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 Banglore.
- **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.

PUBLICATIONS & PATENTS

- **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 antonym–synonym.
  - 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.
- **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 an **adaptive stride pooling** module to capture 3D context with **less memory** and **better feature pooling.**

INTERNSHIPS

- **Stylout AI, Founding Engineer** (May, 2025 - Present) : *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

- **Unimodal Breast Cancer Detection from Mammograms | (Prof. Chetan Arora)**   (August 2025–Present)
  - 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.
- **Nil Proxy Pro - Portable Bio-metric Attendance System**   (May 2024 - August 2024)
  - Implemented custom lightweight **operating system and micro-kernel** with specialized **drivers** for **fingerprint sensor and RTC**, supporting **WiFi connectivity** and **sensor integration** for ESP32 microcontroller compatibility.
  - Integrated secure **cloud access infrastructure** to store, upload and manage attendance data with high availability.
- **RISC-V Pipeline,Cache Coherence Simulator | (Prof. Rijurekha Sen)**   (March 2025–April 2025)
  - Implemented a simulator for **all processor stages** with and without **bypassing** during RISCV program execution.
  - Implemented the **MESI protocol** to simulate **N-way set associative L1 cache coherence** across **multiple cores**.
- **FileRec - Advanced forensic file recovery and carving tool**   (March 2025)
  - File recovery system using **signature-based detection** to recover **JPEG, PNG, PDF, ZIP** files from corrupted disks.
  - Supports **Ext4, NTFS, and FAT32 filesystems** with **overlapping file detection** and fast **multi-threaded scanning**.

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