# Nikola V. Maruszewski

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## EDUCATION

**Northwestern University**                                                                           Evanston, IL

*Bachelor of Science, Computer Science; Master of Science, Computer Engineering*          *Sep 2022 – Jun 2025*
- **Score:** 4.00/4.00
- **Relevant Coursework:** Operating Systems; Distributed Systems; Code Analysis and Transformation (in LLVM); Advanced Topics in Compilers; Compiler Construction; Parallel Architectures; Computer Architecture (with RISC-V); Advanced Digital Design (in Verilog); Computer Networking; Machine Learning; Deep Learning

## EXPERIENCE

**Software Engineering Intern**                                                              Jun 2024 – Aug 2024

*Caterpillar, Inc*                                                                                        *Peoria, IL*

Worked in the Autonomy and Automation Division on computer vision and data processing.
- Worked on the design and implementation of a new data warehouse and processing pipeline in Python.
- Designed and implemented distributed concurrency control systems for distributed compute with ZooKeeper.
- Worked a smartphone vehicle calibration system using OpenCV in Python.

**Teaching Assistant**                                                                          Jun 2023 – Present

*Northwestern University*                                                                             *Evanston, IL*

Acted as an undergraduate peer mentor for CS 321: Programming Languages and CS 213: Intro to Computer Systems.
- Held several office hours each week.
- Answered questions, both synchronously in office hours and asynchronously on a Piazza message board.

**Undergraduate Researcher**                                                                    Sep 2022 – Present

*PARAG@N Lab*                                                                                        *Evanston, IL*

Led a research project to design improved Quantum Systems software.
- 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.

**Campus Ambassador**                                                                         Sep 2023 – Jun 2024

*Ansys*                                                                                              *Evanston, IL*
- Researched, reached out to, and scheduled meetings with relevant campus groups to discuss Ansys' tools.
- Organized lunch info sessions for Ansys, including booking rooms and organizing food.
- Coordinated with a member of the Ansys team for the campus work.

## PROJECTS

**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.

## AWARDS AND HONORS

**McCormick Summer Research Award** | *Northwestern University*                                        06.01.2023
Awarded a total of $8000 to perform summer research on Quantum Computing.

**Dean's List with High Honors** | *Northwestern University*                                  Dec 2022 - Present
Awarded each quarter to students with a 4.00 GPA. Received every quarter starting Dec 2022.

## TECHNICAL SKILLS

**Programming Languages**: Python, C, C++, JavaScript, Java, MATLAB, Shell Script, x86 Assembly, ARM Assembly, RISC-V Assembly, HTML, CSS

**Machine Learning**: PyTorch, NumPy, PolaRS, Scikit-learn, Linear Algebra, MLOps

**Tools**: Docker, Containerd, Make, CMake, Ruff and Flake8, Mypy, Poetry, Git, Github Actions, Linux, ZooKeeper

**Robotics**: Embedded devices, Embedded programming, ESP-32, Arduino, Intel 8051, Motor controls, Servos, Gyroscopes, PID Tuning, Motion processing, Command processing, Wireless communication, OpenCV