

Anthony Alvarez

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EDUCATION

Northwestern University, Evanston, IL
Bachelor of Science in Computer Science

Expected Graduation: June 2026
GPA: 3.9/4.0

EXPERIENCE

DeYoung Solutions, Web Developer, Kalamazoo, MI

May-September 2023

- Developed user interface of a client portal for a drug testing laboratory with C# and Blazor pages.
- Created several pages to allow users to create, update, read, and delete data using ASP.NET.
- Implemented an interface to manage both a legacy database and a new database simultaneously.

Henry Crown Sports Pavilion, Customer Service Representative, Evanston, IL

September 2022-May 2023

- Enforced gym safety rules and maintained the gym in an orderly state.
- Provided customer service by assisting gym members with booking tennis court reservations and renting equipment.

PROJECTS

Tock OS PIO-SPI driver for RP2040 | Rust, Embedded Systems, Kernel Development

January 2025-Present

- Creating a kernel driver for the Tock operating system for Northwestern University's Computer Science research program.
- Applying the Programmable IO controller on the RP2040 chip to emulate a serial peripheral interface (SPI) controller for arbitrary pins on a Raspberry Pi Pico WH board.
- End Goal is to construct a Wi-Fi driver for Tock OS which sits on top of the PIO-SPI driver.

Racket Interpreter | Rust, Racket

- Made an interpreter, written in Rust, which implements the Racket beginner student language.
- Features support for arithmetic, Boolean logic, if statements, user defined variables, a REPL, and running files from command line arguments.

Cloud Based Image Filters--Scalable Software Architectures Final Project | Python, AWS, MySQL

- Utilized AWS Lambda to build a REST API for uploading, storing, and manipulating images on a cloud server.
- Operated RDS with a MySQL database to track users and associated images; used S3 to store the images themselves.
- Leveraged OpenCV and NumPy to perform several image filters and manipulations such as edge detection, and blurring.

Of Mice and Frogs--Game Design and Development Studio Final Project | C#, Unity Game Engine, GitHub

- Collaborated with three teammates to develop a rogue-like game featuring a yo-yo-wielding mouse who attacks frogs.
- Implemented player controller and yo-yo mechanics to provide fast paced and responsive player experience.
- Developed a map generation and scene management system, that handles player travel through randomly organized sets of rooms and handles transferring player statistics and inventory across rooms.

Cane Pack--Design Thinking and Communication Project

- Collaborated with a team of three other members to design, build, and pitch a device to allow patients with hemiplegia to carry small items on a cane for the Shirley Ryan Ability Lab.
- The prototype consisted of a block with a little bag and a water bottle holder attached to a cane via hose clamps.

CLUBS

Northwestern University Robotics Club (NURC)

September 2022-Present

NURC-Automated Lacrosse Goalie Software | Python, OpenCV, Linux

- Currently leading the redesign and development of the computer vision system.
- Cut down time to detect a ball in an image frame by 20% while maintaining accuracy.
- Leveraging python and OpenCV to make a robot that tracks a lacrosse ball mid-flight and stops it from getting into a lacrosse goal.

NURC-Combat Robotics

- Engineered and fabricated a 5lb radio controlled mini bot to fight with a 30lb combat robot in National Havoc Robot League (NHRL) tournaments.
- Designed and constructed (either 3D printed or machined) parts for use in combat robots.
- Competed in combat robotics competitions along with the combat robotics club and fixed robots in between fights, resulting in qualification for the *NHRL World Championships* in November 2023.

SKILLS

Programing languages and frameworks: Python, C++, Rust, C#, ASP.NET, Java.

Software/Tools: GitHub, Visual Studio, Unity Game Engine, Linux, SolidWorks.

Foreign Languages: Spanish.

Interests: Cycling, Video Games.