Aansh Samyani
Mechanical Engineering
Indian Institute of Technology Bombay

22B0424
B.Tech.
Gender: Male
DOB: 26/02/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	

Pursuing a Dual Minor Degree in **Computer Science (CS)** and **Artificial Intelligence and Data Science (AI-DS)**

Scholastic Achievements

- Awarded a branch change, ranking in the top **10%** among more than **1.4K** students for exemplary academics *('22)*
- Attained a **Semester Performance Index (SPI)** of **9.67** in the 3rd semester showing academic excellence *('23)*
- Achieved **99.98** percentile in MHT-CET, earning a **top-20** ranking among more than **1.3 lakh** candidates *('22)*

Research Experience

A Multi-Agentic Approach to improve Reasoning of Large Language Models (LLMs) *(May '24 - Present)*
Guide: ***Prof. Chaithanya Bandi*** | ***National University of Singapore***

- Explored different aspects of existing multi-agent conversational frameworks like **DSPy**, **LangGraph** and **Autogen**
- Implemented **CoT, Re-Act, and Inception Prompting** techniques to enhance control over multiple agents
- Reimplemented various architectures like **Debate**, **Majority Voting** and **Representative Voting** using Autogen
- Drafting a **research paper** extending the **reasoning abilities** of these architectures, contributing to academia

FinAgent: Multi-Agent Framework for Financial Planning *(May '24 - Present)*
Guide: ***Prof. Chaithanya Bandi*** | ***National University of Singapore***

- Conducted extensive research on integrating **Human-in-the-Loop** (HITL) methodologies to enhance decision-making
- Explored the functionality of **Tool Use** and how it enhances the reasoning and financial planning ability of LLMs
- Applied **Reinforcement Learning with Human Feedback** (RLHF) to iteratively refine agent behavior

Kolmogorov-Arnold Networks in explicit Model Predictive Control *(Jul '24 - Present)*
Guide: ***Prof. Debashish Chatterjee*** | ***Summer Undergraduate Research Program***

- Analyzed key properties of **KANs** including **Grid Extension, Interpretability**, and **Continual Learning**
- Used **approximation theory** to understand and articulate the effectiveness of **KANs** as robust approximators.
- Acquired knowledge of the basic **optimization** processes in **Non-Linear Model Predictive Algorithms**

Key Projects

Deep Generative Models - An Odyssey | *Seasons of Code* | *Web and Coding Club* *(May '24 - Present)*

- Generated synthetic data using **GANs** and trained a model on the **Celeb-A** dataset (**200K+** face images)
- Analyzed **VAEs** to understand their role in learning **latent representations** and **dimesionality reduction**
- Examined **flow-based modelling** methods to model complex data distributions through invertible transformations
- Assessed the iterative denoising process of **diffusion models** and their potential to generate high-fidelity samples

Physics Informed Neural Networks (PINNs) | *Course Project* *(Apr '24 - May '24)*
Guide: ***Prof Shyamprasad Karagadde*** | *Applied Artificial Intelligence and Data Science*

- Reimplemented the **Sparse Identification of Nonlinear Dynamical Systems (SINDy)** paper to understand and apply sparse regression techniques for discovering linear and non-linear differential governing equations for data
- Utilized **autoencoders** to capture the **latent space** of pendulum and predict its governing differential equation
- Conducted comprehensive evaluation of **PINNs** against traditional architectures, demonstrating significant improvement

Virtual Clothing Try On System | *Course Project* *(Nov '23 - Dec '23)*
Guide: ***Prof. Asim Tewari*** | *Statistical Machine Learning and Data Mining*

- Used **OpenPose** for body pose estimation and detailed body surface mapping to ensure accurate overlay of clothes
- Implemented **image segmentation** using **U-Net** architecture to isolate body regions for accurate try-on results
- Utilized **Generative Adversarial Networks (GANs)**, to generate realistic and precise fitting of clothing items

Neural Networks for Computer Vision | *Winter in Data Science* | *Analytics Club* *(Dec '23 - Jan '24)*

- Explored and implemented **state-of-the-art** convolutional neural network architectures from scratch in PyTorch
- Re-implemented the **papers** including UNet, ResNet, LeNet, VGG, GoogLeNet, and EfficientNet architectures
- Optimized model performance by **batch normalization, dropout regularization**, and **learning rate scheduling**

Evolution of Generative Adversarial Networks (GANs) | *Self Project* *(May '24 - Jun '24)*

- Explored and implemented a variety of **GANs**, including DCGAN, WGAN, cGAN, InfoGAN, CycleGAN, ProGAN, and SRGAN for generating high-quality synthetic images, image-to-image translation and super-resolution
- Leveraged mathematical concepts such as **Wasserstein distance, KL-Divergence, JS-Divergence, mutual information maximization, cycle consistency loss, and progressive training** to tackle stability issues

Sentiment Analysis | *Learner's Space | NN and LLM | Web and Coding Club* *(Feb '23 - Jun '23)*

- Developed an accurate sentiment analysis bot using **NLP** and **LLMs** to enhance customer feedback analysis
- Increased the accuracy of the **BERT** model to **70%** by fine-tuning it with the transformer framework
- Designed a **Gradio** script for deployment, enhancing user interactivity and improving accessibility and friendliness

Course Recommendation System | *Data Analytics and Visualization Team* *(Jan '24 - Mar '24)*

- Designed a course recommendation system by leveraging **collaborative filtering and content-based filtering**
- Integrated **contextual information** such as user demographics and temporal data to improve relevance of responses
- Employed **multitask learning** techniques to simultaneously predict user preferences and course ratings

Sector Analysis | *Data Analytics and Visualization Team* *(Jul '23 - Sep '23)*

- Researched market growth trends for **20K+ companies** listed on NASDAQ and BSE across diverse sectors
- Examined the variations of the growth of companies with their **Market age, Inflation and GDP per capita**
- Analysed the average Revenue per Employee of companies (private and public) belonging to different sectors

Technical Skills

- **Softwares** - Adobe Photoshop, Canva, Solidworks, AutoCAD, Git, Microsoft Office, GOM Suite, Figma
- **Languages** - LaTeX, Python, C, C++, R programming, MATLAB, Julia
- **Libraries** - NumPy, Pandas, Matplotlib, Seaborn, Tensorflow, Keras, PyTorch, Scikit-Learn, OpenCV, Autogen

Leadership And Mentorship Roles

Manager, Analytics Club | *Undergraduate Academic Council* *(May '24 - Present)*

*Heading a **2-tier** team representing the interests of **10k+** students in the domains of AI and Data Science*

- Led a **Pan-IIT AI-ML** Hackathon with **6** other IITs raising sponsorships worth **₹6 lakhs** with **2000+** registrations
- Curated an **Internship-Prep Bootcamp** and **Interview-Prep Booklet** aiding preparation of **500+** students
- Achieved a reach of **1.2K+** in the 3rd edition of **Winter in Data Science**, witnessing a **40% y-o-y** increase
- Engaged an audience of over **2000** by enhancing social media presence through specially curated content.

Convener, Analytics Club | *Undergraduate Academic Council* *(May '23 - May '24)*

*Member of a **5** membered team representing interests of **10K+** students in the domains of AI and Data Science*

- Effectively directed **Quant Quest**, a premier algorithmic trading hackathon, drawing **2000+** student participants
- Led **Internship Preparation Program** for Analytics and Quant, empowering **1000+** students' career prospects
- Launched and administered Learner's Space courses, positively impacting the education of more than **1000** students

Data Analytics and Visualization Team | *Undergraduate Academic Council* *(Jun '23 - May '24)*

*Serving as a technical trainee of a **12**-membered team consisting of Artificial Intelligence and Data Science enthusiasts*

- Actively collaborating with different student bodies and startups within and outside the institute for relevant projects
- Executed a comprehensive **course feedback** survey to assess and ascertain the suitability of courses for **5k+** students
- Proficiently harvested data via web scraping and processed it into a structured, readable and analyzable format

Summer of Science Mentor | *Maths and Physics Club | Institute Technical Council* *(May '24 - Present)*

- Supervising **6** students on a reading project based on **Deep Generative Artificial Intelligence (Gen - AI)**

Seasons of Code Mentor | *Web and Coding Club | Institute Technical Council* *(May '24 - Present)*

- Co-mentoring and guiding group of **10** students on a coding based project: **A Guided Tour to PyTorch**

Key Courses Undertaken

CS & AI	Computer Programming and Utilization, Logic in Computer Science, Introduction to Machine Learning, Applied Artificial Intelligence and Machine Learning Statistical Machine Learning and Data Mining
Mathematics	Linear Algebra, Single and Multi Variable Calculus, Differential Equations

Extra Curriculars

Learning	• Mastered **ABACUS** or Mental Arithmetic by successfully completing all **8** levels • Participated and qualified for the **semi-finals** of **Convolve**, a Pan-IIT AI Hackathon • Completed Learner's Space courses on **NN and LLMs** and **Python for Data Science**
Sports	• Completed an intensive year-long **90 hours** training program for Chess under NSO • Contributed to **3+** record victories of the inter-school football team
Miscellaneous	• Secured **1st** team prize in **Laughter Riots 3.0** stand-up comedy competition • Secured **3rd** solo prize in **Laughter Riots 3.0** stand-up comedy competition • Acquired an **International rank** of **39** as a school representative in the **International Informatics Olympiad**, earning a Special Achievement certificate for the same