQTT** (Mosquitto broker) with a publisher-subscriber model, facilitating continuous crowd signal streaming from sensor hardware to the cloud backend.
- Designed a multi-zone risk **propagation mechanism** based on connected-components graph traversal, automatically escalating adjacent zones' risk levels according to neighboring severity.
- Implemented **velocity-predicted** multi-person identity tracking with adaptive distance thresholds and frame-loss tolerance, ensuring stable IDs during occlusion and camera jitter.
- Created a **hybrid storage** architecture using **InfluxDB** for time-series crowd analytics and **Amazon RDS** for structured user data management.

Technologies / Tools Used : Node.js, Python, Raspberry Pi, MQTT (Mosquitto), InfluxDB, Amazon RDS, JavaScript

AutoMata : AI Workflow Automation Platform | 📺 Render

Jul 2025 - May 2026

Full-Stack SaaS Application | Deployed on Render

- **Built a visual workflow automation engine** supporting trigger-based, multi-step execution across 6 external platforms — **Google Drive, Gmail, Slack, Discord, Notion, and Google Calendar** — without relying on Zapier or similar no-code middleware.
- **Designed event-driven workflow runtime** with **asynchronous** task execution, webhook triggers and **dependency-aware** node orchestration.
- **Implemented custom OAuth 2.0 integrations** and secure token lifecycle management for all 6 third-party services — handling token refresh, scope validation, and revocation natively.
- **Created a drag-and-drop workflow builder** using React Flow for dynamic automation graphs with modular execution nodes and integration actions.
- **Integrated Stripe subscription and usage-based credit billing**, allowing teams to cap workflow execution spend and automatically pause execution when credit thresholds are hit.

Technologies / Tools Used : Next.js, PostgreSQL, Prisma ORM, Clerk, Tailwind CSS, React Flow, TypeScript, OAuth 2.0

Social : Alumni & Student Networking Platform | 📺 Vercel

Sep 2025 - Apr 2026

Full-Stack Application | Deployed on Vercel

- **Designed a directed-edge graph data model** in **MongoDB** for user relationships, enabling **O(1)** follower lookups, scalable graph traversal, and efficient follow-request state management at scale.
- **Built a graph-based recommendation engine** using second-degree connection traversal and mutual-connection scoring — surfacing prioritized user suggestions with explainable reasoning (shared interests + connection signals).
- **Secured all chat data with AES-256-GCM encryption** before database persistence — ensuring messages are unreadable even in the event of a direct database breach.
- **Implemented real-time messaging, likes, and comments via WebSockets**, reducing perceived latency and enabling live notification delivery without polling.
- **Improved backend throughput under high load** by layering Redis-compatible **caching** and route-level **rate limiting** — preventing abuse and maintaining response consistency during traffic spikes.

Technologies / Tools Used : Next.js, MongoDB, TypeScript, WebSockets, Cloudinary, Tailwind CSS, JWT

SKILLS

Programming Languages : Java, JavaScript, TypeScript, Python, C

Databases : MongoDB, PostgreSQL, MySQL, InfluxDB, Prisma ORM

Frameworks & Libraries : Next.js, React, Tailwind CSS, shadcn UI, HTML/CSS

Tools & Platforms : Node.js, Express.js, REST APIs, WebSockets, OAuth 2.0

Data, AI & Analytics : Machine Learning, Deep Learning, Neural Networks, Pandas, Tensor Flow, Data Visualization

EDUCATIONS

P.E.S. Modern College of Engineering | Pune

Nov 2022 - Jun 2026

B.E. in Information Technology (Honours in Data Science)

CGPA : 8.8 / 10

Asian College of Science, Commerce & Arts | Pune

Jun 2021 - Mar 2022

Higher Secondary Certificate (HSC)

CGPA : 86%

DSK School | Pune

Jun 2019 - Apr 2020

Secondary Education (ICSE)

CGPA : 95.6%