

Braden Vaughan

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Education

University of Maryland - BS, Aerospace Engineering

College Park, MD - May 2022

Technical Skills

CAD & Design: SolidWorks, Autodesk Fusion, Siemens NX, Teamcenter

Simulation & Analysis: ANSYS, NASTRAN (SOL101, SOL105), FEA, Stress Analysis

Manufacturing & Prototyping: CNC Programming, CAM, G-Code, 3D Printing, Rapid Prototyping, GD&T

Engineering Tools: KISSsoft, LabVIEW, MATLAB, Arduino, C/C++

Quality & Process: ISO9001:2015, ASME Standards, Cost Reduction

Engineering Experience

Hoowaki LLC

Greenville, SC

Mechanical Engineer III

January 2026 – Present

- Manages two lab technicians and daily operations of polymer lab and prototype shop, coordinating testing schedules, and prototype builds across customer projects
- Partners with customers to scope technical solutions and deliver project quotes
- Implemented and manage ISO9001:2015 QMS, establishing SOPs for lab testing, prototype validation, and material traceability
- Developed a manufacturing method to produce high-grip polypropylene film at commercial scale

Mechanical Engineer II

September 2023 – December 2025

- Led all engineering efforts as the sole engineer, owning product development from concept to production
- Designed mechanical microsurfaces with 40–600µm features to increase friction for medical and consumer applications
- Developed anti-migration medical devices to reduce patient trauma and streamline surgical workflows
- Programmed and operated high-precision CNC machines using G-Code and CAM to fabricate parts within 5µm tolerance

Techtronic Industries (TTI)

Anderson, SC

Mechanical Engineer, Advanced Engineering Team

June 2022 – June 2023

- Designed next-generation power tools from concept to functioning prototype, owning CAD modeling, assembly design, and prototype testing
- Redesigned existing power tools to improve performance, add features, and reduce per-unit cost
- Researched fan acoustics and airflow, resulting in U.S. Patent No. 12071956B2 for noise reduction
- Redesigned a planetary gear set in KISSsoft, reducing per-unit cost by \$1+ and improving torque efficiency
- Conducted sound and vibration testing on prototype tools to minimize noise at specified frequencies
- Reported findings and held hands-on demonstrations for project engineers and product managers

University of Maryland Capstone Project – NASA RASC-AL Competition

College Park, MD

Mechanical Design Engineer

September 2021 – June 2022

- Awarded Best in Theme at the 2022 NASA RASC-AL Forum
- Designed payload carriers interfacing with NASA docking ports to transport goods to a lunar habitat
- Performed FEA in NASTRAN on pressurized structures to verify margins of safety under launch and docking loads per NASA structural design standards

University of Maryland Aerospace Engineering Department

College Park, MD

ENAE 362 Teaching Fellow & ENAE 301 Grader

August 2021 – January 2022

- Graded labs, homework, and exams for aerospace instrumentation course and held office hours to support student understanding of experimental methods

STX LLC

Baltimore, MD

R&D Mechanical Engineering Intern

May 2021 – August 2021

- Conducted quality control testing on 500+ shoulder pads to verify NOCSAE compliance
- Created GD&T engineering drawings in SolidWorks for future lacrosse products
- Performed FEA in ANSYS on lacrosse stick heads to benchmark stiffness against current models

UMD Loop Engineering Team

College Park, MD

Mechanical Design Engineer

September 2019 – September 2021

- Selected as one of 12 international teams from 400 applicants for The Boring Company's inaugural Not-A-Boring Competition
- Performed FEA in NASTRAN (SOL101/SOL105) to verify structural integrity under dynamic loads

Patents

“Fan shroud and fan assembly having fan shroud” — U.S. Patent No. 12071956B2 (Issued: August 2024)

“Wiper blade with microstructures” — U.S. Patent App. No. 20260042424A1 (Filed: August 2025)