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Robotics Researcher
Bachelor's in Mechanical Engineering
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Education

- **Indian Institute of Technology Indore (IIT-I)** *2020 – 2024*
  Bachelor of Technology in Mechanical Engineering
  CGPA: 9.0/10 (3.829/4)

- **FIITJEE Junior College** *2018 – 2020*
  Senior Secondary (TSBIE)
  Percentage: 96.2%

Experience

- **Robotics Innovations Lab, Indian Institute of Science (IISc)** *July 2024 - Present*
  Research Intern Bengaluru, India
  - Designed the multi-modal locomotion mechanism for an inspection robot, enhancing its mobility and functionality.
  - Developed the kinematic and static force models for the in-pipe inspection robot and optimized its capability to adapt to changes in pipe diameter.

- **Zebu Intelligent Systems** *May 2023 - July 2023*
  Mechanical Intern Hyderabad, India
  - Designed, analyzed, and prototyped a Surveillance Helicopter, leveraging 3D printing technology for custom part fabrication, contributing to a prototype ready for further testing.
  - Assisted senior mechanical engineers and fellow interns with tasks including component design and analytical calculations to support ongoing projects.

Projects

- **Gesture Controlled SMA Actuated Robotic Hand** *August 2023 - December 2023*
  Mechatronics and Instrumentation Lab, IIT Indore
  - Designed and developed a gesture controlled robotic hand actuated using Shape Memory Alloy (SMA) springs.
  - Developed an interface between the hand and ML based gesture recognition for intuitive human-robot collaboration.

- **Investigation of Laser Soldering** *March 2024 - April 2024*
  Mechatronics and Instrumentation Lab, IIT Indore
  - Proposed and optimized laser-based soldering technique for PCBs, demonstrating reduced thermal impact compared to traditional methods.
  - Experimented with fiber laser soldering at varying powers and irradiation times, achieving shorter processing times and smaller heat-affected zones, minimizing temperature load on components.

- **Synthetic Jet Impingement Cooling** *March 2022 - September 2022*
  Fluid Mechanics Lab, IIT Indore
  - Investigated heat transfer characteristics of high-aspect-ratio elliptical synthetic jets through thermal imaging, providing insights applicable to electronics cooling advancements.
  - Processed and analyzed data on MATLAB, which culminated in a paper presented at the FMFP 2022 Conference.

Publications

- **Unravelling the processing parameters for selective positioning of multi-materials using Laser decal Transfer based μ-3D printing**
  AIMTDR - 2023 (Presented and under review)
- **Understanding the Heat Transfer Characteristics and Axis Switching phenomenon in High Aspect Ratio Elliptical orifice impinging Synthetic Jets**
  Fluid Mechanics and Fluid Power, Volume 1. FMFP 2022. Lecture Notes in Mechanical Engineering (Link to the paper)

Patents

- **A Gesture-controlled SMA-actuated Robotic Gripper System and method thereof**
  Application No.: 202421051320, Publication Date: September 2024

Technical Skills

- **Software Tools**: Fusion 360, SolidWorks, AutoCAD, Ansys Mechanical, Ansys Fluent*
- **Programming**: Python, MATLAB, C++
- **Robotics**: ROS 2*, Gazebo

** Elementary proficiency*

Training and Certifications

- **ROS2 Level 1 and Level 2** *May 2024*
  Udemy
- **Supervised Machine Learning: Regression and Classification** *March 2023*
  DeepLearning.AI, Stanford University
- **Finite Element Analysis of Beams and Plates** *December 2021*
  Defence Electronics Research Laboratory (DLRL) (On-site)
- **Programming for Everybody (Getting Started with Python)** *May 2021*
  University of Michigan

Positions of Responsibility

- **Club Head**, The Music Club, IIT Indore *October 2022 - April 2023*
- **Treasurer**, The Music Club, IIT Indore *April 2022 - October 2022*
- **Volunteer**, Alumni Meet IIT Indore, Bangalore Chapter *September 2023*
- **Volunteer**, Alumni Meet IIT Indore, Hyderabad Chapter *February 2024*

Achievements

- **Best Paper Award**, AIMTDR 2023 Conference *2023*
- **Nominee**, for the Best BTech Project Award among all the 4th year students *2024*
- **Exhibitor, AVINYA 2023**, MCTE, Mhow *2023*
- **AIR 5505**, among 1.6 lakh candidates, JEE Advanced 2020 *2020*
- **99.03 %tile**, among 1 million+ candidates, JEE Main 2020 *2020*
- **3rd Position**, band leader, Inter-IIT Cultural Meet *2023*
- **Gold Medal**, Solo Singing, IIT-I vs IIM-I *2022*
- **Gold and Silver Medals**, Duo and Solo Singing, IBCC, IIT Indore *2022*