Theodore Coulson

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Education

Northwestern University, MS in Robotics — Sept 2025 – Dec 2026

- **Coursework:** Machine Learning and Sensing, Robotic Manipulation, Machine Dynamics, Embedded Systems, SLAM, Mechatronics, Deep Learning

Oberlin College, BA in Physics with a minor in Computer Science — Sept 2020 – June 2024

- **Coursework:** Systems Programming, Electronics Lab, Programming Languages, Discrete Mathematics, Classical and Quantum Mechanics, Algorithms.

Experience

Co-Founder, Entomological Enhancement Society, LLC – Pound Ridge, NY — June 2023 – Aug 2025

- Led of independent video game development project using Unreal Engine 5.
- Designed and implemented gameplay systems in C++ and Blueprint scripting language.
- Lead user interface designer and animator; Lead grant writer; Lead hiring manager for 7-person intern team.

Research Assistant, Oberlin College Physics Department – Oberlin, OH — Sept 2021 - Dec 2022

- Analyzed data from small angle neutron scattering investigation of magnetic nanoparticles.
- Documented and organized project data and code.
- Prepared summaries of findings for collaborators.

Programming Teacher and Team Lead, Stem Kids NYC – New York, NY — Summers 2018-2021

- Led programming and engineering classes for elementary and middle school students.
- Team leader during summer 2021. Designed, coordinated, and delivered camp-wide STEM demonstrations.

Projects

Fine Manipulation of Model Trains, Northwestern University – Evanston, IL — Dec 2025

- Programmed an Franka Emika Panda arm to place model trains on track with 1-2mm precision.
- Designed custom end effector parts and manipulation strategy
- Integrated computer vision pipeline with custom motion planning API

Pen-Grabbing Robot Arm, Northwestern University – Evanston, IL — Sept 2025

- Programmed an Interbotics PincherX-100 robot arm to grab a pen held in front of it in 4 day sprint.
- Built perception–to–action pipeline using OpenCV + Intel RealSense to detect 3D position of handheld pen.

Rapidly Exploring Random Tree, Northwestern University – Evanston, IL — Sept 2025

- Implemented RRT algorithm in Python for path planning in an obstacle-rich 2d environment.

Autopilot for Remote-Control Model Plane, Oberlin College – Oberlin, OH — Jan 2023

- Designed, built, and tested a 6' wingspan remote-control model airplane.
- Collaborated with classmate to design and implement an autopilot system capable of following GPS waypoints in C++ during a four week project sprint.

Student Organization Leader and Founder, Oberlin College – Oberlin, OH — Sept 2021 – June 2024

- Co-founded and led tabletop role-playing games club. Organized and led club meetings and activities.
- Fencing team head armorer. Responsible for maintaining and repairing equipment.

Skills

Programming Languages: C++, C, Java, Python, Rust, Scheme
Software: Git, ROS 2, Unreal Engine, Gazebo, Linux Systems, Onshape, OpenCV, Numpy
Hardware: Microcontrollers, Mechatronics, Mill, Lathe, 3d Printing