

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, Metallurgy Intern

May 2026 - Aug 2026

- Built an Excel-based fatigue calculator (per the M53 IC industry standard) and S-N curve estimator, backfilling missing tangential/radial load data from engine specs to compute fatigue strength limits for 3 crankshaft designs
- Modeled a customer crankshaft in SolidWorks and validated fatigue-life predictions in Ansys against resonance test data from 2 prev. tested parts, establishing a reusable FEA verification workflow projected to cut physical testing costs ~60%
- Simulated quench hold times via Ansys transient thermal analysis and confirmed full martensitic transformation through tensile testing and microstructural analysis, validating heat treatment parameters for production

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%

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

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
- 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