Hardik Shrivastava
Mechanical Engineering
Indian Institute of Technology, Bombay

190100053
B.Tech.
Gender: Male
DOB: 27-10-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	

Pursuing a **Minor** degree in the Department of **Electrical Engineering**

Technical Projects

IIT Bombay Racing Team

Faculty Advisor: Prof. Amber Shrivastava | Dept. of Mechanical Engineering
*A cross-functional team of 70+ students designing and fabricating an **electric race car** for the Formula Student **international** competition which is conducted by SAE and IMechE held every year at Silverstone, United Kingdom*

- FSUK'20 Results **First Indian team** to achieve **1st** position in engineering design, overall **4th** rank among **73 teams**

Design Engineer | Drivetrain *(May'21 - Present)*

- Conceptualizing and designing the **mounting configuration** for the Motor and Gearbox mounts for maximum **strength to weight ratio** and minimum **deformation**, fixed to the **monocoque chassis** of our new car E13
- Collaborating with **Wipro 3D** for the fabrication of **additively manufactured** motor and gearbox mounts and employing **industrial standards** of performance indices for **material selection**
- Calculated the energy consumption and lap time for **4 Wheel Drive** vs **2 Wheel Drive** using **OptimumLap** for **FSUK** track

Junior Design Engineer | Drivetrain *(September'20 - May'21)*

- Represented the team by presenting the conceptualized design of an **Electric Powertrain** in the Engineering Design Presentation **(EDP)** category of the **Formula Student Electric Vehicle (FSEV) Concept Challenge 2021**
- Developing a **MATLAB** code for restricting **battery power output** according to the **Formula Student Competition rules**
- Compared **2-motor** and **1-motor** rear wheel drive configuration on the basis of different parameters for the Design Event of **Formula Bharat 2021** Electric Vehicle category, where we achieved **5th** position

Hands-free Elevator Mechanism and Auto-sanitization *(July'20 - August'20)*

Institute Technical Council (ITC)

- Designed a **contactless elevator ride** prototype by implemented concepts of **fluid compression** and **Pascal's law** which uses foot pedals to press floor buttons, further modeled on **Fusion 360** and simulated on **Ansys**
- Designed an **auto-sanitization** system for the elevator by integrating **ultrasonic sensors** and programming the **Arduino Uno** microcontroller board whose results are simulated on **Tinkercad**

Parallel QR matrix factorization | Course Project *(February'21 - April'21)*

Guide: Prof. Shivasubramanian Gopalakrishnan | Dept. of Mechanical Engineering

- Developed **parallel** versions of the **C++** code developed for **QR** matrix factorization using **modified Gram-Schmidt** and **Householder** algorithms for CPU and GPU parallelization using **OpenMP** library and **NVIDIA's CUDA** framework
- Performed a **time-study** to analyze the effect of **matrix size** and number of **parallel threads** on the program's execution time and achieved upto **60% reduced execution time** as compared to the sequential algorithm

Leadership and Mentorship Roles

Mentor | IIT Bombay Racing Summer Induction Program *(April'21 - present)*

IIT Bombay Racing Team

- Supervising **2 Junior Design Engineers** by acquainting them with knowledge and experience in **Drivetrain** subsystem
- Guided **4** trainees to excel in the basics of **race car engineering** through literature study, simulations and tasks
- Mentored **two teams** for a **2-month** long mechanical project on designing a **V-12 engine** and **RV helicopter** assembly

Teaching Assistant | CE 102 *(March'21 - June'21)*

Prof. R.S. Jandig | IIT Bombay

- Conducted **tutorial sessions** for a batch of **100 students** in their departmental course of **Engineering Mechanics**, cleared their **doubts** and assisted the professor in **administrative tasks** like **proctoring students** in exams

Design Convener *(May'20 - April'21)*

Institute Media Body | Insight

- Creatively ideated and designed illustrations for **Newsletter 22.2, 23.1** and **Posters** using **Adobe Illustrator**, and **Adobe Photoshop** for the Instagram Page of Insight
- Ideated and designed **motion poster** using **Adobe After Effects** for the publicity of **Newsletter 22.2**

Technical Skills

Programming Languages : Python, C++, MATLAB, HTML, CSS3, DART for Flutter
Softwares & Tools : ANSYS, AutoCAD, SolidWorks, LTSpice, OptimumLap, Android Studio, Adobe Premiere Pro Adobe Illustrator, Adobe Photoshop, Adobe After Effects,