Aayudh Panchal

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B.Tech – Computer Science and Engineering
National Institute of Technology, Surat

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EDUCATION

Degree	Institute	CGPA	Year
B.Tech – CSE	NIT Surat	9.01 (current)	2022–Present

KEY COURSES TAKEN

- Data Structures; Algorithm Design & Analysis; Machine Learning; Cloud Computing; Data Science; Social Network Analysis; System Software; DBMS; Discrete Mathematics; Operating Systems; Computer Networks; Computer Organization; Microprocessor Interfacing; Artificial Intelligence

TECHNICAL SKILLS

- Python; C/C++; JavaScript; TypeScript*; HTML5; CSS3; Assembly
- MongoDB; MySQL; ChromaDB Vector Databases
- Next.js; React.js; PyTorch; LangChain*; Tailwind CSS; Docker*; Docker Compose*; GitHub

Intermediate proficiency

PROJECTS

- **Online Diamond Marketplace** *Live Site*
  SVNIT Surat
  - Designed and deployed a scalable diamond marketplace for Lexus SoftMac.
  - Engineered data ingestion for CSV/XLSX/XLS with 43+ attributes and 170+ variations.
  - Standardized attributes using NLP and pattern matching to automate buyer request handling.
  - **Tech Stack:** NextJS, TypeScript, Flask, Python, MongoDB, Gemini, Tailwind CSS
- **RIAC SVNIT Web Platform** *Live Site*
  SVNIT Surat
  - Developed a full-stack portal for 500+ users with event and form workflows.
  - Integrated Google OAuth and dynamic form builder, collecting 800+ submissions.
  - Built real-time dashboard for tracking user activity and submissions.
  - Secured access via JWT, RBAC, and rate limiting.
  - **Tech Stack:** ReactJS, NodeJS, Express, MongoDB, Tailwind CSS, Docker, JWT, Axios, Recharts
- **Denoising Probabilistic Diffusion Model** *GitHub*
  FashionX, NIT Surat
  - Implemented Stable Diffusion with CLIP (123M), U-Net (731M), and VAE (6M) for end-to-end generation.
  - Built modular text-to-image workflows with 512×512 resolution output.
  - Used attention-based U-Net and latent sampling for efficient synthesis.
  - **Tech Stack:** Python, PyTorch, Hugging Face
- **Diabetic Foot Ulcer Detection using YOLO** *GitHub | W&B Report*
  SVNIT Surat
  - Fine-tuned YOLOv8 on DFU dataset to detect and localize ulcers in medical imagery.
  - Reached **80.9% mAP@0.5** and **75.2% precision** via augmentation and anchor tuning.
  - Validated reliability with PR curves and confusion matrix.
  - **Tech Stack:** YOLOv8, Python, PyTorch, Ultralytics, W&B, OpenCV

EXPERIENCE

- **Summer Research Intern, Object Detection & Depth Estimation** Jun. 2024–Jul. 2024
  Sardar Vallabhbhai National Institute of Technology, Surat
  - Implemented YOLO-based object detection pipelines using CNNs.
  - Developed depth estimation models leveraging PyTorch and OpenCV.
  - Evaluated MLP and Transformer-based monocular depth architectures.
  - Collaborated with a multidisciplinary research team to meet deliverables.
- **AI ML Intern** Jun. 2024–Jul. 2024
  FashionX, Surat
  - Implemented a Denoising Diffusion Probabilistic Model from scratch in PyTorch.
  - Learnt about Generative Adversarial Neural Networks and their applications in realm of Virtual Tryon.
  - Learnt about Variatonal Auto Encoders, Decoders, CLIP models, and more.

POSITIONS OF RESPONSIBILITY

- **AI/ML Lead** Google Developer Group on Campus, NIT Surat *Oct. 2024–Present*
- **Web Development Lead** Research & Innovation Affairs Council, NIT Surat *Sep. 2024–Present*
- **Think Tank Head** Nexus, CSE Dept., NIT Surat *Jul. 2024–Present*

ACHIEVEMENTS

- **Winner, National SIH 2024** 1st place out of 2100+ teams *Smart India Hackathon*
- **Runner-Up, DotSlash 8.0** 2nd place among 100+ teams *ACM NIT Surat*
- **1st Runner-Up, GDSC Hack The Tank 2.0** Product innovation hackathon
- **Certificate, Google Cloud Study Jams 2024** Completed GCP AI/ML & cloud labs *Certificate*