

# Nikola V. Maruszewski

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## EDUCATION

### Northwestern University

Evanston, IL

*Master of Science, Computer Engineering*

Sep 2022 – Jun 2025

- **Score:** 4.00/4.00
- **Relevant Coursework:** Advanced Topics in Compilers; Parallel Architectures; Computer Architecture (with RISC-V); Advanced Digital Design (in Verilog); Electronic System Design; ASIC and FPGA Design

### Northwestern University

Evanston, IL

*Bachelor of Science, Computer Science*

Sep 2022 – Jun 2025

- **Score:** 4.00/4.00
- **Relevant Coursework:** Operating Systems; Distributed Systems; Code Analysis and Transformation (in LLVM); Compiler Construction; Programming Languages; Advanced Digital Design (in Verilog); Computer Networking; Machine Learning; Deep Learning

## EXPERIENCE

### 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.

### 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.
- Learned about commercial robotics and autonomy platforms.

### Teaching Assistant

Jun 2023 – Jun 2024

*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.

### Campus Ambassador

Sep 2023 – Jun 2024

*Ansys, Inc.*

*Evanston, IL*

Acted as the Campus Ambassador for Ansys at Northwestern.

- 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 receive 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

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- McCormick Summer Research Award** | *Northwestern University* 2023  
*Title:* “A Compiler for Quantum Chiplets.” Advised by Nikos Hardavellas.
- Northwestern Academic Year Undergraduate Research Award** | *Northwestern University* 2023  
*Title:* “A Compiler for Quantum Chiplets.” Advised by Nikos Hardavellas.
- Dean’s List with High Honors** | *Northwestern University* Dec 2022 — Present  
Awarded each quarter to students with a 4.00 GPA. Received every quarter at Northwestern.

## TALKS AND PRESENTATIONS

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- A Compilation Framework for Chiplet-Based Quantum Computing Systems** Sep 2023  
Given at Northwestern University.
- Quantum Computing Research at PARAG@N** May 2023  
Lecture given for a class session of COMP\_ENG 456 at Northwestern University.

## RESEARCH GRANTS

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- McCormick Summer Research Award** | *Northwestern University* 2023  
*Title:* “A Compiler for Quantum Chiplets.” Advised by Nikos Hardavellas. \$4500 (supplemented to \$8000).
- Northwestern Academic Year Undergraduate Research Award** | *Northwestern University* 2023  
*Title:* “A Compiler for Quantum Chiplets.” Advised by Nikos Hardavellas. \$1000.

## PUBLICATIONS

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- SEQC: Stratify-Elaborate Quantum Compilation for Modular Architectures** (Under Review) *ISCA 2025*  
Jessica Jeng\*, Nikola Vuk Maruszewski\*, Connor Selna, Michael Gavrincea, Kaitlin Smith, Nikos Hardavellas  
(\* represents equal contribution)

## TECHNICAL SKILLS

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**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