Pursuing a Minor in **Artificial Intelligence** and **Data Science** offered by the CMinDS, IIT Bombay

Scholastic Achievements

- Awarded **AA grades** in **11** courses for exemplary academic performance during first four semesters [2025]
- Secured **98.83** percentile in *IIT-JEE Advanced* examination among **0.18 million** candidates [2023]
- Secured **99.83** percentile in national *JEE Mains* examination among **1.16 million** candidates [2023]
- Achieved **99.94** percentile in *MHT-CET 2023* examination among **0.63 million** candidates [2023]
- Qualified the prestigious **KVPY SA** examination conducted by IISc Bangalore [2022]
- Qualified **NTSE Stage 1** examination from Maharashtra state, conducted by MSCE Pune [2021]

Professional Experience

AI/ML Intern | *IIFL Capital* [May '25 - Jul '25]

- Achieved **98.3%** Recall@3 and **97.7%** MRR by building a centralized Retrieval-Augmented Generation **(RAG)** system using *Azure OpenAI*, with custom API endpoints for query handling and document uploads
- Reduced API costs and improved real-time performance by integrating **Redis-based caching** to eliminate redundant queries to the RAG backend, resulting in **faster response** times and **lower compute load**.
- Delivered a chatbot-style frontend built with React and multi-prompt support, backed by chunked document embeddings stored in a remote *PostgreSQL* database and raw files managed on *Azure Blob Storage* efficiently

Key Projects

Road Segmentation from Satellite Images | GNR 633 | *Course Project Prof. Alok Porwal* [Jan '25 - Apr '25]

- Achieved **44.95%** Dice Coefficient and **29.30%** IoU on binary road segmentation by training a U-Net model on the Massachusetts Roads Dataset, addressing severe class imbalance in high-resolution satellite imagery
- Improved segmentation performance on imbalanced aerial imagery by designing a custom data pipeline and applying preprocessing techniques, such as grayscale mask binarization, normalization, and augmentation
- Enhanced model generalization by incorporating learning rate scheduling, dropout regularization, and pixel-level loss functions, enabling effective detection of thin road structures in high-resolution inputs

Deepfake Detection | DS303 | *Course Project Prof. Manjesh Hanawal* [Jan '25 - Apr '25]

- Achieved **84.62%** video-level accuracy on the SDFVD dataset by training a ensemble of a custom CNN and a random forest classifier, and averaging their outputs to robustly classify real vs. fake content
- Improved input quality and model generalization by extracting **I-frames**, precisely isolating dominant facial regions using OpenCV, FFmpeg, and **MTCNN**, and applying data augmentation on cropped faces
- Engineered **11**-dimensional facial feature vectors using Local Binary Patterns (LBP) for texture analysis and Canny edge contours for structural cues, enhancing the model's sensitivity to subtle deepfake artifacts

Web Developer | ISRO Problem Statement - **Gold Medal** | *Inter IIT Tech Meet* [Nov '24 - Dec '24]

- Created an interactive website that effectively showcased the *relative abundances* of various elements on the lunar surface through detailed and accurate **2D** and **3D** visualizations for the ISRO Problem Statement
- Leveraged advanced React libraries like **Three.js**, **OpenLayers** to build a dynamic website with custom tile-based 2D lunar mapping and an interactive 3D model, enabling accurate and intuitive visual representation

Artist Audio Classifier | DS203 | *Course Project Prof. Vinay Kulkarni* [Aug '24 - Nov '24]

- Extracted 20 MFCCs from 115 audio files across six artist categories, enhancing feature richness by segmenting into 6-second clips and incorporating Delta/Delta-Delta coefficients for temporal dynamics
- Augmented dataset with pitch shifting, time-stretching to boost generalization via increased data diversity
- Achieved **78.5%** classification accuracy by tuning **Random Forests** with RandomizedSearchCV, applying PCA to reduce dimensionality while retaining **90%** variance, improving generalization across artist classes

Fashion Recommendation System | Summer of Code | *WnCC, IIT Bombay* [May '24 - Aug '24]

- Constructed a sophisticated recommendation system for visually similar fashion products, leveraging a curated dataset of approximately **45,000** fashion images encompassing diverse **styles** and **categories**
- Leveraged Transfer Learning to recommend visually similar fashion items by extracting **2048** dimensional feature vectors using pretrained **ResNet50** model, enabling robust visual similarity across diverse styles
- Deployed a fully functional web application using Streamlit, featuring a responsive and intuitive UI, drag-and-drop image upload, and real-time inference to deliver instant, visually similar product recommendations

Email Spam Detection | *Self Project* [Jun '24 - Jul '24]

- Achieved **97.5%** classification accuracy by training and evaluating multiple models on labeled email data, ultimately selecting **Multinomial Naive Bayes** for its balance of high precision and low false positives
- Standardized raw email text for feature extraction by leveraging **NLTK** tools like tokenization, stemming, and punctuation removal, ensuring clean and consistent inputs for downstream vectorization and modeling
- Enhanced feature representation by experimenting with **Bag of Words**, **Word2Vec**, and ultimately applying **TF-IDF** vectorization to capture term relevance and frequency, enabling robust input encoding

Positions of Responsibility

Web Nominee | *Student Mentor Programme (SMP), IIT Bombay* [May '25 - Present]

- Designed and developed SMP's official website, accessed by **5,000+** students, leveraging React.js to build a responsive, modular component-based architecture and optimize rendering for smoother user experience
- Developing the Peer Review portal to evaluate ISMP candidates based on feedback from fellow applicants

Web Developer | *SeDriCa, UMIC, IIT Bombay* [Jul '24 - May '25]

- Spearheaded the complete development and deployment of SeDriCa's **official website**, building a responsive and performant frontend using React, implementing *SEO* practices, and hosting on a custom domain
- Aligned the web platform with SeDriCa's goals by collaborating closely with designers and project leads

DAMP Mentor | *Student Mentor Programme (SMP), IIT Bombay* [May '25 - Present]

- Selected for a **12**-member team through a rigorous process involving in-depth interviews and peer evaluations
- Mentoring **8** sophomores in their academic, personal, and co-curricular pursuits through credible guidance

Technical Skills

Programming	C++, Python, JavaScript, SQL
Development	HTML, CSS, Bootstrap, React, Node.js, Git
Data Science	Pandas, NumPy, SciPy, Scikit-Learn, TensorFlow, OpenCV, Spark, Azure
Other	LaTeX, Adobe Photoshop, Fusion 360, LaserCAD, Canva, Blender

Relevant Courses Undertaken

Mathematics	Linear Algebra, Differential Equations, Calculus I, Calculus II
Physics	Introduction to Classical and Quantum Physics, Physics Lab
Computer and Data Science	Computer Programming and Utilization, Programming for Data Science, Introduction to Machine Learning, *Supervised Machine Learning, *Advanced Learning Algorithms
Economics	Microeconomics, Macroeconomics, Statistics, Econometrics**
Others	Design, Makerspace, Chemistry Lab, Management

**Online Courses*, ***Currently enrolled courses*

Extra-curricular Activities

- **Won** the Economics Department Cricket League, held by the Economics Students' Association [2025]
- Represented Hostel 5 in the Annual Institue Sports General Championship (GC) tournament [2025]
- Reached the **Semi-Finals** of the **Mixed Cricket League**, an open cricket league of the institute [2023]
- Completed a year-long course in **Volleyball** under **National Sports Organization** (NSO) [2024]
- Represented Hostel 1 in Volleyball matches in Freshiesta Tournament during the freshie year [2023]
- Held the position of Vice Captain for Celtics House, demonstrating strong leadership skills [2019]