Curriculum Vitae - **Pruthak Joshi**

CONTACT INFORMATION

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EDUCATION

Indian Institute of Technology Bombay   July 2017-Present
Bachelor of Technology (B.Tech) in Mechanical Engineering
Auxiliary degree in Industrial Engineering and Operations Research
CPI: 8.92/10

SCHOLASTIC ACHIEVEMENTS

- Secured an **All India Rank** of **425** among **0.17 million** candidates in **JEE Advanced**   *2017*
- Attained an **All India Rank** of **191** among **1.2 million** candidates in **JEE Main**   *2017*
- Received **HDFC Meritus Scholarship** for academic excellency   *2009*

WORK EXPERIENCE

Lear Corporation, Center of Excellence - Plastics | Intern   *April'20-June'20*
- Delivered a **design guideline** with various designs, materials, and load calculations for defined applications as a knowledge base document with necessary background and supporting data
- Developed calculations for comparison of different **ribbing patterns** implemented in the side shield for absorbing impact load at the area under seatbelt load
- Designed an **E-Calculator** for calculating critical parameters based on the input design variables

KEY PROJECTS

IITB Mars Rover Team | Design Engineer   *April'18-present*
Faculty Advisor: Prof. Guruprasad PJ, Dept. of Aerospace Engineering
A cross functional team of students which designs and fabricates a semi-autonomous rover for the University Rover
Challenge (URC), an international robotics competition conducted by The Mars Society annually at Utah, U.S.A.
- Responsible for the **design, analysis, optimization** and **manufacturing** of the robotic arm using simulations on ANSYS Static Structural for our upcoming model based on manufacturing constraints
- Designed and analyzed an assembly of **3-link, 6-degree of freedom robotic arm**, capable of lifting weights upto 5 kg and reaching upto a height of 1.2 m
- Revamped the gripper design to **3-fingered** gripper working on **lead screw mechanism**, making it capable of grasping and lifting objects of upto 60mm width
- Achieved an optimum design for different parts, by performing stress, factor of safety and force-displacement simulations on possible designs using SolidWorks and lead its in-house fabrication
- Reduced the weight of the robotic arm by **1.1 kilogram** as compared to the previous iteration by replacing DC motors with bevel gear assembly and linear actuators
- Conducted summer training sessions for 4 freshmen as a part of team induction program
- Represented the team in **Manufacturing Today Conference and Awards** in front of 200+ people

Design and Development of Setup for Characterization of Liquid Bridge Separation   *Summer '19*
Prof. Prasanna Gandhi, Dept. of Mechanical Engineering
- Carried out iterative analysis to firm up dimensions of **parallelogram compliant mechanism** to satisfy given design specifications
- Modeled design iterations in **CAD** software to come up with final design
- Prepared design drawings with **manufacturing tolerances** for fabrication

Pressure Controlled Skateboard | Institute Technical Summer Project   *Summer '18*
Electronics And Robotics Club, IIT Bombay
- Ideated, designed and built an electric skateboard, in a team of 4, controlled by the **pressure difference generated due to the body weight** of the rider, enabling it to function without any remote control
- Used **Force Sensitive Resistors(FSR)** to generate a potential difference and supplied it to **Arduino UNO microcontroller** which in turn gave input to **L298N motor driver** for controlling the skateboard
- Used **18.5V Li-ion battery** to power the circuit and **500 rpm brushed motor** for motion of the board
- The skateboard has capacity to carry weights upto **70 kg** and climb slopes upto **15°**

Study of Probability and Statistics | Maths and Physics Club, IIT Bombay   *May'18-July'18*
Reading project as a part of Summer of Science programme

- Studied about **Point Estimation** of Distribution Parameters: Methods of Moments and Maximum Likelihood, **Bayesian Analysis** and **probability theory**
- Drafted a **report** explaining the concepts I learnt during my study and their applications

POSITIONS OF RESPONSIBILITY

Mentor | **Institute Student Mentor Programme (ISMP)**   *April'19-Present*
- Selected among 95 mentors based on peer reviews and all round performance
- One of 12 students among the entire third year batch chosen on the basis of performance in interviews
- Mentoring a group of 12 freshmen by assisting them in the initial phase of adjustment and facilitate their smooth transition to the academic and social life at IIT Bombay

Mentor, Department Academic Mentor Programme (DAMP)   *April '19-Present*
- Part of a 32 member team, selected from over 95 applicants, which mentors over 150 students, providing academic guidance and general counsel, selected on the basis of peer reviews
- Mentoring 6 students from the sophomore batch to cope with academic difficulties and otherwise
- Acting as a point of contact, aiding the communication between the Faculty and students

Teaching Assistant | Engineering Mechanics course   *Jan'19-May '19*
Course Instructor: Prof. Manish Kumar, Department of Civil Engineering
- Entrusted with responsibility of tutoring over 50 students and assisting the professors in invigilation
- Conducted tutorials, consisting of problem solving and concept discussion sessions

Convener | Maths and Physics Club,IIT Bombay   *April'18-March'19*
Part of a team of 8 students under the Institute Technical Council
- Involved in organization of events fostering to the enthusiasm of students in Physics and Mathematics
- Organized institute-wide **quizzes, talks, group discussions** and mentoring activities to promote interest in the fundamental sciences catering to **500+ students** on campus

TECHNICAL SKILLS

- **Programming**: C++, MATLAB, Python
- **Software**: AutoCAD, SolidWorks, Ansys, Fusion 360, Adams, LaTeX, Adobe Photoshop

RELEVANT COURSES UNDERTAKEN

Departmental	Microprocessor and Automatic Controls, Manufacturing Processes II, Strength of Materials, Manufacturing Processes I, Mechanical Measurements Solid Mechanics, Fluid Mechanics, Thermodynamics
Mathematics and Computer Science	Introduction to Numerical Analysis, Calculus, Linear Algebra, Differential Equations, Introduction to Computer Programming and Utilization
Inter-departmental	Optimisation Models, Operations Analysis, Probabilistic Models, System Modelling and Simulation, Engineering Mechanics, Engineering Metallurgy, Introduction to Electrical and Electronics Circuits
MOOC	Databases and SQL for Data Science, Data Analysis with Python

EXTRA CURRICULAR ACTIVITIES

- Completed a study of **Probability and Statistics** under Summer of Science program by Maths and Physics Club and drafted a report on the same   *May'18-July'18*
- Completed an year long training in Lawn Tennis through **National Sports Organization**   *July'17-April'18*
- Won **Scratch Day**, a competition held by **Web and Coding Club, IIT Bombay**, which included building a game on Scratch programming language in a team of 2   *2017*
- Winner of **"Derek's Faster Smarter Better Challenge"** held at the school level   *2014*
- Secured **3rd position** in state level competition held by All India Gojukai Karate-Do   *2007*
- Achieved **Grand Master** level for successfully completing the ALOHA mental arithmetic program