

Tanmay Dharmaji Mhatre

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EDUCATION

University of Colorado Boulder, United States

August 2024 – May 2026

Master of Science in Mechanical Engineering (Design Emphasis) (GPA: 3.83/4.0)

Relevant Courses: Design for Manufacturability, Advance product Design, Bio-Inspired Robotics, Aesthetics of Design, Introduction to Polymers, Graduate Design 1 and Micro Electromechanical Systems

University of Mumbai, India

July 2019 – May 2023

Bachelor of Technology in Mechanical Engineering (GPA: 3.0/4.0)

Relevant Courses: Product Design and Development, Vehicle Systems, Thermodynamics and Design of Mechanical Systems

SKILLS

- **Programming Skills:** C, C++, Python
- **Software:** SolidWorks (CSWA and CSWP certified), CATIA V5, Ansys, Creo, AutoCAD, Autodesk Inventor, LabVIEW, Photoshop, Adobe Premiere Pro, Figma, CAD tools, Lucid Charts, MS Office, Arduino ADE, CNC, 3D Printing

EXPERIENCE

Mechanical CAD Engineer, Practical Scientific Solutions, Inc

August 2025 – May 2026

- Designed and engineered a covert, autonomous system to classify moving targets using a four-stage sensor cascade and launch a tracking projectile, while meeting demanding size, weight, and power (SWaP) requirements.
- Prototyped mechanical and electrical subsystems with SolidWorks and custom PCBs. Developed embedded software on a Jetson Nano and Teensy V4 microcontroller for real-time target classification and projectile launch, powered by a robust battery system.
- Delivering a field-deployable prototype of Project R.O.C.K. to the U.S. Army, which demonstrates the system's viability and is now being considered for future mass production.

Research Assistant, Pillai College of Engineering, India

May 2023 – May 2024

- Designed a solar dryer assembly in SolidWorks, optimizing airflow and thermal dissipation through forced convection channels and strategic DC fan placement, resulting in a 1.51°C panel temperature drop and a 10.3% boost in energy efficiency.
- Fabricated a low-cost (\$60) solar dryer using an ASAWA insulation panel, achieving an 86% moisture reduction in spinach and demonstrating practical viability for small-scale agricultural use.
- Developed a LabVIEW based voltage monitoring system using NI USB DAQ 6001 and Hall-effect sensors, enabling electro-mechanical, high-accuracy, zero-noise data logging every 10 seconds for real-time diagnostics.

PROJECTS

Laptop Stand with Modular Cooling Pad

October 2024 – December 2024

- Streamlined a 35-part laptop stand into a 22-part modular design using SolidWorks and DFA analysis, which decreased assembly time by 20% and enhanced manufacturability, improving the DFA score by 25.69.
- Directed material and process selection using Ashby charts and decision matrices, choosing ABS, aluminum, and EVA for optimal strength-to-weight ratio, cost-effectiveness, and moldability.
- Performed economic and break-even analysis to assess design feasibility, lowering the unit cost and reducing the break-even point to 24,043 units, thereby supporting scalable manufacturing.

Multifunctional Agricultural Tool

August 2024 – December 2024

- Designed and prototyped a multifunctional hoe ("Wonder 2.0") using SolidWorks, 3D Scanning, and FEA analysis to address the lack of ergonomic design and versatility in traditional tools.
- Conducted user clinics and stakeholder interviews to refine usability and selected rapid prototyping, sustainable materials, and manufacturing methods.
- Delivered a 4-in-1 adaptive tool that lessened physical strain, improved crop maintenance efficiency, and achieved a projected annual revenue of \$6.7M with a 19-month payback period.

Pit Viper Inspired Dual Sensing Robot

September 2024 – December 2024

- Engineered a snake-inspired mechanical chassis in SolidWorks to create a compact, stable robotic platform for dual thermal and visual sensing systems.
- Iterated through multiple 3D-printed prototypes and implemented a modular assembly using Velcro and glue for rapid electronics access, optimizing sensor placement for an unobstructed field of view.
- Delivered a robust, sensor-integrated platform that enabled precise steering via a differential drive; thermal sensing achieved 25% faster target acquisition and 30% lower heading angle variance compared to visual-only trials.

Dyson Bladeless Fan Reverse Engineering

August 2024 – October 2024

- Applied DFA principles and SolidWorks modeling to streamline design optimization using GD&T.
- Selected ABS, aluminum, and EVA foam using Ashby charts and decision matrices, aligning components with injection molding, die casting, and thermoforming processes.
- Lowered part count to 31 and DFA score by 64.8%, which enabled scalable, cost-effective manufacturing through injection molding and other high-volume techniques.

PUBLICATION

Published "Development of Solar Dryer" in International Journal of Applied Engineering and Technology (Vol. 5 No. 4, December 2023, ISSN: 2633-4828, pp. 1361–1376) [Link](#)