

Benjamin Nguyen

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EDUCATION

University of Arizona Honors College

B.S. Mechanical Engineering

Tucson, Arizona

GPA: 3.66 | Expected Dec 2027

Honors/Awards: Dean's List with Distinction, VEX Community Award by Google, NASA Space Grant

Certifications: Onshape Professional

PROFESSIONAL EXPERIENCE

Garmin

Tucson, AZ

Mechanical Engineering Intern

May 2026 – August 2026

- Sole project owner of an electromechanical test rig for Garmin dog devices: CAD, electrical schematic, software architecture, and documentation. Ran a self-directed 12-week schedule across data collection, design reviews, and vendor procurement.
- Analyzed accelerometer and CV data to characterize canine running motion and inform design requirements.
- Designed modular neck geometry simulating variable dog sizes and gait dynamics, achieving 92% kinematic correlation with real-world canine running.

Caterpillar, Inc.

Tucson, AZ

Simulation Intern - Electric Minesite

May 2025 – August 2025

- Designed DOEs for 1000s of minesite simulations to identify cost-efficient, robust electric infrastructure configurations for long-term development.
- Developed a Python visualization tool to display critical simulation patterns in easily digestible graphs and explanations.

AlleyDev Engineering

Irvine, CA

Mechanical Design Intern

April 2024 – June 2024

- Designed in SOLIDWORKS and fabricated 4 portable vending machines via 3DP and laser-cut acrylic, collaborating cross-functionally to launch to market in 2 months.

PROJECTS & LEADERSHIP EXPERIENCE

Personal Project

Tucson, AZ

2 DOF Ball Balancer Robot

February 2025 – Present

- Developing a gimbal-style ball-balancer using a Teensy 4.1 and two stepper motors for closed-loop touchscreen stabilization.
- Optimized 5 kinematic revisions in NX using DFMA principles, reducing part count by 60% while minimizing backlash.
- Designing a custom PCB motherboard with integrated 5V regulation to power optical endstops and onboard microprocessors.
- Coding a real-time C++ PID controller for precise position control, integrating OLED and LED strip user feedback systems.

Combat Robotics Club

Tucson, AZ

2x Vice President, Wildcat Robotics

May 2024 – Present

- Led technical and administrative teams to grow the club from 16 to 60 members, mentored 18 combat robotics teams, and planned the logistics of 2 in-house competitions with 1000+ spectators each.
- Raised \$173,500 for 3D printers, CNC mill and router, workshop tools, robot parts, and competition travel.
- Designed and built a servo-actuated flamethrower for use in the televised BattleBots Destructathon competition.

Team Lead - 30 lb Combat Robot

August 2025 – Present

- Defined performance requirements for all 5 robot subsystems, leading cross-disciplinary engineering to deliver on cost, schedule, and performance goals.
- Designed the 6061 aluminum frame and TPU armor in Onshape, using FEA to validate structural integrity with 58kN impacts.
- Refined frame geometry for CNC manufacturability and created ASME Y14.5-compliant GD&T drawings to ensure critical frame and weapon assembly fits.

Team Lead - 3 lb Combat Robot

August 2023 – Present

- Designed 3 iterations of the robot in Onshape using DFMA techniques, reducing manufacturing cost by 63% and assembly time by 70%, securing 4x top 5 finishes at national and state events.
- Optimized AR500 steel weapon lateral strength to meet a FOS of 2.5 with FEA and Topology Optimization.
- Formulated engineering drawings with ISO 2768-1 GD&T standards to machine 6061 aluminum weapon hubs.

High School VEX Robotics

Tucson, AZ

Team Captain & Founder of 606X

August 2019 – May 2023

- Designed in Fusion 360 and built 4 robots for local and national competitions, ranking 1st in Arizona and 24th globally.
- Documented 200+ pages of technical design, managed the schedule and \$15,000 budget to meet competition deadlines.
- Created an educational YouTube robotics channel with 400,000+ views and 2,000+ subscribers.

SKILLS

Programs: NX, Creo, SOLIDWORKS, Onshape, Fusion 360, Inventor, AutoCAD, Python, MATLAB

Technical Analysis: SOLIDWORKS FEA, Fusion 360 CAM, Topology Optimization, Creo Simulate, GD&T, DFM & DFA, DOE

Fabrication: 3D Printing, Welding, CNC Milling/Routing, Laser Cutting, Soldering

Other: Team Leadership, Project Management, Budget Management, Microsoft Office Suite, Content Creation