Harsh Meel

B.Tech., Indian Institute of Technology Bombay'23

Phone: 8440-077-829

Email: harsh.meel15@gmail.com
harsh.meel@iitb.ac.in

LinkedIn: https://www.linkedin.com/in/harshmeel

Examination	University	Institute	Year	CPI/%
Graduation	IIT Bombay	IIT Bombay	2023	8.21
Intermediate	RBSE	Rajat Vidyapeeth Sr. Sec. School, Sikar	2019	93.80%
Matriculation	ICSE	St. Mary's Sr. Sec. School Sikar	2017	96.00%

Pursuing a **Minor** in **Mechanical Engineering** from Department of Mechanical Engineering, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Achieved All India **99.74 percentile** in IIT Joint Entrance Examination - Main 2019, out of **1.2M aspirants** ['19]
- Awarded **INSPIRE scholarship** for performing among top **1%** of **0.2M** aspirants of Senior Board examination ['19]
- Secured **Distinction Certificate** in State Talent Search Examination, conducted by Government of Rajasthan ['16]

PROFESSIONAL EXPERIENCE

ideaForge Technology | R&D Intern [May'22 – June'22]

Global leader in UAV technology | Developing drone solutions for Defence & Homeland Security, Surveying and Enterprises

- Designed plan of **modular**, **disassemblable** wind tunnel capable of **variable** controllable flow in a confined space
- **Developed testing setup** to collect data and analyze flow of tube axial fans and relation of fan-flow parameters
- Proposed further solutions to cut costs of system by over **30%** and power consumption by over **50%** of initial
- Conducted hardware procurement study, vendor shortlisting and prepared detailed **Cost estimation** of project
- Worked **across multiple teams** in different departments to finalize the technical and functional requirements
- Awarded **Letter of Recommendation** by **Co-Founder and VP Engineering** for work and performance delivered

IIT BOMBAY RACING

*A 3-tier cross functional team of **70+** IITB students to build an electric race car for Formula Student. Car E12 **won** Design Event'21 and Overall Championship'21 Concept Class, only Indian car ever to achieve this feat in **Formula Student UK***

Design Engineer | Battery Subsystem [May'21 – June'22]

- Responsible for design, analysis, manufacturing and testing of **400V battery** made of composite material and encompassing lithium-polymer cell modules having capacity of **7.8 kWh** and worth **INR 1Million+**
- Developed a **new method** to calculate energy required by vehicle using **driver performance data** and **transient simulation of race car**, decreasing energy capacity of car by **~33%** , reducing weight and increasing performance
- Engineered new battery assembly with **initiative** of parallel configuration of cells, reducing battery pack heating
- **Initiated** technical alliance with **Exigo Recycling**, reducing **640 kg** eq. of annual CO_2 emissions in fabrication
- **Led** Battery subsystem at **Formula Bharat'22**, premiere Indian FS event with **41** teams from across the country
- **Trained** and **managed** 3 junior design engineers, acquainting them with design and subsystem management

Junior Design Engineer and Trainee | Battery Subsystem [Nov'19 – April'21]

- **Assembled** Battery (over **1000** parts) working in High Voltage environment with professional standards
- Utilized **hands-on experience** on several manufacturing machines and processes like Hydraulic Press, Laser Cutting, Additive Manufacturing, Carbon Fiber Composite casting, High Voltage wire routing, workshop tools
- Collaborated with electrical team on setting up and testing of **Battery Management System** and Electronics
- **Led 4-member team** to prepare and conduct recruitment tests for **140+** new aspirants for engineering team
- Designed Universal Joint for vehicle's **steering** and conducted structural **finite element analysis** of car's **Chassis**

RELEVANT COURSES UNDERTAKEN

- **Civil Eng. and Others:** Transport Engineering I & II, Fundamentals of Urban Science, Const. Management Probability and Statistical Methods, Geotechnical Engineering, Structural Mechanics,
- **Mechanical Eng.:** Kinematics and Dynamics of Machines, Manufacturing Processes II, Solid Mechanics, Engineering Graphics and Drawing, Fluid Mechanics, Workshop Practice

KEY TECHNICAL PROJECTS

Optimization of Electric Vehicle Charging Infrastructure | BTech Technical Project [Jan'23 – April'23]

Guided by: Prof. Tom V. Mathew

- Conducted comprehensive analysis and optimization of EV charging infrastructure along a highway corridor to address EV adoption and inadequate charging infrastructure in India, receiving a full **(AA)** grade for the work
- Conducted literature review, collaborating with industry experts, identifying gaps and relevant methodologies
- Developed corridor model integrating EV battery capacity, charger power and delay due to charging (service)
- Employed optimization techniques to determine most cost-effective charger placement and charging power
- Demonstrated significance of Level 3 DC fast charging infrastructure for greater EV adoption and level of service
- Validated that current EV battery sizes are sufficient for medium-length highway transportation in India

Overtake Assist System | Institute Technical Summer Project [May'20 – Aug'20]

Tinkerers' Lab IIT Bombay

- Project **Awarded Special Mention (top 7)** out of **64** projects with over **200+** participants from the institute
- Built a vehicle-mountable **driver assistance system** which scrutinizes three-car overtake maneuver on two-laned roads, assisting the driver to avoid head-on collision in difficult weather and poor lightning conditions
- Formulated the final algorithm to be developed into a demonstrative **two-dimensional simulation web-app**
- **Conducted** primary **on-road experiment** to test viability of the system to optimize via **Machine Learning**

Racing Driver Aggression Predictor | Course Project [Aug'22 – Dec'22]

Guided by : Prof. Gopal R. Patil, Dept. of Civil Engineering IIT Bombay

- Analyzed driving behavior of Go Kart drivers based on **82** unique data points generating probability distribution
- Defined and calculated driver aggressiveness using statistical analysis, yielding model to **predict driver skills**
- Received perfect grade (AA) for the quality of work done and final results obtained in the course project

Steel Pedestrian Bridge | Course Project [Jan'22 – April'22]

Guided by : Prof. Siddhartha Ghosh, Dept. of Civil Engineering IIT Bombay

- Designed pedestrian bridge of span **28m**, width **3.2m**, height **14m** with load **500kg/m^2** and wind speed **33m/s**
- Modeled bridge structure in **STAAD Pro**, conducted load & stability analysis yielding a **max 0.42** utilization ratio
- Documented results using detailed Structural Drawings on bridge geometry and connections in **AutoCAD**

VISSIM Traffic Junction Design | Course Project [Jan'22 – April'22]

Guided by: Prof. Narendra R Velaga, Dept. of Civil Engineering IIT Bombay

- **Developed** a traffic volume model on **PTV VISSIM** software and identified congestion causes on Jogeshwari Vikhroli Link Road (JVLR), **6**-laned road in Mumbai connecting Western Expressway to Eastern Expressway
- Designed an improved traffic signal cycle at IITB-JVLR **5-way** junction increasing Level of Service
- Proposed flyover design at junction, **improving** Level of Service **from E (Constraint Flow) to B (Smooth Flow)**

TECHNICAL/SOFTWARE SKILLS

- **Programming Languages** Python, C++
- **Engineering Software** AutoCAD, SolidWorks, Ansys, MATLAB

EXTRA-CURRICULAR ACTIVITIES

Film Making	○ **Winner** Film Cup, **Inter IIT Cultural Meet'22** at IIT Madras**,** leading cinematography of 2 films ○ **Winner** Best Editing as **Director of Photography** in IIT Bombay Music Video General GC'22	[Jan'23] [Feb'22]
Sports	○ **2** times **Table Tennis U-14 Champion,** District Level School Championship ○ **Gold Medalist** in Table Tennis in Freshiesta, IIT Bombay Sports Freshmen Competition ○ **2 Gold**, **2** Silver and **1** Bronze in Badminton, Table Tennis at different School Sport Meets	['13, '14] [Oct '19] ['11 - '16]
Communication Skills	○ Anchor and Stage Manager spearheading a team of **7** organizers at an annual event worth **INR 2M+**, in front of an audience of **6K+** ○ Presenter at Fresher's Technical Orientation'21 and conducted open house QnA session	[Dec '19] [Nov '21]
Others	○ **Volunteered** as assistant in School Science Exhibition by Dept. of Education, Govt. of Raj. ○ Vipassana Meditator and avid reader of philosophy and history content and books	[Feb'18]

POSITIONS OF RESPONSIBILITY

Film-Making Mentor | Silverscreen ['19 – '21]

Film Society of IIT Bombay

- Mentored **100+** freshmen into making **20+** videos in various events like Freshiezza and 24-hours Film Making
- Guided teams of novice film makers through technicalities and skills of film making and editing
- Assisted club administration and engaged in training and selection of institute film making conveners

Events Organizer | International Exhibitions, Techfest IIT Bombay [Dec'19 - Jan'20]

*Asia's Largest Science and Technology Festival | Footfall **1,75,000+** | Events: **280+***

- **Administered** ground level activities and crowd control at International Exhibitions, footfall of **60K+** people
- Responsible for providing support and acting as channel of communication to international exhibitors comprising likes of **ETH Zurich**, **ISRO**, **NHK Japan**, **Engineered Arts**