NICHOLAS GRUMMON

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PERSONAL STATEMENT

Mechanical engineer engaged in the generation of nuclear power. Avid maker, chess player, and reader.

EDUCATION

Vanderbilt University, *B.E. Cum Laude* *May 2024*

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

- Notable coursework: Finite Element Analysis, Mechanics of Materials, Heat Transfer, Topology
- Clubs and societies: ASME, Tau Beta Pi, Chess (President), Orchestra (Clarinet)

Franklin High School, *Valedictorian* *May 2020*

- Notable accolades: TN Governor's School for Emerging Technologies, Perfect ACT, National Merit Finalist
- Clubs and societies: FIRST Robotics (Words, 2018), Wind Ensemble (Principle Clarinetist)

CERTIFICATIONS & SKILLS

Certifications: *Engineer in Training*, Commonwealth of Virginia | *Project Management*, Google
Software: ANSYS (Workbench, APDL, Fluent) | SolidWorks | CATIA | LS-DYNA | Linux / bash | GitHub / GitLab
Languages: Python (pandas, numpy, matplotlib) | VBA (Excel, SolidWorks) | C++ | LaTeX

PROFESSIONAL EXPERIENCE

Framatome Inc. Lynchburg, VA

Mechanical Engineer, Component Analysis and Fracture Mechanics (Full Time) *July 2024 - present*

- Performed fatigue analyses using Ansys APDL, to qualify nuclear reactor components according to ASME.BPVC.III criteria.
- Performed flaw growth *da/dt* and *SIF* evaluations using APDL and VBA macros, according to ASME.BPVC.XI Appx C criteria.
- Acted as Preparer on 10+ technical calculations, fulfilling contracts with 5+ utilities and the industry-level PWR owner's group.
- Won CORE Award (company wide recognition) for novel implementation of probabilistic Monte Carlo (Weibull) simulation in Python, predicting PWSCC time-to-failure in LCBB replacements and delivering critical-pathway product for customer outage.

Wyzant Tutoring Services Remote

Tutor - ACT, SAT, PSAT *Feb 2025 - present*

- Coached 15+ students on practical exam strategies, sharing approach as a top 1% ACT / SAT scorer and NM Finalist.
- Achieved a 5.0/5.0 rating, designing individualized lessons and homework that consistently drove student score gains.

Nissan Motor Corporation Decherd, TN

Process Engineering Co-Op, Casting and Forging (Full Time) *Jan 2023 - Aug 2023*

- Tuned aluminum injection parameters for a High Pressure Die Caster (HPDC) based on process-data driven experimentation, to warm up the machine without using steel liners/inserts. Reduced scrapped steel by 66%, showing potential savings of $125k/yr.
- Led traceability initiative to contract the installation of a barcode laser-engraver for billets/crankshafts immediately after forging.
- Scripted a Python tool to compile years of HPDC vacuum data stored in an SQL database. Used data to characterize faults.

Vanderbilt Laser Diagnostics of Combustion Laboratory Nashville, TN

Undergraduate Research Assistant (Part Time) *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.
- Investigated scientific papers covering the phenomenon of cool flames, with applications in diesel and alternative-fuel efficiency.

Trek Bicycle Corporation Franklin, TN

Assembler *May 2022 - Aug 2022*

- Assembled and tuned bicycles from the frame up to fulfill customer orders, ranging from hard-tail MTBs to road racing models.
- Maintained production schedules (~10 bikes/day) and quality inspections as a technician/mechanic in a shop environment.

Vanderbilt University Campus Planning Nashville, TN

Intern *May 2021 - Aug 2021*

- Used AutoCAD to organize and compile thousands of recent construction documents for the Campus Planning online library.
- Updated records of recently installed hydration stations, restroom signage, and showers in sixty-six campus buildings.

Chick-fil-A Franklin, TN

Cashier, Kitchen Staff *May 2017 - July 2019*

- Engaged with hundreds of guests per day, taking orders and cooking meals in a high-paced, customer-focused team environment.

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PROJECT EXPERIENCE

Engineering Portfolio, *https://nicholasgrummon.portfolio.com* *to present*
- Exhibits sample FEA meshes and studies, characteristic of fatigue and crack-growth modeling performed for Framatome Inc.
- Showcases fabrication skills including machining (lathe + end mill), welding, 3D-printing, lasercutting, and more.
- Notable design projects: parametric Solidworks template, self-moving chess-board, eight-bit cpu.

Vanderbilt Capstone - Nissan Automated Speaker Install *Aug 2023 - Apr 2024*
- Led a 5 person team to automate the installation of speakers into Nissan Pathfinder vehicle doors using a UR10e "cobot."
- Delivered machined aluminum end-effector featuring parallel spring-action nut drivers and a CAM-actuated gripper.
- Used Ansys Workbench to minimize 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%+).

Decorative Container Design Challenge, Vanderbilt "The Wond'ry" Innovation Center *October 2022 - December 2022*
- Tasked as a three-person team by Vanderbilt's "The Wond'ry" with implementing a more decorative way to serve boxed wine.
- Conducted market-research surveys in public regarding perceived quality and taste, to inform customer-driven design decisions.
- Collaborated with Vanderbilt's fine arts department to create a 3D-printed clay vase that facilitates cooling of wine bladders.

Self-Moving Chess Board *Mar 2022 - Apr 2022*
- Designed and programmed a self-moving chess board featuring an electromagnet on a two dimensional table actuator (similar to a laser cutter) that slides pieces, a Raspberry-Pi running the Stockfish chess engine, keyboard input, and an LCD user interface.
- Specced stepper motors and designed a custom belt system using Solidworks, to support dynamic motion of the motors.
- Earned a top score of 5 in Vanderbilt's junior-level Mechatronics design faire for "superior difficulty and functional significance."

Eight-Bit Microprocessor *Dec 2021 - Jan 2022*
- Designed and built an eight-bit single cycle microprocessor based on ARM architecture, using IC logic gates on a breadboard.
- Wrote associated Turing-complete machine language that supports conditional branching, looping, and linking.
- Invited to present the processor as a guest lecturer in Vanderbilt's Digital Systems undergraduate seminar.

Vanderbilt Formula SAE Motorsports Club *August 2021 - December 2021*
- Responsible for designing and fabricating a shield to cover drivetrain components from exposure to the cockpit of race vehicle.
- Utilized hand tools and machine shop equipment to create custom sheet-aluminum pieces and to install in the cockpit.

Chess Engine in C++ *Aug 2020 - Aug 2021*
- Wrote a C++ chess engine using bitboard architecture and the negamax game-theory algorithm.
- Included search tree optimizations, featuring alpha-beta pruning, iterative deepening, quiescence search, hashing, and more.
- Activated an online BOT account using the Lichess API.
- Maintained a git repository using VSCode, see project here: https://github.com/nicholasgrummon/KTYBX-Chess-Engine

Eagle Scout Service Project *February 2017*
- Led a team of 20+ boy scouts in constructing two self-designed awninged trailheads for a local sensory garden for the blind.
- Developed strong team leadership and project management skills as well as responsibility in delivering work for sponsors.

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VOLUNTEER & LEADERSHIP EXPERIENCE

"Vector Space" Community Makerspace, *Mentor* *May 2025 - present*

- Logged 15+ volunteer hours supporting community DIY events and mentoring FIRST Robotics Team 10257, specializing in teaching CAD design principles and fabrication skills, and sharing experience as a 2018 FRC-Worlds Competitor.
- Constructed a 16-foot tall "Baba Yaga" (house on chicken legs) art installation with a team of six. Led the structural design of removable legs with a locking mechanism for 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 local area.
- Supported additional Habitat initiatives including the "ReStore" thrift warehouse and "Blitz Build" house-in-a-day events.

Vanderbilt Chess Club, *President* *Aug 2020 - May 2024*

- Led weekly meetings and monthly club tournaments, and maintained equipment for a community of 200+ chess players.
- Organized Vanderbilt's first-ever team for the Pan-Ams Intercollegiate Championship in Seattle. Placed 4th in U1800 section.

DISTINCTIONS & ASSOCIATIONS

Distinctions: Franklin High School**,** *Valedictorian* | BSA Troop 130**,** *Eagle Scout* | Chess.com, *2000 Rapid (Top 0.3%)*
Associations: Virginia DPOR, *EIT* | Tau Beta Pi, *Member* | ASME**,** *Member* | NAYGN, *Member*