Sayak Dutta
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Education

Degree	Institution	CPI	Year
MTech	IIT Gandhinagar	8.58	2024-present
BTech	NIT Sikkim	8.14	2020-2024
Class XII	KV Salboni	94.8%	2019-2020
Class X	KV Salboni	94.2%	2017-2018

Internships

Advanced Panorama Stitching System– ECIL **May 2025 - Present**

- Architected an end-to-end under-vehicle stitching pipeline (SuperGlue → RANSAC → cylindrical warp → bundle adjustment → blending) for robust real-time stitching.
- Implemented adaptive cropping (retaining 80–90% data), trapezium alignment with epsilon tuning, and cylindrical straightening for geometric consistency.
- Optimized global alignment via bundle adjustment, refining focal lengths and rotations to minimize reprojection error across multi-image sequences.
- Delivered ultra-high-resolution panoramas (20K+ px) with sub-pixel accuracy (≤5e-4 px error), validated using AUC@5/10/20 thresholds and precision metrics.

Machine Learning Intern – FOXAIR **Dec 2022 – Feb 2023**

- Conducted Customer Churn Analysis for a telecom company, reducing churn rate by 15% and improving customer satisfaction through targeted retention strategies.
- Developed and deployed a Machine Learning model using XGBoost to predict Customer Lifetime Value (LTV), achieving over 91% accuracy.
- Utilized K-Nearest Neighbours (KNN) to cluster customer segments and optimize targeted marketing for high-value customers.
- Analysed historical data to identify customer behaviour patterns, resulting in strategies to enhance profitability and reduce losses from negative LTV customers.
- Delivered insights on customer retention and LTV, contributing to data-driven decision-making and business optimization**.**

Thesis/Research

- Developed "**UnCageNet**," a three-stage Gabor-enhanced segmentation and CRFill inpainting pipeline that removes cage occlusions, enabling state-of-the-art self-supervised tracking and pose estimation (STEP/ViTPose) to recover 11.6% OKS lost to occlusion on APT-36K synthetic tests, raising OKS from 0.734 to 0.812 and mAP@OKS from 0.582 to 0.730on 30-species benchmarks of APT36k, with real-time 45 ms per frame;.
- Introduced the first large-scale benchmark with 10 realistic cage geometries blended over APT-10K/AP-36K images via alpha compositing: 48,600 image–mask pairs; Work submitted at ICVGIP 2026.

Projects

Decision Tracker AI Agent – (Meeting Insights Application)

- Developed a modular AI application (Fast API + React) that analyzes meeting audio recordings to extract key decision insights using LLaMA 70B via the Groq API.
- Implemented Google Meet integration to connect, record audio, and save recordings directly to an audio folder.
- Enabled manual audio file uploads for analysis and insights extraction, enhancing user control over the process.
- Utilized FFmpeg, PyAudio, and Pydub for audio processing and transcription, ensuring high-quality audio analysis.
- Containerized the application with Docker for consistent deployment and environment management.

AI-Powered Resume Analyzer and Optimizer Using Semantic Matching and RAG

- Developed a full-stack AI tool (Fast API + Streamlit) to analyze and optimize resumes against job descriptions.

- Engineered NER-based extraction with spaCy for structured skill data from resumes and JDs.
- Built a semantic-matching pipeline using SBERT and FAISS for ranking relevant skills.
- Implemented a RAG flow: chunked documents, embedded with sentence-transformers, and retrieved context for feedback using Groq's Llama3-8B.
- Containerized the application with Docker for consistent deployment.

Responsibilities

- CSE Branch Representative in CDS
- Served as a core member in Blithchron design team.

Achievements/Awards

- **National Taekwondo Player** – Represented at the national level, demonstrating discipline, resilience, and competitive excellence.

Skill Summary

- **Languages:** Python, C, Matlab
- **Tools:** Git, GitHub, Docker, Matplotlib, TSFEL, PyTorch, Hugging Face, LLMs