



Aravind Macharala

Roll No.:220003050

B.Tech - Mechanical Engineering

Minor in Psychology

Indian Institute Of Technology, Indore

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GitHub

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EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major	Indian Institute of Technology Indore	6.7(Current)	2025-Present
B.tech Minor	Indian Institute of Technology Indore	8.33	2025
Senior Secondary	Telangana State Board of Intermediate Education	94.9%	2022
Secondary	Board of Secondary Education, Telangana	100%	2020

EXPERIENCE

- DRDO-Research Centre Imarat-Cntrol system laboratory** 20th May 2025 - 21st Jul. 2025
Under Scientist 'G' RJK CHARI- Research Intern Hyderabad
 - Performed FEA-based modal and harmonic analysis in ANSYS on hydraulic actuation systems, applying Pascal's Law to study natural frequencies, stresses, deformation, and component behavior.
 - Conducted vibration testing to validate simulations and compared hydraulic, pneumatic, and electric actuation systems to assess reliability, damping, and failure modes, recommending improvements for aerospace applications.
- KAKATIYA THERMAL POWER PROJECT** 1st May 2024 - 2nd Jul. 2024
Turbine Efficiency Calculation & Ml base monitoring of turbine - Intern Bhupalpally dist
 - Gained hands-on experience at a thermal power plant through turbine efficiency calculations, thermodynamic cycle analysis (Mollier charts, Rankine/regenerative), and operational diagnostics.
 - Applied plant data to develop a machine learning-based monitoring system for predictive analysis and real-time fault detection in turbines and auxiliaries.

PROJECTS

- Vibration control of Weed cutter machine** June 2025 -On going
Under Prof. Anad Parey - B.tech Project GitHub
 - Designed and developed a multi-axial vibration absorber using Dunkerley's equation and experimental modal analysis, and validated performance through ANSYS-based vibration and deformation studies on the grass trimmer.
 - Conducted lab and field testing with accelerometer measurements, demonstrating significant vibration reduction and improved operator safety and ergonomics.
- Self-Stabilizing traction vehicle** Feb 2025 -Apr 2025
Under Prof. I.A. Palani GitHub
 - I have successfully carried out this project under the valuable guidance of Dr. Palani Sir at IIT Indore, gaining significant insights and hands-on experience in the process.
- Aerodynamic Analysis of an FSAE Car** Nov 2024-Mar 2025
Self GitHub
 - Performed CFD-based aerodynamic analysis of a Formula SAE car in Ansys Fluent, from geometry simplification, meshing, and turbulence modeling to post-processing of drag, lift, pressure distribution, and vortex structures, providing insights for drag reduction and improved stability.

TECHNICAL SKILLS

- Programming:** Python, Matalab, Machine learning
- Software:** Fusion360, Solidworks, Ansys Structural Analysis, Ansys Fluent, Catia*
- Tools/Frameworks:** Tensorflow, Scikit-Learn, Latex, Microsoft office, Git, XGBoost*, PyTorch* * Elementary proficiency

KEY COURSES TAKEN

- Mathematics:** Linear Algebra, Calculus, Numerical methods, Differential Equations-1 and 2
- Mechanical:** Strength of materials, Fluid mechanics and machinery, Thermodynamics, Material Science, Machine drawing, Theory of manufacturing processes, Heat Transfer, Applied Thermodynamics, Industrial Engineering, Quality Management, Instrumentation and Control Systems, Machining Science & Meterology
- Psychology:** Psychology/ Humanities and Social Sciences, Cognitive Psychology, Mind, Action, and Technology,

POSITIONS OF RESPONSIBILITY

- Memeber,** Badminton Club, IIT Indore Nov 2024
- Memeber,** Sport council, IIT Indore Jan 2023-May 2024
- Logistics Head,** IBCC, IIT Indore Aug 2023