Raj Viren Lakhani | **170040009**
Mechanical Engineering | **B.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 17-08-1999

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	
Intermediate	Maharashtra State Board Pune	PACE Junior Science College	2017	90.92%
Matriculation	Maharashtra State Board Pune	The Bishop's School	2015	93.80%

Pursuing Bachelor's degree in Mechanical Engineering with **Honors**

SCHOLASTIC ACHIEVEMENTS

- **Ranked 4th** among 125 B.Tech. students in the department and awardee of **Institute Academic Prize** ['20]
- Awarded **AP grades** for outstanding performance in Fluid Mechanics **(1/153)** and Heat Transfer **(2/153)** ['19]
- Selected as **Undergraduate Teaching Assistant** for first year Chemistry and Physics courses ['20]
- Awarded a change of branch (**top 8%** students) based on exceptional academic performance in first year ['17]

PROFESSIONAL EXPERIENCE

Lear Corporation | India Engineering Centre (IEC) Seating, Pune [May '20-Jun '20]

*Received Letter of Recommendation and **Lear Spotlight Award** for potential tool cost and rework time savings*

- Conducted a study of **20+** Seating jargons & **80+ design checks** across Comfort, Legal & Packaging requirements
- Reported legal and **comfort compliance** for the upcoming **Jaguar Land Rover** (JLR) model using **CATIA V5**
- Categorised specifications as OK, NOK or NA after scrutinizing **45+** extracted drawings; raised **25+ deviations**
- Delivered 5 RMDV reports for **right-first-time** line operations and safety checks as per OEM regulations

PUBLICATION

"*Hybrid Turbulence Model Computations of the NASA Juncture Flow Model Using PHASTA*" **presented** at American Institute of Aeronautics and Astronautics SciTech 2020; **272 reads** and **99%** relatively higher research interest

INTERNATIONAL EXPOSURE

University of Colorado, Boulder | Student Intern [May '19-Jul '19]

Advisor: Prof. Kenneth Jansen, Ann and H.J. Smead Aerospace Engineering Sciences Department

- Extracted velocity profile data from **80** locations on the DLR-F6 wing-body model using **Paraview** and **MATLAB**
- Collated pressure coefficient (C_p) data from simulations for **14 cross-sections** on the nose, fuselage and wing
- Qualitatively contrasted CFD simulation results with NASA's measurements averaged over **8** experimental **runs**
- Computed **3** boundary layer (BL) parameters with a mean **accuracy** of **97.6%** resembling experimental studies
- Carried out **grid-independent** study for empty wind tunnel to assess computational costs in introducing wall BL

KEY PROJECTS

Tracking microbubbles in Bifurcating Microchannels | Research Project [Sep '19-Present]

Project Guide: Prof. Janani M, Department of Mechanical Engineering, IIT Bombay

- Extrapolating the study for potential **medical applications**: Tracking emboli through a network of capillaries
- Prototyped Y-shaped microchannel (100µm diameter) using PDMS **soft-lithography** technique on silicon wafer
- Induced microbubble flow using different **flow rate ratios** of continuous (dyed water) and dispersed phase (air)
- Explored 3 parameters affecting preferential movement of microbubbles through bifurcating channel networks

Institute Technical Summer Project | Web and Coding Club, IIT Bombay [May '18-Jun '18]

Worked in a ***team of 4*** *to create an equation solver Android app*; *qualified for development stage based on proposal*

- Implemented **OCR** (Optical Character Recognition) to extract text from images of printed mathematical equations
- Integrated **12+** Python scripts and **3 Python modules** to solve **20** test cases and plot graphs using Matplotlib
- Augmented the accuracy & repeatability of the OCR operation using Image Processing; eliminated noise & glare

Creep Deformation | Student Designed Experiment: Solid Mechanics [Mar '19-Apr '19]

Project Guide: Prof. Parag Tandaiya, Department of Mechanical Engineering, IIT Bombay

- Examined the effect of uniaxial loading on creep deformation of a solder wire at room temperature in a team of 4
- Established a robust experimental setup to measure **strain vs time** in an Sn-Pb wire under **3** different **weights**
- Verified power law relationship (**R^2=0.99**) using **120+** recorded **values**, calculated the average stress component

Glider Design & Optimisation | Course Project: Introduction to Flight [Sep '18-Oct '18]

Project Guide: Prof. Rajkumar S Pant, Department of Aerospace Engineering, IIT Bombay

- Fabricated, tested & troubleshot 2 gliders in a **team of 7**; achieved maximum **range** (**17 metres**) among 10 teams
- Optimised wing load & aerodynamic lift using elliptical wing design principle for prolonged **airtime** (**11 seconds**)

COURSE SEMINAR

Focused Ion Beam (FIB) in Nanomachining | Course: Manufacturing Processes [Oct '19-Nov '19]
Guide: Prof. Pradeep Dixit, Department of Mechanical Engineering, IIT Bombay
- Extensively reviewed literature on applications of FIB machining; learned **4** processes & **3 applications** in depth
- Modeled the FIB of Gallium ions (Ga^+) on silver base metal using **SRIM** – an Ion Penetration Modeling **software**
- Visited FIB Imaging facility of MEMS department to gain practical insights; observed interdiffusion at **200nm**

TECHNICAL SKILLS

Software: MATLAB, AutoCAD, ANSYS, SolidWorks, ADAMS, OpenFOAM, Fusion360 **Programming:** Python, C, C++, Shell

OTHER COURSE PROJECTS

Chain Reaction Simulator | Course: Computer Programming [Mar '18-Apr '18]
Project Guide: Prof. Krishna S, Department of Computer Science & Engineering, IIT Bombay
- Programmed a **C++** code-based simulation of a 2-player version of the popular Android game in a **team of 3**
- Utilised **recursion** algorithm with 2 dimensional arrays and conditional loops for quick matrix computations

Space Mission Simulation | Course: Spaceflight Mechanics [Mar '19-Apr '19]
Project Guide: Prof. Ashok Joshi, Department of Aerospace Engineering, IIT Bombay
- Recreated Ariane5, Hella SAT 3 space mission; studied **15** launch vehicle **specifications** and orbital parameters
- Designed a nominal trajectory and a mission timeline based on **20 calculations** to achieve an **accuracy** of **91%**

Disassembly of a Biometric Machine | Course: Engineering Metallurgy [Sep '18-Oct '18]
Project Guide: Prof. Parag Bhargava, Metallurgical & Material Sciences Department, IIT Bombay
- Studied 6 materials and **5-step** Floating Glass technique for glass plates used in institute attendance machines

Aircraft Crash Investigation | Course: Introduction to Flight [Sep '18]
Project Guide: Prof. Rajkumar S Pant, Department of Aerospace Engineering, IIT Bombay
- Delineated the changes effected in commercial flights after the Delta 191 crash and presented it to **70+ students**

POSITIONS OF RESPONSIBILITY

Department Research Coordinator | Undergraduate Academic Council [Apr '19-Jun '20]
*Honoured with **Department Special Mention award** for a tenure impacting **4000+** students & **200+** stakeholders*
- Mapped **60+** student-professor research interests through **3** centralized research programs for project allocation
- Increased project opportunities by **200%** (YoY); gauged progress through bidirectional student-faculty feedback
- Collaborated with IIT Bombay Research Park in planning & execution of **ResearchX** – a flagship research event

Institute Student Mentor (ISMP) & **Department Academic Mentor (D-AMP)** [Jun '20-Present]
*Selected (**1/39** out of **110** applicants) based on interviews, strong peer reviews, ethics and overall performance*
- Mentoring and guiding **6** sophomore students in their academic issues and extra-curricular pursuits in institute
- Collaborated in a **team of 13** to develop Mechanical D-AMP **Blog** having projected readership of **500+** students
- Selected (**1/108** out of **300** applicants) to assist incoming freshmen in academic & co-curricular development

Teaching Assistant Roles | IIT Bombay and Student Support Services [Sep '18-Jun '20]
- PH108 | Basics of Electricity and Magnetism: Tutored **45** first year students in concept building & problem solving
- CH107 | Physical Chemistry: Arranged weekly doubt-clearing and feedback sessions catering to **250+** students
- Tutorial Service Centre (TSC): Additional help session catering to **900+** students before exams and quizzes

KEY COURSES

CFD and Heat Transfer, Machine Design, Strength of Materials, Microprocessors and Automatic Control, Manufacturing Processes, Applied Thermodynamics, Operations Analysis, Optimization Models, Numerical Analysis, Linear Algebra

EXTRA CURRICULAR ACTIVITIES

Cultural	• Awarded hostel **Cultural Special Mention** for contribution to dance and theatre activities	['19]
	• Choir performance on the 56th Convocation before **2000+** audience and Hon'ble **PM Narendra Modi**	['18]
	• Performed in a dance troupe of **17**; secured **5th** position in **interhostel** dance championship	['18]
	• Underwent a yearlong training in Indian Classical Vocals under NSO at IIT Bombay	['17]
Social	• Volunteered for Abhyuday's Annual Social Festival at IIT Bombay to facilitate NGO networking	['18]
	• Established the **Guinness World Record** through solar energy awareness campaign	['18]
Misc.	• Spearheaded a 4 tier council as **Head Boy**; bagged overall runner-up trophy as **House Captain**	['15]
	• Mentored **4** freshmen for RC Plane Competition under Aeromodelling Club, IIT Bombay	['18]
	• Delivered two sessions on internship preparation, process and experience for **150+** students	['19]
	• Authored an article in the first ever UG Research 101 booklet with **2.5K+** downloads	['20]
Competition	• Elocution **1st** ['13] • Spelling **1st** ['10,'14,'15] • March Past **1st** ['13]	
	• Quiz **1st** ['11,'13] • Singing **1st** ['11,'14,'15] • Group Skit **1st** ['13]	

Scholastic achievements and extracurricular activities are not verified by the Placement Cell