

# JAY SAWANT

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## EDUCATION

### University of California, San Diego

Master of Science in Data Science at HDSI — GPA: 3.97/4.0

Sept 2024 – Dec 2025

San Diego, USA

### Indian Institute of Technology Bombay

Bachelor and Master of Technology in Electrical Engineering — Major GPA: 8.9/10

July 2018 – June 2023

Mumbai, India

## TECHNICAL SKILLS

**Programming:** Python (PyTorch, NumPy, Scikit, TensorFlow, Pandas, OpenCV), C++, MATLAB, Bash  
**Tools & Frameworks:** AWS, Slurm, PyTorch-DDP, Linux, Git, Docker, VS Code, Vertex AI, Huggingface  
**Courses:** Deep Generative Models, Reinforcement Learning, Machine Learning, Statistical Models, NLP, Automatic Speech Recognition, Probability and Statistics, Linear Algebra, Medical Image Computing, Data Structures and Algorithms

## EXPERIENCE

### Autonomous Driving Research (Imitation Learning) @ Netradyne

June 2025 – Present

Research Engineer Intern

San Diego, USA

- Benchmarked SimLingo (camera-only, ~1B) vs. TransFuser++ (camera+LiDAR, ~120M) and replicated closed-loop results on CARLA Leaderboard & Bench2Drive showing similar performance with far fewer parameters
- Trained a camera-only TransFuser++ (~30M) on SimLingo's ~5× larger dataset, achieving near-parity with SimLingo and demonstrating that scaling data-even with simpler models-can match the SOTA performance of complex models
- Added causal temporal attention (4 frames, 250 ms stride) to capture actor dynamics; driving score was unchanged vs. a 1-frame baseline, indicating 1 frame + ego speed suffices without 4-frame temporal context

### Synthetic 3D MRI Generation @ Cognitive Imaging Lab, UCSD

Jan 2025 – Present

Graduate Student Researcher

San Diego, USA

- Developed a conditional latent diffusion pipeline by integrating a VAE for latent space compression with a 3D diffusion transformer (DiT-3D), enabling the generation of high-fidelity, class-specific synthetic 3D brain MRIs with FID of 16.9
- Augmented the real brain MRI dataset with synthetic data, leading to substantial improvements in F1-score, accuracy, AUC-ROC, and AUCPR for a temporal-lobe epilepsy classifier trained using an EfficientNet-V2 backbone
- Future Objective: Pre-train a 3D ViT on integrated real and synthetic datasets and fine-tune it for downstream tasks

### Cardiac Arrhythmia Detection @ Probeplus Solutions

May 2024 – July 2024

AI Consultant

Bangalore, India

- Trained a baseline CNN and a multi-head attention-based model as a part of a remote-health monitoring system to achieve a multi-label classification of 26 arrhythmias using a dataset of 12-lead ECG recordings from PhysioNet 2021 challenge
- Improved the model performance by integrating an RNN branch for temporal context and by calculating cross-attention features between CNN and RNN outputs, achieving 2% increase in the challenge score on external test dataset

### Deep learning in Histopathology @ MeDAL, IIT Bombay

May 2022 – June 2023

M.Tech Thesis under Prof. Amit Sethi [\[Publication\]](#) [\[M.Tech Thesis\]](#)

Mumbai, India

- Employed an active learning method to train a classifier, achieving efficient segmentation of WSIs into six tissue regions and outperforming the popular image-processing-based HistoQC tool with higher dice scores on 70% of the WSIs
- Secured 16th place (F1 score 0.67) in the 2023 OCELOT Challenge using DeepLabV3 for cell detection and classification

### Contrastive learning in Chest X-rays @ Qure.ai

May 2022 – August 2022

AI Scientist Intern

Mumbai, India

- Achieved 0.80 AUC on a 280K-image chest X-ray test set by training ResNet50 on 1.2M scans for opacity classification and boosting the performance with a Supervised Contrastive Learning-pretrained backbone

## PROJECTS

### Person to Person Virtual Try-On | ECE285: Deep Generative Models, UCSD [\[Report\]](#)

April 2025 - June 2025

- Generated a paired-person dataset from VITON-HD images using IDM-VITON preprocessing and DensePose
- Engineered a 16-block diffusion-transformer denoiser with self and cross-attention for garment conditioning and FiLM-timestep modulation, optimized via noise-aware EDM, custom  $2^{nd}$  order ODE solver, and CFG to achieve FID 27.7

### RAG-based Multimodal Medical QnA App | MED277: Biomedical NLP, UCSD [\[Report\]](#)

Oct 2024 - Nov 2024

- Designed a RAG-based multimodal medical chatbot app with multilingual capabilities, integrating a Google Translate API, BiomedBERT embeddings for context retrieval, Gemini 1.5 Pro for output generation, and Gradio for a web interface