Abigail Martel

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EDUCATION

Vanderbilt University — **Nashville, TN**
Bachelor of Engineering in Mechanical Engineering — Expected May 2027
Major GPA: 3.8/4.0 | Dean's List

EXPERIENCE

Boston Scientific | *R&D Engineering Intern* — Sunnyvale, CA | Jun 2026 – Aug 2026
- Led design and implementation of an automated rotary fixture for a laser welder, integrating custom CNC-machined components
- Designed a custom PCB and integrated stepper motors, a touchscreen LCD, and an optocoupler into the rotary fixture
- Supported NPD through test-method dry runs, GD&T drawings, TQRs, PDM documentation, and human factors research
- Tested the force-response of multiple materials and authored a technical report comparing test results with cadaver-derived data

Vanderbilt University Medical Center | *Research Assistant, LOR3 Lab* — Nashville, TN | Dec 2024 – May 2026
- Modeled a heart-lung block stand in SolidWorks and fabricated it to improve organ visibility, drainage, and blood collection
- Collected and analyzed hemolysis data from 6 pumps, comparing flow, pressure, and hemoglobin levels for clinical and lab models
- Developed and 3D printed a wearable ECMO pump casing, iteratively testing pressure-flow performance and magnetic coupling

Tikkun Olam Makers | *SolidWorks Lead* — Nashville, TN | Oct 2023 – Present
- Collaborated with a team of 6 to design 4 ergonomic cane handles in SolidWorks for an individual with Ehlers-Danlos Syndrome
- Modeled and prototyped an adaptive chair for a preschooler using SolidWorks and laser cutting to fabricate components
- Produced 3 custom silicone molds to support a neurodivergent student in motor control for toothbrushing and handwriting

Bionuclex | *Management Consulting Intern* — Cape Town, South Africa | May 2025 – Jun 2025
- Crafted a pitch deck proposing a $250K raise for 12% equity to launch a geographically segmented cancer detection database
- Benchmarked 9 biotech companies across South Africa, the U.S., and U.K. to assess market positioning and entry opportunities
- Formed a go-to-market plan focused on grant applications and investor outreach to secure initial funding and drive market entry

Vanderbilt University Medical Center | *Research Assistant, Dr. Anil Trindade* — Nashville, TN | Aug 2023 – Aug 2024
- Collected and analyzed laboratory research data, organizing over 800 data points in Excel for streamlined interpretation
- Served as a contributing author on the publications "Risk Factors and Clinical Consequences of Early Extubation Failure in Lung Transplant Recipients" and "Pre-transplant Anemia as a Marker of Short-term Outcomes in Lung Transplant Recipients"

PROJECTS

Neonatal Transport Vibration Reduction | Senior Design — Nashville, TN | Aug 2026 – Present
- Identified high-vibration areas using accelerometers and FFT/PSD analysis to guide neonatal incubator design improvements
- Lead team communication and documentation while collaborating with neonatologists to develop vibration-reduction prototypes

Interactive Light Panel for Susan Gray Elementary School | *Communication Lead* — Nashville, TN | Aug 2023 – May 2024
- Led a 3-person team to build an interactive light panel tailored to visually impaired students, enhancing accessibility in school
- Programmed a Raspberry Pi to control an LCD screen; designed components in AutoCAD and fabricated laser-cut MDF parts

COMMUNITY ENGAGEMENT AND LEADERSHIP

DORE initiative | *Vice President* — Nashville, TN | Aug 2024 – Present
- Support fundraising initiatives to expand access to affordable rehabilitation and therapy services for the community
- Facilitate game nights at rehabilitation centers and manage social media to promote overdose prevention awareness

Next Steps AmbassaDores | *Tutor* — Nashville, TN | Aug 2024 – May 2025
- Provided weekly tutoring sessions for 2 neurodivergent students, simplifying complex content to improve comprehension
- Taught study techniques and time management skills; reviewed and edited work prior to submission to ensure clarity

SKILLS AND MEMBERSHIPS

Fabrication & Prototyping: 3D printing, Welding, Soldering, Laser Cutting, Laser Welding, Resin Printing, CNC machining
Software: SolidWorks (CSWA Certified), AutoCAD, MATLAB, Java, LabVIEW, Arduino, KiCad, Minitab
Additional Memberships: VU-WISE *Social Chair*, Concrete Canoe *Quality Control,* Vanderbilt Field Hockey, SWE, ASME
Interests: Disability Advocacy, Yoga, Running, Field Hockey, Fostering Dogs, Hiking, Scrapbooking, Coffee Shops