Saksham Katiyar | **20D100022**
Mechanical Engineering | **Dual Degree (B.Tech. + M.Tech.)**
Indian Institute of Technology Bombay | **Gender: Male**
Specialization: Computer Integrated Manufacturing | **DOB: 6/23/2001**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	ISC	Dr. Virendra Swarup Education Centre	2019	94.00%
Matriculation	ICSE	Dr. Virendra Swarup Education Centre	2017	96.00%

Pursuing a **minor** degree in the Department of **Computer Science and Engineering**

Scholastic Achievements

- Currently holding **Department Rank 1** in Mechanical Engineering Dual Degree department *(2022)*
- Achieved **99.29 percentile** in *JEE Main* among **1.02 million** candidates *(2020)*
- Secured **97.87 percentile** in *JEE Advanced* among **0.25 million** candidates *(2020)*
- Ranked **29th** in *UCEED* among **12000+** candidates all over India *(2020)*
- Rewarded by the *UP Govt.* for securing **highest marks** in **Computer Science** in *ISC Examinations* *(2019)*
- Awarded *UPSTSE scholarship* worth **₹48000** by the *Council of Science & Technology, UP* *(2017)*

Professional Experience

Product Design & Management Intern | *FogTeams* *(May 2022 - July 2022)*
FogTeams is working to build an office metaverse for distributed teams to collaborate like physical office

- Designed and prototyped several **UI/UX** requirements of the product using **Figma** software
- Ideated and developed the **UX flows** for app integrations with **Zoom** and **GMeet** from scratch
- Studied product's competitions and designed a new **co-browsing feature** to collaborate in meetings
- Added **user controls** and hover states to increase engagement on the **virtual platform**

Key Projects

Formula Student | *IIT Bombay Racing Team* *(February 2021 - March 2022)*
A 3-tier cross-functional team of 90+ students to build an electric vehicle for Formula Student

Junior Design Engineer | *Drivetrain Subsystem* *(September 2021 - March 2022)*

- Optimized **motor mount** for weight reduction through several iterations on **SolidWorks** and **Ansys**
- Designed and optimized the **gearbox mount** for E13, our upcoming entry for FSUK'23
- Upgraded the previous **driveshaft** for increased length requirement, suggested two new designs for further weight reductions and analysed all the designs on **KISSsoft** software for validation
- Studied the thermal effect of **TIG welding** on Aluminium alloy Al6061 from several research papers

Trainee | *Mechanical Division* *(February 2021 - September 2021)*

- Modelled parts of a **V6 combustion engine** including rocker-arm assembly, oil gasket, intake manifold and performed **structural analysis** of critical components under static loads
- Studied the designs of **wheel assembly, drivetrain** and **suspension** in formula and production cars

Computer Vision based Web App *(April 2021 - June 2021)*
Summer of Code | Web n' Coding Club, IITB

- Pre-processed a **CatsVsDogs dataset** and deployed a **neural network** to classify the images
- Deployed a pre-trained **YOLOv5** model to perform **object detection** and **localisation** on images, videos and live-stream in real-time on a **web app** using **Flask** web framework
- Added features to list the objects detected through **webcam** in real-time and warn for specific objects

Functional Weeder *(October 2021 - March 2022)*
Team Project | E-Yantra Robotics Competition

- Developed a **multi-robot** environment to perform labor-intensive **agricultural** tasks autonomously
- Implemented functional programming language **Elixir** to code the movement and **obstacle avoidance** algorithm of the robots, and web framework **Phoenix** for communication between the robots
- Assembled two robots with **Raspberry Pi**, **robotics arm** and necessary **sensors** to perceive data

Autonomous Object Catching Robot *(May 2021 - July 2021)*

Institute Technical Summer Project | Institute Technical Council

- Programmed a robotic simulation in **ROS** framework to catch falling objects autonomously by performing **object detection** on a live camera stream using **OpenCV** library in Python
- Simulated a 4-wheeled robot and camera setup on **Gazebo** software using URDF files and custom plugins

Lasso Game *(December 2020 - February 2021)*

Course Project | Computer Programming and Utilization

- Built a two-mode **graphically responsive game** in **C++** using libraries like **composite** and **sprite**
- Implemented **object-oriented** methods to add features like scoreboard, timer, coins, bombs, magnets, etc

Centre of Gravity Locating Device *(February 2022 - April 2022)*

Course Project | Mechanical Measurements

- Designed a **measurement device** from scratch to calculate the coordinates of the **centre of gravity** of any object in a 2-D plane using only **digital scales** and equilibrium equations
- Curated the **CAD design** on Solidworks and calculated its specifications like range, error and resolution

Positions of Responsibility

Core-Team Member | *Electronics and Robotics Club, IITB* *(June 2021 - April 2022)*

- Part of a **15-member core team** catering to **5000+** robotics enthusiasts in the institute by **conducting** events like XLR8, Line follower workshop, Controls Bootcamp, ER101 and ROS Workshop
- Mentored **100+** students in **3D-Modelling** in workshops like **Tinkering Bootcamp** and **ER101**
- Added blogs' section to our current website using a content management system **forestry.io** and **Next.js**

Web Development Head | *All IIT Robotics Association* *(August 2021 - December 2021)*

- Represented IIT Bombay in **AIITRA**, a collaboration between robotics clubs of **top 6 IITs** to conduct country-wide hackathons sponsored by renowned corporations, with a reach of **50,000+** students
- Led a team of **20+** members to develop and manage the **official website** of AIITRA
- Designed the website from scratch using **HTML, CSS, Javascript** and **Bootstrap**

Teaching Assistant | *Department of Mechanical Engineering* *(March 2022 - June 2022)*

- Mentored **180+** freshmen in Engineering Graphics and Drawing by making ideal solutions for weekly labs

Key Courses Undertaken

Computer Science : Data Structures & Algorithms, Computer Networks, Computer Programming & Utilization
Online Courses : Data Science Bootcamp , Blockchain Basics, Smart Contracts, Aerial Robotics
Mathematics : Numerical Analysis, Calculus, Differential Equations, Linear Algebra
Department Courses : Strength of Materials, Mechanical Measurements, Manufacturing Processes, Solid Mechanics, Fluid Mechanics, Structural Materials, Thermodynamics

Technical Skills

Programming : Python, C++, Java, Elixir
Web Development : HTML, CSS, Javascript, Bootstrap, Django, Flask, Phoenix
Design : Figma, Photoshop, Illustrator, Lightroom, Snapseed
Libraries : OpenCV, numpy, pandas, sklearn, matplotlib, BeautifulSoup, tensorflow
Softwares : Matlab, Solidworks, Ansys Workbench, AutoCAD, ROS, Gazebo, Git, KISSsoft, Wireshark

Extracurriculars

Technical	• Participated in **Google Code-In 2018** and successfully completed **8 tasks** • Ranked **1st** among **56 teams** in a **CTF** event organised by Cybersecurity Club, IITB • Led a team of **17 members** in an inter-school tech competition among **60+** schools
Cultural	• Efficient in different forms of **photography** including astrophotography & long-exposure • Received multiple rewards in inter-school **art competitions**
Miscellaneous	• Held the position of TechCraft secretary in the **School Student Council** *(2018-19)* • Organised an intra school **tech-fest** comprising **20+** events and **100+** participants • Proficient in speedcubing with current knowledge of solving **6 different** Rubik's puzzles