

# NICHOLAS C. GRUMMON

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## EDUCATION

**Vanderbilt University, B.E. Cum Laude**

**May 2024**

- Major in Mechanical Engineering, Minor in Computer Engineering | GPA 3.9/4.0

## CERTIFICATIONS & SKILLS

**Certifications:** *Engineer in Training*, Commonwealth of Virginia | *Project Management*, Google

**Software Proficiencies:** ANSYS (Workbench, APDL, Fluent) | SolidWorks | CATIA | Linux / bash | GitHub / GitLab

**Programming Languages:** Python (pandas, numpy, matplotlib) | VBA (Excel, SolidWorks) | C++ | LaTeX

## ENGINEERING EXPERIENCE

**Framatome Inc., Mechanical Engineer - Fracture Mechanics**

**Jul 2024 - Present**

- Performed flaw growth evaluations using Ansys FEA and VBA macros, according to ASME.BPVC.XI Appx C Code.
- Used SolidWorks and SpaceClaim CAD to model complex component geometries based on OEM GD&T design inputs.
- Signed as Preparer on 20+ and Reviewer on 2 technical documents, representing \$1.5M+ in contracts with 10+ nuclear utilities.
- Won CORE Award (company wide recognition) for novel implementation of neural network in Monte Carlo (Weibull) simulation in Python. Predicted PWSCC degradation in lower core barrel bolts and delivered critical-pathway products for customer outage.

**Nissan Motor Corporation, Process Engineering Co-Op - Casting and Forging**

**Jan 2023 - Aug 2023**

- Used a PLC to tune cycle time and FANUC path planning for an aluminum High Pressure Die Caster (HPDC), in order to warm up the machine without using steel liners/inserts. Reduced scrapped (wasted) steel by 60%+ for potential \$125k/yr savings.
- Led traceability initiative to install a barcode laser-engraving cell for numbering billets immediately after forging.
- Conducted continuous improvement 5Y initiative to trace vacuum pressure faults to an irregular cleaning process for filters.

**Vanderbilt Laser Diagnostics of Combustion Laboratory, Undergraduate Research Assistant**

**Jan 2022 - Dec 2022**

- Performed thermodynamics hand calcs to spec a piping in-line heater capable of initiating cool flames at 500 K in dimethyl-ether.
- Installed and calibrated flow meters, valves, and piping to feed gas-fuel mixtures into a tubular burner for flame study.

## PROJECT EXPERIENCE

**Nissan Automated Speaker Installation (Vanderbilt Engineering Capstone)**

**Aug 2023 - May 2024**

- Led a 5 person team to design a cobot station automating the installation of speakers on the Nissan Pathfinder door assembly line.
- Delivered a CNC-machined aluminum end-effector, featuring spring-action nut drivers and a 3-prong gripper, with a UR10e arm.
- Used Ansys Workbench to minimize gripper frame while supporting weight of electrical hardware and speaker payload.
- Met or exceeded all design specifications including cycle time (<40 seconds), weight (<10 lbs), and ROI (projected 400%+).

**Pick and Place Tasks with Baxter Robot and Computer Vision (ME4271 Final)**

**Nov 2023 - Dec 2023**

- Formulated Baxter cobot's direct kinematics and Jacobian and programmed a resolved rates path planning algorithm with ROS.
- Simulated the robot's motion and path planning with quintic polynomials and resolved rates using Matlab and Solidworks.
- Implemented visual servoing with computer vision to track and grab a ball from a flat table using OpenCV.

**Self-Moving Chess Board**

**Mar 2022 - Apr 2022**

- Designed a custom two dimensional (CNC) actuator using SolidWorks, to slide pieces via electromagnet. Programmed stepper motors with an Arduino and L298N drivers. Interfaced with a keyboard and a Raspberry-Pi running the Stockfish chess engine.
- Earned a top score of 5 in Vanderbilt's Mechatronics design faire for "superior difficulty and functional significance."

**Engineering Portfolio:** <https://nicholasgrummon-portfolio.com>

## VOLUNTEER & LEADERSHIP EXPERIENCE

**"Vector Space" Community Makerspace, Mentor**

**May 2025 - present**

- Mentored FIRST Team 10257 on drive-system design and fabrication, sharing experience as a 2018 FRC-Worlds competitor.
- Completed a wide range of fabrication projects including machining (lathe, mill), welding, 3D-printing, and plasma cutting.
- Contributing "maker" on a 16-foot tall "Baba Yaga" art installation (team of six). Led the structural design of removable, lockable legs to enable portability. Showcased the piece at a local fall festival for 500+ attendees.

**Habitat for Humanity, Construction Volunteer**

**Apr 2025 - present**

- Logged 60+ volunteer hours building framing, installing siding, and laying roofing on 4 Habitat homes in the Central VA area.

**Wyzant Tutoring Services, Tutor - ACT, SAT, & PSAT**

**Feb 2025 - present**

- Coached 15+ students on practical exam strategies, sharing approach as a top ACT (36) / SAT (1570) scorer and NMSC Finalist.

**Vanderbilt Chess Club, President**

**Aug 2020 - May 2024**

- Hosted weekly meetings for 200+ total members and led Vanderbilt's first-ever appearance at "Pan-Ams" college championship.

**Org. Associations:** ASME, *Member* | Tau Beta Pi, *Member* | Franklin High School, *Valedictorian* | Scouting America, *Eagle Scout*