



SAMYAK SIDDHARTH SANGHVI

samyakss83.github.io



ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
—	B.Tech in Computer Science & Engineering	Indian Institute of Technology Delhi	9.29
2023	MAHARASHTRA STATE BOARD	Alpha Junior College of Science	92.00%
2021	MAHARASHTRA STATE BOARD	Kilbil St. Joseph's High School	93.20%

SCHOLASTIC ACHIEVEMENTS

- **Joint Entrance Exam Advanced (JEE) 2023:** Secured **All India Rank 83** amongst more than 1.5 Lakh candidates.
- **KVPY Scholar 2022:** Awarded the KVPY scholarship by securing **All India Rank 27** amongst more than 50000 students.
- **INPhO 2023:** Among **top 35 students** from the country, selected to attend Orientation and Selection Camp, TIFR Mumbai.
- **APhO 2023:** Selected for national team of Asian Physics Olympiad 2023 to represent India at Ulaanbaatar, Mongolia.
- **Joint Entrance Examination (JEE) Main:** Secured **99.97 Percentile** among over 1 million candidates in JEE Main.
- **Chemenigma 2024:** Winner of Experimental, Theoretical and Computational Chemistry competition by IISC Bangalore.
- **National Olympiads:** Ranked **top 1%** in National Standard Examination in Chemistry, Astronomy and Junior Science.
- **Semester Merit Award:** Awarded Merit Prize for being in **top 7%** Merit List in batch of 1200 for 2nd Semester.
- **Eightfold AI INNOV8 Challenge:** Selected as one of the **20 national finalists** in hackathon organized by Eightfold AI.
- **Sixth Annual Nepal AI School:** Selected with a **Full Scholarship** from 800 candidates and **Won** in the school's **Ideathon**

PUBLICATIONS & PATENTS

- **Attend What Matters: Leveraging Vision Foundational Models for Breast Cancer Classification Using Mammograms** *IEEE International Symposium on Biomedical Imaging, 2026* | (Prof. Chetan Arora)
 - Generated ROIs from **Grounding DINO**, applied **cross-attention** between crops and full-breast, classified via an **MLP**.
 - Fine-tuned **DINOv2** and trained a classifier with **contrastive loss** for better embedding **alignment** and discrimination.
- **SiDGen: Structure-informed Diffusion for Ligand Generation** | (Prof. Tarak Karmakar)
 - Designed a model for **protein-conditioned ligand generation** using **BindingDB** dataset with sequence and structures.
 - Implemented **Triangle Attention** for structure based condition and utilized **Cross Attention** to denoise each ligand.
 - Implemented **Soft Coarsening** via **Diffpool** to capture 3D context with **less memory** and **better feature pooling**.
- **Towards Support-Free Printing in Extrusion-based Additive Manufacturing: Path Planning and Process Control** *International Mechanical Engineering Congress and Exposition, 2025* | (Prof. Sagar Sarkar)
 - Created a pipeline to achieve graphics based multi-axis adaptive slicing to allow **support-less overhang printing**
 - Designed and implemented a method to **Identify, label, and segment mesh extrusions** using SDF to cut the Mesh.
 - Designed a **fault detection interrupt** pipeline via **deterministic computer vision** analysis to flag bumps and strings
- **Bhav-Net: Knowledge Transfer for Cross-Lingual Antonym Synonym Distinction via Dual-Space Graph Transformers**
 - Introduced a novel **dual-space architecture** combining BERT encoders with graph transformers for antonymsynonym.
 - Enabled **knowledge transfer** from large multilingual models to lightweight GNNS without significant performance loss.
 - Presented **cross-lingual generalization** in 8 languages, with SOTA results and interpretable semantic representations.

INTERNSHIPS

- **Stylout AI, Founding Engineer** (May, 2025 - September, 2025) : *Virtual Tryon Pipeline and Recommendation System*
 - Utilized MediaPipe, DensePose, and SAM-2 for advanced **human parsing** and **body pose and depth estimation**.
 - Developed **VITON pipeline** using DensePose, body poses, and **fine-tuned diffusion model** for image generation.
 - Built **recommendation engine** incorporating Exploration-Exploitation via **GCN embeddings** for fashion relationships.
- **FAIRPHILE INNOVATION LABS** (December 2024, - January, 2025) : *Efficient 3D reconstruction and segmentation*
 - Developed **fine-tuned masking models** with **SAM-2** and **YOLO-v8** for object segmentation and **mask generation**.
 - Implemented custom **NeRF** and its pipeline to **reconstruct segmented point-cloud** from **sparse multi-view imagery**.

PROJECTS

- **Universal Vision Prompt Training v1.0** | (Prof. Chetan Arora) (December 2025 – Present)
 - Implemented an Internal Library for prompt training supporting **Learnable Tokens, CVPT, CoOP, CoCoOP** and **MaPLe**.
 - Added Support for **Backbones** like Dino family, SwinT, and **VLMS** like Qwen2, Qwen3, Llama4, Mistral3, Gemma3 etc.
- **Natural Language Interpretation of Satellite Imagery** | (InterIIT Tech Meet 14.0) (November 2025–December 2025)
 - Used a composition of **Qwen3 VL** and **SAM3** with a Graph-based **Semantic mask merging** algorithm to localize objects
 - Created a **Mixture-of-Adapters** architecture to support **SAR, IR** images, added **ReAct Tool calling** for Geometric analysis.
- **General Vision Language Action Navigator** | (Robotics Club) (September 2025–December 2025)
 - Integrated **Grounding DINO** and **Depth Anything V2** for **obstacle detection** while maintaing localization using odometry.
 - Leveraged **Qwen2.5 VL** and **SAM2** for **destination and task reasoning**, and **safe actions** when obstacles were detected.

TECHNICAL SKILLS

- **Programming Languages:** Python, MATLAB, C/C++, JavaScript, CSS, PHP, Rust, VHDL, Assembly, R
- **Frameworks:** PyTorch, Keras, TensorFlow, OpenCV, Hugging Face, Scikit-Learn, MediaPipe, MuJoCo, CGAL