Atishay Jain
Computer Science & Engineering
Indian Institute of Technology Bombay

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B.Tech.
Gender: Male
DOB: 25/05/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	CBSE	Hope Academy	2021	85.40%
Matriculation	CBSE	Pushpa English Medium School	2019	95.80%

Pursuing a **Minor** in **Machine Intelligence and Data Science**

Scholastic Achievements

- Awarded the **AP** (Advanced Performer) grade for exceptional performance (**top 1%** of students) in **Artificial Intelligence** and **Machine Learning** Lab with a perfect score of 100 *(2023)*
- Secured **All India Rank 104** and **Zonal Rank 4** in **JEE Advanced** out of 150,000+ candidates *(2021)*
- Achieved **All India Rank 270** with **99.98** percentile in **JEE Main** among over **1 million** candidates *(2021)*
- Awarded the prestigious **KVPY Fellowship** by securing **All India Rank 123**, from Govt. of India *(2020-21)*
- Received the **MMVY** scholarship from the state government of Madhya Pradesh for academic **merit** *(2021-22)*

Internship Experience

Soft Hand Simulation *(May'23 - Jul'23)*
Guide: Dr. Daniele Bernardini | Technical University of Munich, Germany *Summer Research Internship*

- Studied **MuJoCo**, a **Mu**lti-**Jo**int dynamics with **Co**ntact based physics simulator, for implementing an under actuated soft hand model of a **Gripper** that can be calibrated to resemble the actual **robotic** hand movements
- Designed basic structure of model using **XML** file and controlled the simulation through C++ API of MuJoCo
- Encoded **constraints** on sum of angles and torque acting on joints, which accounted for the movements of gripper

IFP Petro Products Private Limited *(Dec'22 - Jan'23)*
Web Development and Technical Intern *Winter Internship*

- Developed a web application using **MERN** stack with a hyperlocal service model serving the suppliers and recyclers
- Implemented User login and registration functionalities using ExpressJS framework and **MongoDB** for backend
- Designed a **Supplier Dashboard** providing users to place their orders to recyclers as well as track its live status

Key Projects

Image Captioning using Deep Learning *(Dec'22 - Jan'23)*
Winter in Data Science *Analytics Club, IIT Bombay*

- Trained model to classify **MNIST** image dataset using **PyTorch** and Neural Networks, with final accuracy $\approx 97\%$
- Used **CNNs** in PyTorch for classifying images from **CIFAR-10** dataset and **torchvision** for transforming images
- Explored **NLP** for performing **Sentimental Analysis** over stock market headlines using **NLTK** and **spaCy**
- Utilized pre-trained **VGG19** model for extracting features from **Flickr8k** image dataset and processed these features into **LSTM** network for descriptive image caption generation, evaluated the model using **BLEU** scores

Autonomous Driving Vehicle *(May'23 - Aug'23)*
Seasons of Code *Web and Coding Club, IIT Bombay*

- Studied **Markov Decision** Processes and designed a planner for MDP planning algorithms like **value iteration**
- Encoded a grid **Maze** into **MDP** and utilized planner for finding **shortest path** from start to end of the maze
- Ideated a controller to **navigate** a car out of parking lot on road safely in a **gym-driving** simulator environment
- Studied **Reinforcement Learning** to encode agent state from the environment details for autonomous driving

Cache Hierarchy Optimization for Graph Analytics *(Mar'23 - Apr'23)*
Prof. Biswabandan Panda | Course Project - Computer Architecture *IIT Bombay*

- Implemented **inclusive**, **exclusive**, and **non-inclusive** cache hierarchies in **ChampSim**, a trace-based simulator for microarchitecture study, and evaluated their performances over traces based on **Graph algorithm** workloads
- Examined impact of varying L1, L2, LLC cache sizes and **associativity** by plotting IPC for different algorithms
- Compared various **LLC** cache **replacement** policies from a baseline cache hierarchy and improved upon the **IPC**

Python Combat *(Oct'22 - Nov'22)*
Prof. Kavi Arya | Course Project - Software Systems Laboratory *IIT Bombay*

- Developed a browser-based game platform for learning **Python** with user-interactive **Animations** using JQuery
- Implemented a code editor using **CodeMirror** library with syntax highlighting and **auto-completion** features
- Utilized **Brython** library for running Python in a browser along with a **Logger** which displays results of the code
- Created **Dynamic Arena** for levels with different placements of objects on reloading and each with unique themes

Other Projects

Railway Journey Planner *(Jul'22 - Nov'22)*
Prof. Supratik Chakraborty | Course Project - Data Structures and Algorithms Lab *IIT Bombay*
- Designed a railway model with both **client** and **server** facilities as a **Graph**, with features like **auto-completing** station names (Trie), **search** journey reviews by keywords (KMP), and **filter** reviews based on **ratings** (Heap)
- Added ability to **efficiently** search for reviews for a train, giving a keyword for any review through **KMP** algorithm
- Programmed a modified **DFS** to find direct and **indirect** journeys between given stations subjected to constraints

Representative Imaging and Data Analysis *(Sep'22 - Oct'22)*
Prof. Suyash P. Awate | Course Project - Data Analysis and Interpretation *IIT Bombay*
- Applied **PCA** to generate **representative** new fruit images after sampling from a dataset of diverse fruit images
- Analyzed 28×28 images of **handwritten digits** (MNIST) and **reduced** dimensionality to 84 by using **PCA**

Stock Market Analysis *(Apr'22 - Jul'22)*
Summer of Science *Maths and Physics Club, IIT Bombay*
- Studied various Stock Market Terminologies, strategies and roles of **Financial Intermediaries** in the market
- Analysed **Derivative** Markets including **Futures** Trading, **Options Theory** and Options Trading Strategies

Sliding Puzzle SAT Solver *(Feb'23 - Mar'23)*
Prof. Ashutosh K. Gupta | Course Project - Logic for Computer Science *IIT Bombay*
- Implemented a script in **Python** using **Z3Py** library to encode a **Tile Loop** puzzle game as a **SAT** problem and solve it efficiently with the given **constraints** along with verifying the proposed solution in case of satisfiability

Simple File Transfer Protocol *(Mar'23 - Apr'23)*
Prof. Bhaskaran Raman | Course Project - Computer Networks *IIT Bombay*
- Implemented a FTP for **bi-directional** data transfer through **Socket** Programming in C++ with **multiple** clients

Positions of Responsibility

Institute Web and Coding Convener | *Web and Coding Club, IIT Bombay* *(May'22 - May'23)*
- Worked in a team of **8** to organize 40+ events catering to the programming interests of 10K+ Institute students
- Framed Competitive Programming problems for **SciComp-Blitz** Technical Inter Hostel General Championship
- Ideated and co-created a Project in **Hello FOSS**, an event to promote **Open Source** development in institute

Department Academic Mentor | *Student Mentorship Program* *(May'23 - Present)*
- Among **32 candidates** selected after extensive peer reviews, SoP and interviews out of **70+ applicants**
- Working as **mentor** and contact point of **6 sophomore** students to resolve their academic and personal queries

Teaching Assistant | *Undergraduate Academic Council, IIT Bombay* *(Oct'22 - Feb'23)*
- Selected as a TA for **Calculus (MA109 and MA111)** courses in Autumn semester for 1st-year students
- Conducted weekly **Tutorial** sessions for practice problems solving and aiding students throughout the course

Summer of Science Mentor | *Maths and Physics Club, IIT Bombay* *(May'23 - July'23)*
- Mentored **6** students in learning project on **Data Structures** and **Algorithms**, providing resources & guidance

Technical Skills

Programming	C/C++, Python, Java, Bash, Awk, Sed, VHDL, Assembly, MATLAB
Development	HTML, CSS, JavaScript, Bootstrap, MySQL, Flutter, React, Django
Data Science	NumPy, Matplotlib, Pandas, TensorFlow, PyTorch, Scikit-Learn, NLTK
Other Tools	Git, LaTeX, AutoCAD, FLTK, Doxygen, Z3, MuJoCo, Wireshark, Sphinx

Relevant Courses

Computer Science	Data Structures and Algorithms†, Software Systems Lab, Computer Networks†, Design and Analysis of Algorithms, Logic for Computer Science, Computer Architecture†, Discrete Structures, Operating Systems†, Automata Theory
Machine Learning	Artificial Intelligence and Machine learning†, Foundations of Intelligent and Learning Agents, Digital Image Processing, Data Analysis and Interpretation
Mathematics	Calculus, Linear Algebra, Optimization Models, Differential Equations, Game Theory
Others	Introduction to Electrical and Electronics Circuits, Quantum Physics and Application, Electromagnetism, Economics, Engineering Drawing

† *Theory + Lab*

Extracurriculars

- Bagged **1st** position out of 400+ teams in **CodeWars V1**, a Bot programming contest by WnCC *(2021)*
- Placed among **top 50** teams over institute by developing a **Trading** strategy for indices and utilizing **K-Means** clustering for classifying **stocks** in **Limestone Data Challenge** by **Tower Research Capital** *(2023)*
- Built a Wifi controlled Bot in **XLR8** competition held by Electronics and Robotics Club, IIT Bombay *(2022)*
- Pitched a startup idea about **Electric Vehicles** in **EnB Buzz** event organized by E-Cell, IIT Bombay *(2021)*
- Junior **Diploma** in **Music** (Subject - Synthesizer), received from **Prayag Sangeet Samiti**, Prayagraj *(2019)*
- Secured **Merit** Prize in 13*th* National **UCMAS** Abacus & Mental Arithmetic Competition, New Delhi *(2014)*