Dev Kumar

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Education

Bachelor of Technology in Mechanical Engineering

2023 − Present

Indian Institute of Technology Dharwad
GPA: 7.71

Higher Secondary (Class XII)

2020 − 2022

Jusco School South Park, Jamshedpur
Percentage: 90.4%

Relevant Coursework: Thermodynamics, Fluid Mechanics, Heat Transfer, Strength of Materials, Engineering Design, Machine Dynamics, Manufacturing Technology, Numerical Methods, Computational Fluid Dynamics (CFD).

Projects

- **Design and Simulation of an Annular Trapped Vortex Combustor (TVC):** Modeled and simulated an annular TVC to study vortex stability, flow recirculation, and combustion efficiency using CFD tools for advanced propulsion applications.

- **Computational Study of Jet Atomization in Crossflow :** Conducted high-fidelity CFD simulations to investigate aerodynamic breakup, droplet size distribution, and fuel–air mixing characteristics of liquid jets in crossflow.

- **Cooling Jacket Optimization in Trapped Vortex Combustors:** Performed conjugate heat transfer simulations to improve wall cooling performance, minimize thermal stresses, and enhance overall combustor durability.

- **Design and anlysis of a bar bending mechanism using CAD tools:** Performed force, torque and stress calculations to validate bending capacity and structural safety.

Leadership Roles

- **Powertrain Head, Ingene Motorsports Club:** Leading the powertrain subsystem for the Formula Student car; responsible for drivetrain optimization, thermal management, and integration with the chassis.

- **Core Committee Member, MMAE Association:** Coordinated departmental workshops and technical events promoting interdisciplinary collaboration in mechanical, materials, and aerospace engineering.

- **Sponsorship & Outreach Team Member, Shodhayantrik 2025:** Managed external communications and partnership outreach for IIT Dharwad's flagship technical research symposium.

Technical Interests

- Computational Fluid Dynamics (CFD) and Multiphase Flow Analysis

- Thermal System Design and Heat Transfer Optimization

- Gas Turbine and Propulsion Systems

- Vehicle Dynamics and Powertrain Engineering

- High-Performance Computing for Engineering Simulations

Skills

- **Programming:** Python, MATLAB, C, C++
- **CAD:** SolidWorks, Fusion 360, CATIA, PTC Creo, AutoCAD
- **CAE:** OpenFOAM, Ansys Fluent, Ansys Mechanical
- **Other:** Git, LaTeX, Data Analysis, MS Office

Achievements & Certifications

- Certified in **Fundamentals of IC Engines (ALISON, 2024)** – Acquired knowledge of engine cycles, fuel systems, and combustion efficiency.
- Certified in **3D Geometric Dimensioning and Tolerancing (Geomiq Academy)** – Developed expertise in interpreting GD&T symbols for precision engineering design.