

Dhruva Vinay Pingale

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EDUCATION

University of Minnesota, College of Science and Engineering
BASc, Aerospace, Aeronautical and Astronautical Engineering

Minneapolis, MN
Graduation Date: May 2027

PROFESSIONAL SUMMARY

Aerospace engineering student at the University of Minnesota with 3+ years leading mechanical design on a Cable-Driven Parallel Robot research project. Experience in spacecraft dynamics, controls, MATLAB simulation, and quality engineering (FMEA, ISO9001, ISO14001, ISO45001). FSAE Lead Designer and events coordinator for a 1,600+ member student organization.

TECHNICAL SKILLS

MATLAB, Solidworks, Onshape, Data Analysis, Design for Manufacturing, Root Cause Analysis, Device Networking, CAPA

RELEVANT COURSEWORK

Aerospace Vehicle Design, Optimal State Estimation, Aeromechanics Lab, Spacecraft Attitude Dynamics, Aerodynamics

WORK EXPERIENCE

Quality Engineer Intern, MTS Systems Corporation

May 2026 - September 2026

- **Owned** end-to-end resolution of 35 corrective actions, **driving** root-cause investigations from initial finding through verified closure and **leading** cross-functional meetings to resolve issues ranging from minor process gaps to major systemic failures
- **Identified** inefficiencies in the corrective action workflow through interviews with stakeholders company-wide, then **designed** and **prototyped** a new system to replace it, shifting the process from reactive and painful to streamlined and user-centered
- **Applied** structured quality methodologies (FMEA, 8D, CAPA) within an ISO-certified system to support inspections and strengthen process reliability
- **Extended** impact beyond the quality function by **contributing** to a cross-disciplinary engineering project, designing control valves for a rolling road system's cooling architecture

PROJECT EXPERIENCE

Mechanical Lead of CDPR Research, ARDC Lab

September 2024 - Present

- **Led** team of 10+ undergraduates to **design** and manufacture **critical hardware** for a Cable-Driven Parallel Robot
- Redesigned attachment system, leading to a **98% decrease** in per-unit mass while eliminating kinematic redundancy
- **Built** a safety factor and **inverse kinematics model** to **ensure robot safety** upon reconfiguration
- **Designed** and **deployed** a high speed wireless link to send **real-time positioning data** to base station
- **Integrated** advanced robotics concepts (GJK, Minkowski sums, linear programming) and tools (LaTeX, Jupyter, Git, SolidWorks) into daily problem-solving.

Team Lead, Senior Design Project AEM 4331 - Aerospace Vehicle Design

September 2026 - Present

Remote Inspection Drone - Sponsor: Sentera (John Deere)

- **Leading** a 7-person team through the full design lifecycle of an autonomous VTOL drone for agricultural and critical infrastructure/construction site surveying, under a 12-week timeline
- **Directing** cross-disciplinary technical decisions across avionics, structures, and power/propulsion to meet mission requirements: 50g payload capacity, 9+ minute flight endurance at 40–500 ft altitude, sub-2.25 kg total weight, and R&D cost under \$2,000
- **Architecting** a system supporting both autonomous flight and manual FPV operator control, with forward- and downward-facing cameras for agricultural monitoring and infrastructure inspection, launching from a waterproof VTOL dock sized for vehicle transport
- **Serving** as primary point of contact for sponsor communications, translating Sentera's operational requirements into engineering specifications and team deliverables