Nathan Kriegel

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Education

Bachelor of Science in Mechanical Engineering — Boston, MA
Northeastern University — Expected Dec 2026

- **Minor:** Aerospace
- **Relevant Coursework:** Aerodynamics, Aeronautical Propulsion, Fluid Mechanics, CFD, Thermodynamics, Heat Transfer, Robot Mechanics & Control, Robotics Sensing, Systems Analysis & Control, Mechanical Engineering Design
- **Study Abroad:** NUin Greece, Fall 2022

Skills

- **CAD & Design:** SOLIDWORKS (CSWA), Inventor, AutoCAD, Autodesk Vault, engineering drawings
- **Simulation & Analysis:** ANSYS Fluent (CFD), Simulink, weighted decision matrices
- **Fabrication:** 3D printing (FDM), laser cutting, CNC milling, woodworking
- **Programming & Tools:** C++, Python, Java, Arduino, Raspberry Pi, G-code, Klipper, Microsoft Office

Experience

Engineering Intern — Marlborough, MA
DuPont — Jul 2024 – Dec 2024

- Supported MEMCOR engineers designing water filtration systems to customer specifications
- Delivered error-free models and drawings in Inventor and AutoCAD up to 50% ahead of schedule
- Improved warehouse efficiency up to 200% by reorganizing storage and staffing for system builds
- Unified drawing standards with remote offices and managed shared files in Autodesk Vault

Projects

Multi-Nozzle Viscous Thread 3D Printer — Boston, MA
Capstone, Transformative Robotics Lab — Jul 2026 – Present

- Designing a four-nozzle Viscous Thread Printing (VTP) system for the lab's Ender 5 Plus, using a rotating build plate to turn each layer 90° so continuously extruded foam layers interlock
- Developed a custom C++ slicer with a desktop GUI that converts STL/OBJ models into multi-nozzle G-code with density zones, overhang handling, and continuous extrusion during plate turns
- Showed in slicer simulations that a 20 mm nozzle cluster prints 2.5–3.3x faster than a single nozzle
- Ran calibration print sweeps to tune PLA coiling settings, achieving consistent closed coils and identifying the hot end's ~13 mm^3/s melt rate as the limit on print speed
- Evaluated design options with a weighted decision matrix, selecting a backlash-free direct-drive plate on four ball bearings and a single Klipper controller syncing all four extruders

Modular Multi-Game Table — Boston, MA
Personal — May 2026 – Present

- Modeled a 6 x 8 ft hardwood game table in SOLIDWORKS (30 custom parts, 4 assemblies) with knock-down legs for transport and a removable projector cradle
- Designed swappable play surfaces (rear-projected D&D map on acrylic, felt, pool with ball return, wood) and six player stations with hinged displays and dice trays
- Building a Python (FastAPI) game engine to run the projector, Raspberry Pi seat displays, and phones

Functional 3D Printed Parts — Boston, MA
Personal — May 2026 – Present

- Designed and printed 15+ parts in SOLIDWORKS, including camera stands, an audio amp clamp, a ukulele wall mount, a speaker enclosure, and a clip-on desk cup holder assembly

Interests

Aerospace, RC Planes, 3D Printing, Tabletop Games, Music, Photography