



**Divyanshu Suman**  
**Chemical Engineering**  
**Indian Institute of Technology Bombay**

**22B0401**  
**B.Tech.**  
**Gender: Male**  
**DOB: 09/07/2005**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	
Intermediate	CBSE	BOSTON PUBLIC SCHOOL	2022	97.00%
Matriculation	CBSE	R.A.N. PUBLIC SCHOOL	2020	97.80%

Pursuing a **Dual Minor** in the department of **Computer Science and Machine Intelligence & Data Science**

## SCHOLASTIC ACHIEVEMENTS

- Ranked in the **Top 1%** candidates in **JEE-Advanced** out of the **0.25 million+** candidates across India (2022)
- Placed in the **Top 0.5%** candidates in **JEE Mains 2022** out of **0.8 million+** candidates across India (2022)
- Cleared **NTSE** stage 1 with state rank **12** in Uttar Pradesh amongst **0.1 million+** students (2020)
- Bagged **Interational Ranks 102, 154 and 142** in Cyber, Science & Mathematics Olympiads (2019,18,18)

## PROFESSIONAL EXPERIENCES

**Machine Learning Engineer** | *Bharat Gold Ornaments ( Aurifex.ai )* (Summer 2024)

### Machine Learning

- Developed **JewelsmithAi** an interactive **chatbot** for **jewelry design generation** based on custom user preferences
- Explored concepts and implementation of **Stable Diffusion** and **Fine Tuning** techniques through **research papers** on **Deep Diffusion Probabilistic Models**, **Latent Diffusion Models**, **Textual Inversion** & **DreamBooth**
- Integrated **Style Transfer** using **Textual Inversion** & **Dreambooth** with **Stable Diffusion** for outfit matching jewelry

### ML Ops

- Engineered a **Serverless Architecture** using AWS services like **AWS Lambda**, **API Gateway** and **AWS S3**
- Implemented user data management (storage & retrieval) pipeline using **AWS S3**, **MongoDB Atlas** & **REST APIs**
- Developed an **Evaluation pipeline** with semantic similarity analysis, **FID** and **CLIP** scores via **AWS SageMaker**
- Implemented a **CI/CD pipeline** using **Gitlab Workflow** for automatic build & deployment on **AWS EC2** instance

**Machine Learning Applications on Cloth Designs** | *Neuralthread* (Summer 2024)

- Developed models for efficient design pattern clustering, generation & transformation using **GANs** & **Autoencoders**
- Leveraged **K-means Clustering** Algorithm & **Gaussian Mixture Models** for clustering of design patterns
- Implemented **DCGAN** leveraging **batch normalization** & **LeakyReLU** activations for high-fidelity design generation
- Integrated **Conditional GAN** models like **Pix2Pix** enabling style transfer & color transformation of input designs

**Software Engineer Intern** | *Guide: Prof. Asim Tewari | NCAIR, IIT Bombay* (Winter 2023)

Awarded **Letter Of Recommendation** for **exemplary performance** and **dedicated work** by Prof. Asim Tewari

- Engineered a **Decoupled Architecture** for speech-to-text transcription using **OpenAI Whisper** and **Flask APIs**
- Incorporated **Voice Activity Detection (VAD)** algorithms to optimize transcription initiation and termination
- Utilized **Whisper-cpp**, **WebAssembly** & **Emscripten** to achieve near-native performance for live streaming transcription
- Containerized the application using **Docker Compose** with **NGINX** for SSL Termination & seamless deployment

## KEY PROJECTS

**UniTrain** | *HelloFOSS* | *Web and Coding Club, IIT Bombay* (Sep 2023 - Oct 2023)

- Developed a **Python package** for training generalised deep learning tasks such as **Classification**, **Segmentation**
- Implemented single-command training for training **GAN** models like **DCGAN**, **CycleGAN** over custom datasets
- Leveraged **FastAPI** to streamline the deployment process, ensuring effortless one-click model inference capabilities
- Employed **Python CLI** arguments and utilized libraries such as **ArgParse** for command-line argument parsing

**Attacking LLMs with Projected GD** | *Seasons of Code* | *Web and Coding Club* (May 2024-June 2024)

- Implemented research on **Adversarial Attacks** using **Projected Gradient Descent** to identify vulnerabilities in Large Language Models (LLMs) and generated adversarial prompts to evaluate and enhance model robustness
- Applied **Relaxed one-hot encoding** for smooth gradient optimization & tested implementation on **Gemini LLM**
- Utilized **Simplex Projection** & **Entropy Projection** to ensure valid probability distributions & maintain diversity

**ChromaMart : E-commerce Website** | *Seasons of Code* | *Web and Coding Club* (May 2023-June 2023)

- Developed a full-stack e-commerce website using **ReactJS** (frontend), **Django** (backend) and **SQLite3** (database)
- Utilized **JavaScript** to implement a user-friendly **My Cart** option, streamlining the shopping experience for users
- Integrated crucial functionalities such as **Login**, **SignUp**, **Logout** options and **Form Handling** using **Django**

## Algorithmic Trading | Summer of Science | Maths and Physics Club, IIT Bombay (May 2023-June 2023)

- Explored implementation of **algorithmic trading strategies** using Python and quantitative analysis methodologies
- Learned how to **analyse financial data** to identify trends and patterns, aiding in informed trading decisions
- Conducted comprehensive **backtesting** and performance evaluations to refine trading algorithms and strategies
- Finally used **Interactive Brokers (IBKR)** API to automate buy/sell decisions for currencies as well as stocks

## CaptionGenius : Image Captioning using Deep Learning | Self Project (Sep 2023 - Oct 2023)

- Developed a Robust **Encoder-Decoder** Architecture for **Image Captioning** using the **Flickr8k** dataset
- Employed **NLP** techniques and **GloVe** word-embeddings to effectively preprocess captions for enhanced performance
- Utilized pre-trained **VGG16**-based CNN feature extraction and **LSTM** for caption processing in the encoder stage
- Improved caption quality using **Beam Search** during prediction, as evidenced by corpus **BLEU scores**

## Web Crawler : Recursive Web Scrapping Project | Self Project (Oct 2023 - Nov 2023)

- Developed a Web crawler, utilizing **BeautifulSoup** and **requests** libraries for data extraction from web pages
- Implemented an effective **recursive crawling algorithm** for multi-level data extraction to **user-defined depth**
- Integrated **link categorization** feature within the web crawler to distinguish between external and internal links

## Sign Language Recogniser | Self Project, IIT Bombay (Nov 2023 - Dec 2023)

- Used **OpenCV** to capture live video from WebCam and used **HandDetector Class** from **CVzone** to detect hands
- Used a Pre-trained **Convolutional Neural Network (CNN)** for accurate hand gesture recognition & classification

## Ecomind : Recommendation Engine | Course Project | Prof. Asim Tewari (Sep 2023 - Nov 2023)

- Developed a movie recommendation bot utilizing **content-based filtering** to suggest movies based on user search
- Integrated user-friendly **Gradio** based UI in Google Colab for enhanced user interaction, accessibility, and usability

## POSITIONS OF RESPONSIBILITY

### Institute Web and Coding Secretary | Institute Technical Council (April 2024 - Present)

An integral part of **90+** membered team conducting **50+** events catering the technical interests of **10k+** students

Technical	<ul style="list-style-type: none"><li>• Developed a multiplayer game engine for <b>CodeWarsV4</b> using <b>Python</b> and <b>PyGame</b></li><li>• Contributed to the development and deployment of the <b>Seasons of Code WebPortal</b></li></ul>
Professional	<ul style="list-style-type: none"><li>• Chairing a team of <b>10</b> conveners to ideate and conduct <b>20+</b> programming projects &amp; events</li><li>• Coordinated Summer Coding Projects: <b>150+</b> projects, <b>200+</b> mentors, <b>1300+</b> mentees</li><li>• Organized <b>IT/Software</b> Internship Preperation session helping <b>400+</b> IT Enthusiasts</li></ul>
Initiatives	<ul style="list-style-type: none"><li>• Conducted <b>3</b> summer courses on <b>DSA, ML &amp; Web Dev</b> enrolled by <b>2000+</b> students</li><li>• Conducting <b>PAN India</b> Hackathons to promote projects in <b>Deep Learning</b> and <b>Web3.0</b></li><li>• Revamping <b>WnCC</b> website and <b>Competitions</b> portal for streamlining the processes</li></ul>

### Mentoring and Leadership (Nov 2022 - Present)

- **Technical Summer School** : Mentored **900+** UGs in a course on **Data structures & Algorithms**
- **CodeWars Mentor**: Mentored a UG team to optimize strategies, achieving **1st** position among **400+** teams
- **XLR8 Mentor**: Mentored a team of **5** UGs to develop a mobile-controlled car using **Arduino** and **ESP32**
- **EnB Buzz Mentor**: Guided **4** UGs to prepare pitch deck, BMC, achieving **4th** position among **250+** teams

## TECHNICAL SKILLS

Languages	C   C++   Python   Bash   SQL
Softwares	Github, GitLab, AWS SDK, L <sup>A</sup> T <sub>E</sub> X, MATLAB, AutoCAD, Fusion360, Docker
Data Science	NumPy, Pandas, Pytorch, SeaBorne, Scikit-Learn, Matplotlib, OpenCV, TensorFlow
Development	HTML , CSS , Bootstrap , Tailwind , Javascript , Django , NGINX

## EXTRACURRICULAR ACTIVITIES

Competitions	<ul style="list-style-type: none"><li>• Actively participate in CP contests, achieving a rating of <b>1540</b> on <b>Codechef</b> &amp; <b>1460</b> on <b>CodeForces</b></li><li>• Bagged <b>4th</b> position in <b>SARCasm crypthunt</b> amongst <b>100+</b> teams from IIT Bombay</li><li>• Secured position among <b>Top 10</b> participants in <b>LLM Bootcamp</b>, by Pathway Inc.</li><li>• Placed in the <b>Top 5</b> teams in Predictioneer machine learning competition by Azeotropy</li></ul>
Professional	<ul style="list-style-type: none"><li>• Serving as the <b>PAN India President</b> of <b>10x Developers Club</b> at Coding Ninjas</li><li>• Hosted the <b>India CEO</b> of <b>J.P. Morgan Chase &amp; Co.</b> as POC at E-Summit 2023</li><li>• Coordinated with <b>60+</b> E-Cell members to manage marketing &amp; publicity of <b>E-Summit</b> 2023 attended by <b>120+</b> business tycoons across India with over <b>1 Lakh+</b> total attendees</li></ul>
Social	<ul style="list-style-type: none"><li>• Volunteered <b>80+ hours</b> of service under the Educational Outreach Programme   NSS, IITB</li><li>• Cleared <b>2.5 tonnes</b> of garbage with <b>300+</b> volunteers in Versova Beach Clean-Up Drive</li></ul>