Elija Peters

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EDUCATION

Purdue University — **West Lafayette, IN**
Bachelor of Science, Mechanical Engineering — *Expected May 2029*
GPA: 3.3 / 4.0

EXPERIENCE

Fresh Thyme Market — **West Lafayette, IN**
Retail Associate — *August 2026 - Present*

- Assist customers with product location, questions, and checkout to support a positive store experience.
- Stock and rotate inventory, maintain product displays, and monitor stock levels across departments.
- Support daily store operations including receiving shipments, cleaning, and front-end coverage.

Purdue Electric Racing Club — **West Lafayette, IN**
Brake Systems Member — *January 2025 - Present*

- Contribute to the design and development of the vehicle's brake system for the club's electric race car build.
- Support regenerative braking integration to improve energy recovery and overall vehicle efficiency.

Depop Independent Resale Business — **Bloomington, IN**
Business Owner — *June 2024 - Present*

- Operate a textile recycling and resale business generating five-figure annual revenue.
- Analyze market demand and pricing trends to set competitive product pricing across a rotating inventory.
- Manage sourcing, product listings, shipping logistics, and customer communication end to end.

Walmart — **Martinsville, IN**
Retail Associate — *November 2023 - April 2025*

- Monitored and maintained inventory stock levels to ensure product availability.
- Assisted with shipment orders and stocking merchandise to support daily store operations.
- Provided customer service by assisting customers with purchases and product inquiries.

PROJECTS

Face-Tracking Servo Turret — **Personal Project**

- Designed and built an Arduino-based pan-tilt turret using a PCA9685 servo driver with closed-loop PID control for real-time target tracking.
- Developed Python and OpenCV vision software to detect faces and drive servo positioning over a serial communication link.

Custom Motor Driver PCB — **Personal Project**

- Designed a standalone motor driver board in KiCad to control DC, stepper, and servo motors, from schematic capture through PCB layout.
- Selected driver ICs, power, and protection circuitry, and validated board performance driving motors independent of any single project.

Desktop CNC Router with Custom Firmware — **Personal Project**

- Building a three-axis CNC router with motion control firmware written in C, including trapezoidal acceleration and arc interpolation.
- Implementing a lookahead planner to maintain feed rate through consecutive moves and reduce cycle time.

Thermoformed Plastics Manufacturing Project — **Purdue Coursework**

- Produced custom plastic components using thermoforming processes in a manufacturing lab environment.
- Verified parts met ASTM material and quality standards through controlled forming and dimensional inspection.

TECHNICAL SKILLS

- CAD and Design: SolidWorks, Fusion 360, AutoCAD, KiCad, GD&T
- Programming and Analysis: C, Python, MATLAB, Arduino, Embedded Systems, OpenCV, Microsoft Excel
- Manufacturing: 3D Printing (FDM), CNC Machining, Thermoforming, Injection Molding, Metal Fabrication, Rapid Prototyping, Composites
- Engineering Skills: Mechanical Design, PCB Design, Motion Control, PID Control, Prototyping, Dimensional Inspection, ASTM Standards

INTERESTS

Automotive and motorsport engineering, robotics and mechatronics, snowboarding, soccer.