

# Anand Vyvaswath Kalva

Incoming Mechanical Engineering (Research) Graduate Student  
Bachelor's in Mechanical Engineering  
Minor in Astronomy  
Indian Institute Of Technology Indore

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## EDUCATION

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

## EXPERIENCE

- **Robotics Innovations Lab, Indian Institute of Science (IISc)** July 2024 - May 2025  
*Research Intern* Bengaluru, India
  - Designed the multi-modal locomotion mechanism for an inspection robot, enhancing its mobility and functionality.
  - Developed the kinematic, dynamic and static force models for the in-pipe inspection robot.
- **Zebu Intelligent Systems** May 2023 - July 2023  
*Mechanical Intern* Hyderabad, India
  - Designed, analyzed, and prototyped a new product, a surveillance helicopter
  - 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  $\mu$ -3D printing**  
*Journal of Materials Engineering and Performance - 2025 (Link to the paper)*
- **Understanding the Heat Transfer Characteristics and Axis Switching phenomenon in High Aspect Ratio Elliptical orifice impinging Synthetic Jets**  
*Fluid Mechanics and Fluid Power-Lecture Notes in Mechanical Engineering - 2024 (Link to the paper)*
- **A Gesture-controlled SMA-actuated Robotic Gripper System and method thereof**  
*Patent Application No.: 202421051320, Publication Date: September 2024*

## TECHNICAL SKILLS

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

## ACHIEVEMENTS

- **Best Paper Award**, AIMTDR 2023 Conference 2023
- **AIR 5505**, among 1.6 lakh candidates, JEE Advanced 2020 2020
- **99.03 %tile**, among 1 million+ candidates, JEE Main 2020 2020