

EDUCATION

IIT Mandi

Aug. 2024 – May 2028

Bachelor of Technology in Computer Science and Engineering - CGPA: 8.29 [Till 4th Semester]

HP - INDIA

Central Board of Secondary Education

Class XII – 96.0% (2024) Class X – 95.6% (2022)

Modern Convent School, DL - INDIA

PROJECTS

Biometric Segmentation Research: Concurrent Squeeze-Excitation

[Code](#) / [Research Manuscript](#) / [cgdseg.taneshq.in](#)Accepted, *IEEE IJCB 2026* – M. Vitek et al. (incl. **T. Gupta**),

Label-Efficient Sclera Segmentation with Foundation Models: SSBC 2026 (eCF Paper Id: IJCB2026-325)

- Architected a Vision-Language grounded segmentation model fusing a frozen **CLIP ViT-B/32** text encoder with a **LoRA**-adapted **DINOv2 ViT-S/14** backbone via a novel cross-attention grounding module, tuning only **3.19M** of **88.3M** parameters (3.6%).
- Designed a multi-scale **Feature Pyramid Network** and **Dense-CSSE** decoder fusing DenseNet-style feature reuse with concurrent spatial-channel squeeze-excitation for pixel-precise boundary delineation.
- Devised a two-model training strategy with **3×** real-data oversampling, lifting real-world F1 from 0.8795 to **0.9546** on MASD and 0.8664 to **0.9336** on SBVPI, against a **0.9771** synthetic validation F1.
- Led a team of **10** for the **SSBC 2026** Track 1 submission, training both regimes in under **3.5** hours on a single **NVIDIA RTX A5000 24GB** GPU.

Safe-Dash: Real-Time Driver Drowsiness Detection System

[Code](#) / [Technical Report](#) / [Video Demo](#)

- Collaborated with a cross-functional team of **8** peers to develop an edge-AI system on an **NVIDIA Jetson Nano**, monitoring driver fatigue using the **MediaPipe** Face Mesh pipeline.
- Implemented a unified attention scoring algorithm derived from **Eye Aspect Ratio (EAR)**, **Mouth Aspect Ratio (MAR)**, and **3D Head Pose Estimation**.
- Engineered a multi-modal alert engine providing **Visual (LCD)**, **Audio (Voice)**, **Haptic (Vibration)**, and **Email (SMTP)** feedback, with a Redis-backed cooldown mechanism dispatching HTML-formatted warnings at 15s intervals when attention scores drop below critical thresholds.
- Built a real-time fleet management dashboard using **Flask** and **Redis** to visualize time-series telemetry data at 5s intervals.

Skill Sharing Platform Web-App

[Code](#) / [Visit Live @ skillswap.taneshq.in](#)

- Tech Stack:** Rust, Sveltekit, POSTGRES, TailwindCSS, Typescript, Cloudinary, Porkbun, Railway, OpenStreetMap, Axum, Tokio
- Easily installable as a **PWA** (Progressive Web-Application) with **PIN Codes** based Real Time Map, and expansive filters for posts [100+ categories] and secure email authentication with hashed passwords in detached dedicated database.
- Dynamic + Persistent ThemeSwitching with multi-theme setup of **5** colorful themes. Persistent with **Cookies & Browser Cache + User-Friendly Profile Picture Change Protocol**.

Unified Campus Portal for Colleges

[Code](#) / [Visit Live @ aegis.taneshq.in](#)

- Engineered a unified campus **PWA** consolidating **4** fragmented institutional systems (Governance, Grievances, Academics, Opportunities) into a single platform, designed to scale for **3,000+** students and faculty.
- Architected a highly concurrent, type-safe REST API using **Rust** and **Axum** delivering **sub-50ms** response times; secured **100%** of endpoints via **Google OAuth** and implemented strict **RBAC** across **4** distinct user tiers.
- Designed a **PostgreSQL** schema with **UUID** primary keys and **7+ custom ENUM types** to enforce data integrity; implemented a **4-stage automated grievance workflow** featuring real-time status tracking and **audit logging**.
- Built a reactive, mobile-first frontend with **Svelte** and **Vite**, achieving a **100% PWA compliance score** for native-like access; implemented comprehensive cross-stack **telemetry** to reduce system debugging time by **60%**.

ACHIEVEMENTS

Upper Intermediate (Level 4) Grade **A** Fluency Certification in **Japanese** from IIT Mandi**N5 Level Official JLPT Certification** in Japanese Language

TECHNICAL SKILLS

Deep Learning: DINO, CLIP, Vision Transformers, LoRA, Cross-Attention, Feature Pyramid Networks, Squeeze-Excitation**Edge Computing & AI:** SolidWorks (CAD), NVIDIA Jetson Nano/Xavier, MediaPipe, OpenCV, TensorRT**Hosting/Domains:** DNS, Installable PWA (ServiceWorkers), Porkbun, Railway, Vercel, Netlify, Render, Namecheap**Databases:** PostGRE-SQL, Redis (Time-series caching)**Languages:** Python, Rust, C, C++, Svelte, Java, SQL, JavaScript, TypeScript, HTML/CSS**Libraries:** Pytorch, Pillow, Mediapipe, OpenStreetMap, Axum, Tokio, Tailwind CSS, pandas, NumPy, Matplotlib, Chart.js