RICHAL BALASAHEB ABHANG

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EDUCATION

University of Pennsylvania, Philadelphia, USA
Master of Science in Engineering, Mechanical Engineering & Applied Mechanics Aug 2022-Present
(Concentration in Robotics) 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: Optimization Techniques, Statistical Methods and Data Analysis Techniques, Computer Aided Engineering

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: Basic Electronics Engg., Mechatronics, Electrical & Electronics Engg, Fundamentals of Programming Language

SKILLS

CAD Modelling Software: SolidWorks, Fusion 360, AutoCAD, CATIA
Analysis Software: Matlab, COMSOL, CircuitLab, ANSYS, GMAT, WIPL-D, Qblade, GRASS GIS, X'pert
Languages: Python, C++, C, HTML, CSS, JavaScript
Other skills: GDnT, Machining, Arduino, Welding, Soldering, PCB designing, SEM, Mechanical testing

EXPERIENCE

Sung Robotics Lab, GRASP Laboratory, University of Pennsylvania, USA
Research Assistant, MEAM Robotics Sep 2022-Present

- Helping research in tuneable compliance manipulator in mechatronics and design 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 controls on LabView and thermal noise analysis for the Seismometer

Kick Robotics, Maryland, USA
Remote Mechanical Intern Oct 2020-Nov 2021

- Devised mechanisms for robots assigned with different tasks and challenges
- Developed CAD models that get 3D-printed and selected different sensors for robots working in various environments, got acquainted with ROS

PROJECTS

Mobility vehicle race| ***Design of Mechatronics Systems course*** Sep 2022-Nov 2022

- Designed an Internet controlled mobile car to race with other cars; programmed ESP32 C3 for the project; soldered the circuit on the perf board; designed the chassis, battery, and motor mounts; selected appropriate batteries for task

CANSAT Competition 2019 & 2020, USA| ***Team Head, Mission Control Engineer*** Nov 2018-Feb 2020

- Engineered a descent control system using autogyro in 2019; selected electronics components and integrated them with the system; guided 2020 team as a technical advisor; headed the fabrication team
- Integrated various sensors and camera to collect the surrounding data for sending it live to the ground station

Final year project: Design & Fabrication of Ornithopter| ***Design Engineer, Sponsorship Lead*** May 2018-May 2019

- Designed the mechanism of ornithopter to mimic the action of a bird flying; programmed the robot to fly using RC

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 soldering skills; tested the robots for their structural integrity
- Worked on Arduino based projects, implemented sensors and actuators on robots, learned PCB designing on Eagle

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.