

TANUSH ANAND

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EDUCATION

Case Western Reserve University

BSE - Mechanical Engineering & Materials Science and Engineering
NCAA D3 Track & Field Athlete (All-UAA, High Jump; School Record Holder, Triple Jump)

Expected May 2027

GPA: 3.31

SKILLS

- **Software:** SolidWorks (CSWA Certified, GD&T), Ansys (FEA), Siemens NX, Matlab, R, Microsoft Suite
- **Hardware:** FDM 3D Printing, CNC Lathe & Mill, MIG Welding, Waterjet, Laser Cutting, Tensile Testing

WORK EXPERIENCE

ELLWOOD Crankshaft Group, Mechanical Engineering Intern

May 2026 - July 2026

- Validated undocumented customer crankshaft fatigue life specs against M53 IC standard to ensure design compliance
- Built SolidWorks model and conducted static structural and explicit dynamic simulations in Ansys to evaluate fatigue life
- Simulating quench holds in Ansys transient thermal to determine microstructure transformation, delivering instructions to shop floor

Solmate, Founder & Technical Lead

Sep 2025 - present

- Developed non-invasive roof mounting adapter that's compatible with top 10 solar panel OEMs; filing provisional patent
- Reduced cost per panel install from competitors by 56%; estimated net system savings from traditional methods \$16,000
- Designed MVP in Siemens NX and conducted interviews with installers and homeowners to drive product iteration

FIERF (Forging Industry Educational and Research Foundation), Materials Research Intern

June 2025 - June 2026

- Evaluated 12+ Ni-based superalloy candidates and selected Haynes 282 over Waspaloy based on 2x creep strength at forging temperatures and better machinability, reducing projected die manufacturing costs by 24%

Case Western Reserve University, Circuits Teaching Assistant

Jan 2025 - present

- Lead weekly lab sessions for 40+ students on circuit builds, oscilloscopes, DMMs, and power supply operation

PROJECTS

HDC Solar Pavilion, Engineer Team Lead - Engineers Without Borders 'Humanitarian Design Corps'

Oct 2023 – Dec 2025

- Designed a six-panel, 1,200 W solar array for a campus pavilion in SolidWorks; projected output of 20 kWh/day in spring/summer months
- Led structural design team through part selection, load analysis, and full assembly using McMaster-Carr; secured \$4,000 in funding and stakeholder approval for 2026 installation

Bioplastic Additive Manufacturing Research, Materials Researcher - National Science Foundation

June 2025 - Dec 2025

- Increased tensile strength of FDM-printed PLA by 55% (10.3 → 15.94 MPa) and elongation at break by 48% across 48 specimens by combining hot forging with print orientation optimization
- Modeled ASTM D638 specimens in SolidWorks, printed via FDM, forged samples, and laser-cut to final geometry
- Analyzed tensile stress-strain curves in Matlab and X-ray diffraction data to relate mechanical behavior to crystallinity

Mechanical Press Frame, Engineer Lead - National Science Foundation

Feb 2025 - Apr 2025

- Modeled structural support for a 200 MPa mechanical press in SolidWorks; sourced tubing and C-channel from vendors and verified frame geometry with a dial indicator before welding
- Milled tube faces parallel, generated DXF files for waterjet cutting, and MIG welded the assembly
- Ran 5 load test cycles at peak load confirming alignment and support under 316 stainless steel press operation

Wire Arc Additive Manufacturing (WAAM) Torch, Engineer Lead - National Science Foundation

Nov 2024 - Dec 2024

- Redesigned deformed torch body in SolidWorks: corrected thread dimensions at the diffuser interface, reduced overall length to maximize z-axis travel, and added wrench flats to prevent torsional distortion during assembly
- Machined the part on a lathe and mill (ID/OD turning, hand tapping, slitting); design was verified over 100+ print cycles and added as the standard torch for a second WAAM system