

Luke Beaudoin
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Education

University of Michigan, Ann Arbor

Expected May 2029

Honors Mathematics, Honors Interdisciplinary Physics

GPA: 3.75

Relevant Coursework: Honors Math I–II, Honors Physics I–II (Mechanics, E&M), Data Structures (EECS 280)

Research Experience

UMTRI Biosciences — Undergraduate Researcher (SURE)

May 2026 – Present

- Developed parametric pedestrian model by repositioning the HERMES seated human body model for LS-DYNA finite element simulations
- Applied MATLAB-based mesh morphing techniques to improve finite element mesh quality after repositioning
- Prepared to present research at the SURE Student Seminar and UMTRI Student Research Showcase in August 2026

IGMR Robotics Lab — Undergraduate Researcher (UROP)

Aug 2025 – Aug 2026

- Developed kinematic model of a 6-DOF Geomagic Touch haptic device using Denavit–Hartenberg parameters and homogeneous transformations
- Extended C++ libraries for haptic device interfacing and adapted functionality for Python using CMake
- Collaborated with microsurgery research group on modeling improvements and next steps
- Presented research at the University of Michigan UROP Symposium

Projects

Self-Balancing Robot

Dec 2025

- Designed and 3D printed two-wheeled Arduino robot using Onshape
- Implemented PID control alongside Kalman-filtered state estimation in C++

Polytope Visualization System

Dec 2025

- Built file type converter from .off to .obj for higher-dimensional geometry visualization
- Developed Unity-based tool for exploring polytope structures

Engineering Experience

FIRST Robotics Competition — Electrical Lead / Drive Team Lead 2022 – 2025

- 2024 Michigan State Championship Winner; 4× State Qualifier; World Championship Qualifier
- 2023 FIRST Dean’s List Award Semifinalist
- Led electrical system design (CAN bus, power distribution, wiring architecture)
- Mentored students in robotics systems and fabrication

theCoderSchool Plymouth — Coding Coach 2022 – 2025

- Taught Arduino robotics and programming (C++, Python, Java, JavaScript, C#)
- Developed curriculum for students grades 2–12
- Led summer robotics camps and instructional design

Technical Skills

C++, Python, CMake, MATLAB, Unity, Onshape, Fusion 360, Arduino, robotics kinematics, finite element modeling (LS-DYNA), CAD