Vishwam Raval
Metallurgical Engineering and Materials Science
Indian Institute of Technology Bombay

22B2468
B.Tech.
Gender: Male
DOB: 02/10/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	8.41
Intermediate	CBSE	Geetanjali Olympiad School	2022	94.60%
Matriculation	ICSE	Cambridge Public School	2020	96.17%

Pursuing a **Minor degree** in **Computer Science and Engineering** department, IIT Bombay

Scholastic Achievements

- Awarded the prestigious **Undergraduate Research Award** for research in micromechanics of materials *[2024]*
- Achieved a perfect **AA (10)** grade in **5** courses in the sophomore year for stellar academic performance *[2023-24]*
- Among the top **2 percentage** in IIT-JEE Advanced examination 2022 out of **0.15 million+** candidates *[2022]*
- Obtained **99.57 percentile** in the IIT-JEE Mains examination 2022 amongst **1 million+** candidates *[2022]*

Professional Experience

RICEBERG VENTURES, LLC | Software Developer Intern *[Jun'24-Present]*

Developing a Customized ChatBot for assessing Managerial Qualities

- Developed a **ChatBot** for interviewing and evaluating candidates for managerial positions utilizing existing **LLMs**
- Utilized packages such as **transformers** and **torch** to define a pipeline based on **Llama3 API** from **HuggingFace**
- Utilized the **Gradio** library to create a user-friendly interface for the ChatBot and to deploy it on **HuggingFace**

Website for HR's and candidates to smoothen the job application procedure

- Developed a **Django** and **Bootstrap** website enabling candidates and recruiters to easily post their CVs and JDs
- Utilized Python packages such as **DjangoRestFramework** and **Serializers** to make APIs using **POST** method
- Integrated backend **databases** to validate specific data inputs sourced from **APIs**, ensuring accuracy and reliability

Key Projects

AI-Enabled Sign Language Predicting Glove with TENG | Research Project | SURP *[Jul'24-Present]*

Guide: Prof. Prasanna Mural, Metallurgical Engineering & Material Sciences Department

- Working on a project aimed to design **AI** based tool for predicting sign language with optimized **TENG** technology
- Studied numerous **research papers** to gain insight into the properties of piezoelectric materials to be considered
- Currently working on consolidating the **datasets** of these properties from various experimental and textual sources

Assessment & Improvement of Bond Valuation Methods | Finance Club, IITB *[Jul'24-Present]*

- Conducted **analysis** supporting Berkshire Hathaway's **$300 million** investment in Harley Davidson bonds, 2009
- Made a **comparative analysis** of the outcomes of investing in **bonds** and investing in Harley Davidson **stocks**

Stock Price Prediction using Long-Short-Term-Memory (LSTM) | Self Project *[Jul'24]*

- Developed an LSTM neural network model with customizable layers, hidden units, and dropout for regularization
- Implemented normalization, LSTM input preparation via windowing, and dataset split for training and validation
- Trained LSTM using Adam optimizer, adaptive learning rates, scheduler for rate adjustment, thus minimizing MSE

Developed a Recurrent Neural Network (RNN) model form scratch | Self Project *[Jun'24]*

- Developed a custom RNN model using only **NumPy** and MatPlotLib, applying **forward** & **backward** propagation
- Integrated **Stochastic Gradient Descent** thus improving efficiency and convergence for time-series data prediction
- **Trained** and **tested** the RNN model on a sinosoidal-curve with additional noise achieving a loss of less than **2%**

Software Development for Stress Field Calculation | Supervised Learning Project *[Jan'24-May'24]*

Guide: Prof. M.P.Gururajan, Metallurgical Engineering & Material Sciences Department

- Analyzed the solutions for determining the elastic strain field in an isotropic medium using the **Eshelby's method**
- Developed **python** scripts to implement these solutions using the **stress tensor** and geometrical known quantities
- Designed a **GUI** integrated with **Mayavi**, open-source software model for visualization of the outputs for the user

Optimal move generation in Tic Tac Toe game | Self Project *[Dec'23]*

- Developed Tic Tac Toe move generation with Depth First Search **Minmax** algorithm, improving gameplay strategy
- Optimized moves in Tic Tac Toe with alpha-beta pruning, reducing evaluated moves by **30%** increasing efficiency

Other Projects

1-D Transient Conduction | Course Project | Prof. Deepoo Kumar *[Apr'24]*

Applied finite element method to determine the fuel element temperature distribution across a plane wall

- Examined boundary conditions, stated assumptions and identified temporal conditions to stabilize explicit equations
- Plotted and analyzed the graph of the temperature change with respect to time using **MatLab**

Reverse Engineering | Course Project | Materials Tetrahedron *[Mar'23-May'23]*

- Conducted a **materials** study by disassembling a device as part of a course project under Prof. Parag Bhargava
- Conducted an analysis of the diverse **manufacturing** techniques used in the production of the device's components

IKEA Business Report | Course Project | Management | Prof. Ashish Pandey *[Mar'23-Apr'23]*

- Studied IKEA's **Organizational Structure**, **Growth Strategies**, **SWOT** analysis, and **TOWS** analysis in-depth
- Analyzed **15+** metrics to identify **growth opportunities**, **strengths**, **weaknesses**, and **threats** for IKEA Group

Obstacle Avoiding-Line Following Arduino Bot | Course Project | Makerspace *[Jan'23]*

- Developed a system of **IR** sensors and **Arduino** UNO to enable autonomous line following capabilities for a bot
- **Engineered** and **integrated** a mechanical claw to enhance obstacle avoidance capabilities within the bot's path

Positions Of Responsibility

Institute Squash Secretary | Gymkhana, IIT Bombay *[Apr'24-Present]*

*Elected student representative of IITB Squash in a council of **22** members dedicatedly catering **13k+** students*

- Managing an INR **0.4M** budget for the Institute Squash Team, events, and upkeep of sporting facilities
- Organised Aavhan Squash, a tournament featuring **12** colleges across India with prizes of worth **INR 20k**
- Managed diverse campus squash events, such as Institute Squash Open and League catering to **6k+** students

Technical Proficieny

Programming:	C, C++, Python, MATLAB, SQL, HTML
Libraries/Modules:	Torch, Pandas, NumPy, Scipy, Matplotlib, Django, Langchain, Streamlit
Tools:	git, LaTeX, Anaconda, Visual Studio, SolidWorks, Colab, Bootstrap, Llama3
Competitive Programming:	Rated a maximum of **1323** on **CodeForces**, **4** star badge on **Hackerrank**

Courses Undertaken

Computer Science:	Computer Programming and Utilization, Logic for CS, Discrete Structures
Mathematics:	Integral Calculus, Linear Algebra, Differential Equations
Material Science:	Structure of Materials, Transport Phenomena and Heat Transfer, Statistics and Probability for Materials Engineers, Numerical Methods for Materials Engineers
Miscellaneous:	Artificial Intelligence and Data Science, Computation Lab, Data Structures and Algorithms(LearnersSpace), Economics, Google Cybersecurity (coursera)

Extracurriculars

Sports	• Secured the **2nd** place in the Squash teams event representing IIT Bombay at Aavhan, IITB *[2024]* • Represented IIT Bombay at **2** inter-state and intra-state Squash tournaments *[2024]* • Selected as one of the **6** members for the **INTER-IIT** Squash Camp training *[2023]* • Secured **2nd** place in Squash in General Championship (inter-hostel competition) for hostel 6 *[2023]* • Successfully completed Badminton training of one year under **NSO**, IIT Bombay *[2022-2023]* • Secured **1st** place in intra-school football tournament among 4 other houses *[2019]* • Represented school at various inter-school football tournaments *[2019]*
Misc	• Events Organiser in MoodIndigo, IITB, Facilitated the smooth conduction of Poker Night *[2022]* • Events Organiser at TechFest, IITB, Facilitated the smooth conduction of Techconnect *[2022]* • Secured **1st** place in inter-school Competitive Programming competition (Synchronize) *[2019]* • Secured the **1st** position in state-level INTER-School Bot Racing competition (Aarohan) *[2018]* • Received certificate of appreciation for Rubik's Challenge for completion in **29 seconds** *[2017]* • Developed a working prototype for a **smart streetlight** using **Arduino** and **sensors**