

# RICHAL BALASAHEB ABHANG

4525 Walnut Street, Philadelphia, PA, 19139  
Ph: +1 (267) 969 9933

Email: rabhang@seas.upenn.edu  
LinkedIn: <https://www.linkedin.com/in/richalabhang/>

## EDUCATION

### University of Pennsylvania, Philadelphia, USA

*Master of Science in Engineering, Mechanical Engineering & Applied Mechanics*

Aug 2022-Present

Started Fall 2022 Semester

Courses: Advanced Dynamics, Design of Mechatronics System, Foundation of Engineering Mathematics-1

### Savitribai Phule Pune University, Department of Technology, Pune, India

*Master of Technology in Mechanical and Materials Engineering/ CGPA: 9.28/10.00*

Jan 2021-Jul 2022

Courses: Advanced Stress Analysis, Computer Aided Engineering, Theory of Vibration and Noise Control

### Maharashtra Institute of Technology College of Engineering (MIT COE), Pune, India

*Bachelor of Engineering in Mechanical Engineering/ CGPA: 8.02/10.00*

Jul 2015-May 2019

Courses: Design of Machine Elements 1&2, Manufacturing Process 1&2, CAD drawing, CAD CAM automation, FEA, Product Design and Development, Mechanical System Design, Dynamics of Machinery, Engineering Graphics 1&2

## SKILLS

**CAD Modelling Software:** SolidWorks, Fusion 360, AutoCAD, CATIA

**Analysis Software:** Matlab, COMSOL, ANSYS, GMAT, WIPL-D, Qblade, GRASS GIS, X'pert

**Languages:** Python, C++, C, HTML

**Other skills:** GDnT, Machining, Arduino, Welding, Optical Metallography, SEM, Mechanical testing, 2D drawings

## EXPERIENCE

### **Sung Robotics Lab, GRASP Laboratory, University of Pennsylvania, USA**

*Research Assistant, MEAM Robotics*

Sep 2022-Present

- Helping research in tuneable compliance manipulator in design and material selection aspects under soft robotics

### **Characterization of Stainless Steel (SS) 316 at Cryogenic temperatures, VIT Pune, India**

*Research Student, Materials Engineering department*

Sep 2021-Jul 2022

- Performed tests like tensile, impact, XRD, SEM, hardness, and optical microscopy to compare different properties of SS 316 at room and cryo temperatures. A few samples were annealed at high temperatures and then cryo-treated to compare properties

### **Inter-University Center for Astronomy and Astrophysics (IUCAA), Pune, India**

*Research project student, LIGO-India*

Jun 2019-Jul 2022

- Designed and built Single-stage Suspension Training Module based on HAM AUX
- Generated Analytical model in MATLAB for Folded Pendulum low frequency monolithic horizontal Seismometer; developed CAD (SolidWorks 2021) and FEA model (COMSOL) and assembled it with sensors
- Worked on 2D drawings (drafting), planned the procedure for precision machining of parts, designed jigs and fixtures

### **Kick Robotics, USA**

*Remote Mechanical Intern*

Oct 2020-Nov 2021

- Devised mechanisms for robots assigned with different tasks and challenges; performed FEA of the structures
- Developed CAD models that get 3D-printed and assembled to form the mechanical structure of the robots

## PROJECTS

### **CANSAT Competition 2019 & 2020, USA| Team Head, Mission Control Engineer**

Nov 2018-Feb 2020

- Engineered a descent control system using autogyro in 2019; headed the fabrication team; customized design for better quality of 3D printed parts; performed Finite Element Analysis

### **Final year project: Design & Fabrication of Ornithopter| Design Engineer, Sponsorship Lead**

May 2018-May 2019

- Designed the mechanism of the ornithopter to mimic the action of a bird flying; contributed to the 3D printing of the structure and its integration; played a role in design optimization for light weighting of the robot

### **ABU Robocon 2018, Pune, India| Mechanical Engineer**

Jul 2017-Oct 2018

- Robocon is a national-level robotics competition; designed the Autonomous robot and fabricated an Autonomous and Manual robot; gained machining, 2D drafting and welding skills; tested the robots for their structural integrity
- Tested different composite materials like carbon fibre for various parts of the robots for weight reduction

### **SAE Supra 2017: Formula One Student competition, Noida, India| Powertrain Engineer**

Aug 2015-Jan 2017

- Performed design calculations and CFD in Ansys for the Exhaust manifold; designed the side panels and the floor of the car; coordinated for fabrication; prepared Cost Report for Statics event; headed Inventory and Car pit team

## CERTIFICATIONS

**Certified SolidWorks Professional** by Dassault Systems

Oct 2019

## CONFERENCES & PUBLICATIONS

- Sutar, S. H., Abhang, R., et. al. (2018). "Smart Exoskeleton Primarily for Light Weighting of Load." International Journal of Computer Engineering and Applications (IJCEA), 12.0 (Special Issue):1.0–8.0.
- Abhang R., Bhagwat N. (2019). Conference paper on "Design and Fabrication of Autogyro system for delivery of packages in case of emergencies." AIAA Region VII Conference, Brisbane, Australia