Nikola V. Maruszewski

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Education

Northwestern University — Evanston, IL
Bachelor/Master of Science, Computer Science/Computer Engineering — *Sep 2022 – Present*

- **Expected Graduation:** June 2025
- **Score:** 4.00/4.00
- **Relevant Coursework:** CS 322: Compiler Construction; CS 349: Machine Learning; CS 449: Deep Learning

Roycemore School — Evanston, IL
High School Diploma — *Aug 2018 – Jun 2022*

- **Score:** 4.80/4.00
- **Relevant Coursework:** AP Physics C: Mechanics and E&M; CS 213: Intro to Computer Systems (Dual Enrollment @ NU); MATH 240: Linear Algebra (Dual Enrollment @ NU)

Experience

Summer Undergraduate Researcher — Jun 2023 – Present
PARAG@N Lab — *Evanston, IL*

Funded by an NSF REU and a grant from the NU CS department, I was able to perform cutting-edge research on quantum computing.

- Designed and programmed a quantum compiler to optimize quantum circuits for emerging quantum computer topologies.
- Created a development framework and tools for further quantum systems research.
- Student leader of the project while an undergraduate student.

Peer Mentor — Jun 2023 – Aug 2023
Northwestern University — *Evanston, IL*

Acted as an undergraduate peer mentor for CS 321 Programming Languages.

- Held several office hours each week.
- Answered questions, both synchronously in office hours each week and asynchronously on a Piazza message board.

Awards and Honors

Rebecca Ashley Thatcher Award for Overall Academic Achievement | *Roycemore School* — 2022.06.03
Awarded to the best-performing student in the Roycemore Senior class.

Headmaster's Award | *Roycemore School* — 2022.05.13
Awarded to the Senior best representing Roycemore's Core Values.

Projects

Northwestern Fintech Club | *C++, Python, CMake, Machine Learning, Redis, libcurl, libuv* — Jun 2023 – Present

- Created a orderbook system to pull orderbooks from exchanges using libcurl and libuv, then push them into a Redis instance for consumption by ML prediction clients.
- Organized linting and build systems for multiple projects, in C++ and Python.
- Helped create a devlopment architecture for the coming years, with a focus on reducing technical debt.

MediumAnt | *C, Polulu Wixel, Polulu Micro Maestro, Servos* — Jan 2022 – Feb 2022

- Six-legged ant-like robot created in collaboration with Dr. Shai Revzen at the BIRDS Lab at the University of Michigan.
- Built from laser-cut styrofoam; moves using 360° servos controlled by a Polulu Micro Maestro.
- Movement control accomplished by two wirelessly communicating Polulu Wixels, one on the robot to control motors and the other connected to a PC to recieve commands.

Self-Balancing Robot | *C++, Arduino, MPU6050, L298N* — Jan 2020 – Jul 2021

- Two wheeled self-balancing robot using a MPU6050 gyroscope and L298N motor controller.
- All code is written in C++; the motors are PID controlled using the angle of the robot reported by the gyroscope.
- The bulk of the work was done from 2020.01.06 to 2020.01.24, with additional work during July 2021.

Technical Skills

Programming Languages: Python, C and C++, JavaScript, Java, MATLAB, Shell Script
Machine Learning: PyTorch, NumPy, PolaRS, Scikit-learn, Linear Algebra
Tools: Docker, Containerd, Taskfile, Make, CMake, Ruff and Flake8, Mypy, Poetry, Git, Github Actions, Linux
Robotics: Embedded devices, Embedded programming, ESP-32, Arduino, Intel 8051, Motor controls, Servos, Gyroscopes, PID Tuning, Motion processing, Command processing, Wireless communication