Ekansh Ravi Shankar
Computer Science & Engineering
Indian Institute of Technology Bombay

22B1032
B.Tech.
Gender: Male
DOB: 09/11/2004

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

Pursuing **Minor** in **Artificial Intelligence and Data Science** by CMInDS, IIT Bombay

Scholastic Achievements

- **Department Rank 11** in the **Computer Science and Engineering** Department among **190+** students *(2024)*
- Achieved **All India Rank 49** in **Joint Entrance Examination Advanced** amongst **1,50,000+** candidates *(2022)*
- Secured **All India Rank 142** in **Joint Entrance Examination Main** amongst **10,00,000+** candidates *(2022)*
- Among **top 50** students from top IITs selected for the **Jane Street SEE IIT** program at their Hong Kong office *(2023)*
- Achieved **All India Rank 4** in the Indian Statistical Institute **(ISI, Bangalore)** B. Math examination *(2022)*
- Awarded the **KVPY Fellowship**, by securing **All India Rank 256 and 318** in the SA and SX stream *(2020-21)*

Professional Experience

Data Science and Machine Learning Internship | *Franklin Templeton Investments* *(May 2024 - July 2024)*
Franklin Templeton Investments, Hyderabad

- Engineered a **comprehensive pipeline** to conduct analysis of monthly **Chinese e-commerce platform data**
- Built a custom **LLM agent** to **generate SQL queries** to query this extensive database, utilised the **LangChain** and **OpenAI API**, and techniques such as **dynamic few-shot prompting** to ensure more precise and relevant results
- Created a real-time **interactive platform**, seamlessly integrated with **Snowflake databases** using Streamlit, and the **LLM agent**, allowing users to gain insights into the **performance metrics** of several companies and categories
- Developed a Python script in order to **automate generation of custom reports** for analysts, enhancing efficiency

Key Projects

Algorithmic Trader in C++ *(October 2023 - November 2023)*
Course Project: Data Structures and Algorithms Lab *Guide: Ashutosh Kumar Gupta*

- Processed **order books** received via **sockets** in real-time, **estimated market prices** and designed an **order-pruning** algorithm and wrote **memory-optimised code** to speed up the detection of **arbitrage opportunities** in markets
- Utilised **multi-threading** to simulate a market, and developed **efficient strategies** to send orders and make a profit
- Implemented custom classes for data structures such as **red black trees** and **heaps** for efficient processing of orders

Optimising Investment Returns using Momentum Trading *(June 2023 - September 2023)*
FinSearch *Finance Club, IIT Bombay*

- Implemented a **J/K month momentum strategy** in **Python**, analysed results by varying the stock's **look-back and holding periods** and accounted for return reversal and mean reversion, obtaining **state-of-the-art results**
- Utilised technical indicators such as **RSI** and **Bollinger Bands** to build a **mean reversion** based trading strategy
- Backtested this strategy on the stocks of the **NIFTY index** over a period of 3 years to observe a **45%** return
- Constructed **portfolios** optimised for varying holding periods of stocks, from the **NIFTY100 index**, in Python

Image Segmentation Using Graph Cuts *(April 2024 - May 2024)*
Course Project: Medical Image Computing *Guide: Prof. Suyash Awate*

- Implemented a research paper on utilising **network flow** techniques for **hard image segmentation** of seeded image data, by conversion to graphs, and used a **Markov Random Field and Gaussian prior** to assign costs to edges
- Utilised **Edmonds Karp** in order to evaluate the minimum cut, and **optimised hyperparameters** for better results
- Developed a **user interface for image labelling** and performing the **segmentation** of the input medical images

Cache Optimisation *(October 2023 - November 2023)*
Course Project: Digital Logic Design and Computer Architecture Lab *Guide: Prof. Biswabandan Panda*

- Programmed and compared the performance of **cache eviction policies** such as LRU, LFU, FIFO, BIP using ChampSim
- Implemented the **stream prefetcher** on ChampSim and achieved a maximum **speedup of 1.264** over IP Stride prefetcher
- Used **Intel VTune** to identify bottlenecks in C++ code, and **optimised cache hit rate** to obtain a speedup of **25x**

Reinforcement Learning *(May 2023 - July 2023)*
Summer of Science *Maths and Physics Club, IIT Bombay*

- Studied Finite **MDPs**, **Dynamic Programming**, **Monte Carlo** Methods and **Temporal Difference** Learning
- Simulated the **k-armed Bandit Problem** and implemented **Q-learning** using **OpenAI's Gym** module in Python

Technical Skills

Programming Languages	C/C++, Python, SQL, MATLAB, Bash, x86 Assembly, MIPS Assembly, VHDL
Libraries	NumPy, Matplotlib, Pandas, PyTorch, TensorFlow, Keras, Streamlit
Softwares	Snowflake, GitHub, LaTeX, Jupyter Notebook, Doxygen, Fusion360

Extracurricular Activities

Cubing	• Secured **5th place** among all participants from IIT Bombay at the **Cube Craze Tournament** *(2023)* • Currently **45th in India** for a single solve on the 2x2 Rubik's Cube with a solve of **1.22 seconds** *(2024)*
Swimming	• Respresented my hostel and secured **2nd place** in the **Swimming General Championship** *(2024)*