

Alexandru Otlacan

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EDUCATION

University of Michigan, Ann Arbor, MI

August 2023 - April 2027

Robotics Engineering B.S.E, Music Minor

- **Related Coursework:** Computational Linear Algebra, Human-Robot Systems, Programming and Intro Data Structures, Multivariable & Vector Calculus, Introduction to Logic Design, Robot Dynamics and Simulation, Simultaneous Localization and Mapping (SLAM) & Navigation, How to Build Robots and Make Them Move, Intro to Robot Control*, Human Evaluation of Robots*, Human-Computer Interaction*

Warren Mott High School and Macomb Mathematics Science Technology Center, Warren, MI

September 2019 - June 2023

- **Leadership:** Lead Scout and Design (FRC 818), Drum Major (Warren Mott Marching Band), National Honor Society, Camp Restore Detroit Tutor

EXPERIENCE

Undergraduate Research Assistant

Ann Arbor, MI

EMBiR Lab (Talia Moore Lab)

January 2026 - Present

- Designing a soft robot that uses solenoids in a pressurized system paired with magnets to generate locomotion, and developing supporting hardware and mathematical models to validate it, in collaboration with the Zoetic Robotics Lab

Undergraduate Research Assistant

Ann Arbor, MI

Zoetic Robotics Lab

October 2025 - Present

- Designed, prototyped, and benchmarked soft robotic mechanisms enabling multiple locomotion modes: high-speed crawling, jumping, and passive mobility
- Designed and iterated shell geometry in Fusion 360 to optimize robotic performance across FDM and SLA printing
- Conducted rapid prototyping with FDM 3D printing for microcontroller integration on ESP32C3

Computer Consultant Fellowship

Ann Arbor, MI

Duderstadt Ground Connection

October 2024 - Present

- Earned certifications across 8+ machineries, including Bantam CNC, Epilog Laser Engraver, FDM printers such as Bambu Labs A1 mini and P1S, Prusa Mk4s, and BigRep Studio G.2., SLA printers such as Stratasys J850 and Formlabs Form 3
- Consulted high-level design feedback and quotes for customers, helping finalize part specifications, advising on material use, resolution, and cost trade-offs for 100+ projects

Mechanical and Design Robotics Mentor

Ann Arbor, MI

First Robotics Team 830 - The RatPack Robotics

January 2024 - Present

- Guided technical assistance to 30+ high school students during a two-month FRC build season, overcoming engineering, logistical, and management challenges to complete a functional robot for competition
- Trained students to utilize CNC mills and 3D printers to manufacture and optimize robot components, reducing assembly and manufacturing time by 50% by creating custom aluminum brackets and frames using Fusion 360 and OnShape
- Optimized motion profiles and PID controllers to enhance robot precision and responsiveness by over 100%

PROJECTS

Roof Inspection Robot

Ann Arbor, MI

Walter P Moore · ROB 450 Senior Design Capstone

August 2026 - Present

- Developing an autonomous inspection robot for inspecting tensile roofs using sensors, cameras, and LiDARs

Ballbot Balancing Robot

Ann Arbor, MI

University of Michigan · ROB 311

January 2026 – May 2026

- Designed, fabricated, and tuned a ballbot that balances and drives on a basketball using PID control, omniwheel kinematics, and encoder analysis, with MATLAB trajectory plotting and IMU/LED integration

MBot Classic Robot

Ann Arbor, MI

University of Michigan · ROB 330

August 2025 – December 2025

- Programmed and tested control and navigation algorithms in C++ on ROS2 to complete four MBot robotics challenges covering setpoint control, maze escape, SLAM mapping, and vision-based navigation

Nurse Case Study — Autonomous Medication Dispensing Robot

Ann Arbor, MI

University of Michigan

January 2025 - April 2025

- Conducted user-research interviews with hospital nurses to identify burnout drivers and define workable robotics support needs
- Designed the workflow, UI, and system architecture for an autonomous medication-dispensing robot concept, delivered as a full case study presentation

MEMBERSHIPS

Michigan Marching Band - Section Leader

August 2023 - Present

- Performed at national events, including home football games in the Big House and the Rose Bowl in front of over 500 million spectators
- Hosted sectionals, office hours, and provided advice to returning and new members of section and band to over 50 people a week

TECHNICAL SKILLS

- **Programming Languages:** C++, Python, MATLAB, Java, JavaScript, HTML, CSS, LUA
- **CAD and Design:** Autodesk Fusion 360, SolidWorks, SolidWorks Simulation FEA, OnShape, Rhino, Blender
- **Fabrication:** Cura, Bambu Lab Studio, Prusa Slicer, Materialise Magics, GrabCAD, preFORM, Asiga Composer
- **Robotics and Simulation:** ROS2, Arduino, Simulink, R, NumPy, RViz, ESP32
- **Machines:** CNC Mill (Bantam CNC), 3D Printing (FDM/SLA), Laser Cutting/Engraving, 3D Scanning, Soldering
- **Tools:** Git/GitHub, Microsoft Excel/VBA, Mac, Linux, Windows