Diwaakar Jayaprakash

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Summary

Mechanical Engineering undergraduate focused on CAD-driven design, thermal analysis, and simulation. Proficient in **SolidWorks**, **Fusion 360**, **ANSYS** (thermal/structural), **MATLAB**, and **Python**. Experienced with additive manufacturing and rapid prototyping. Seeking internship in energy-efficient systems, automation, and data center infrastructure.

Experience

- **Engineering Intern — Tech Mahindra (Client: ASML)** May 2025 - Jul 2025
  Semiconductor Manufacturing Engineering *Abu Dhabi, UAE*
  - Operated high-throughput semiconductor equipment (**1000+ outputs/min**); developed **MATLAB/Python pipeline** for **CPD analysis** with real-time dashboards for process monitoring and defect detection.
  - Performed **volumetric constraint analysis in Siemens NX**; delivered technical presentation on semiconductor processes.
- **Assistant — EV Safety & Battery Systems** Mar 2025 – Apr 2025
  Research Internship under Dr. Raja, HOD of Mechanical *IIITDM Kancheepuram*
  - Conducted **thermal analysis of Li-ion battery circuits** using **ANSYS Thermal** and infrared thermal imaging under various load conditions for research publication; assisted in prototype manufacturing and testing.

Projects

- **Rover Development — Mars Research Station** Apr 2024 – Present
  Mechanical Design Engineer *Multi-year Competition Project*
  - **International Rover Challenge (IRC) 2025** — Goa, India — **16th/226 teams globally**
  - ∘ **Science Cache System:** Designed compact autonomous sample collection integrating **6-beaker carousel (100ml each)**, **helical screw drilling actuator**, and chemical mixing in single actuator-minimized assembly. Created comprehensive **SolidWorks CAD models** with BOMs; fabricated via **FDM 3D printing (PLA)**; resolved critical **dust-sealing challenges** at mechanism interfaces.
  - ∘ **Modular Chassis:** Engineered lightweight chassis using **PVC pipes and 3-way joints** optimized for rapid assembly, CoM management, and integration with suspension, differential, and battery systems. Performed **SolidWorks Motion Analysis** for **suspension kinematics** and obstacle clearance validation.
  - ∘ Led onsite assembly, integration testing, and maintenance of rover subsystems including **6-DoF manipulator arm** and electromechanical interfaces.
  - **European Rover Challenge (ERC) Remote 2025** — Poland — **4th/26 teams globally**
  - ∘ Authored competition-grade **technical documentation and design reports** covering design intent, testing protocols, and subsystem specifications. Managed outreach, sponsorship acquisition, branding design, and social media campaigns.
  - **International Rover Challenge (IRC) 2026** — Udupi, India — **10th/50+ teams globally**
  - ∘ Contributed to technical documentation, design validation reports, and competition deliverables; continued team management responsibilities.
  - **Key Skills:** SolidWorks (Design, Motion Analysis, Assembly), ANSYS Structural FEA, FDM Manufacturing, System Integration, Technical Documentation
- **Smart Transparent Window System — Energy & Automation-Oriented Prototype** Jan 2025 – Mar 2025
  Independent Research Project *IIITDM Kancheepuram*
  - Developed **4-layer multifunctional smart window** integrating **fiberglass substrate**, **electrochromic film**, **transparent perovskite solar panel**, and **transparent LED display** with **3D-printed housing**. Performed power generation calculations and feasibility analysis for energy-efficient building applications.
  - **Key Skills:** Multifunctional Material Integration, Energy Systems Analysis, Rapid Prototyping, Design Under Constraints

Technical Skills

- **Design & CAD:** SolidWorks (Design & Motion Analysis), Autodesk Fusion 360, Siemens NX, AutoCAD, Rhinoceros 3D, OnShape
- **Simulation & Analysis:** ANSYS (Thermal), Basic FEA, CFD fundamentals
- **Programming & Data:** MATLAB, Python, MySQL, C++
- **Manufacturing & Prototyping:** 3D Printing (FDM, Resin), CNC Machining, Laser Cutting
- **Engineering Domains:** Mechanical System Integration, Thermal Systems, Energy-Efficient Design, Automation-Oriented Design

Certifications

- International Rover Challenge (IRC) 2025 — Official Competition Certificate
- European Rover Challenge (ERC) Remote Edition 2025 — Official Competition Certificate
- International Rover Challenge (IRC) 2026 — Official Competition Certificate

Education

- **IIITDM Kancheepuram** 2023 – Present
  B.Tech in Mechanical Engineering
- **Relevant Coursework**
  Heat Transfer, Manufacturing Processes, Kinematics & Design of Machines, Materials Science