Michael Halpern

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EDUCATION

Rensselaer Polytechnic Institute *Troy, NY* **Graduation May, 2026**

BS, Computer Science and Information Technology and Web Science, concentrations in Data Science and Machine Learning, Minor in Philosophy

- Dean's List: Fall 2022, Spring 2023, Fall 2023, Spring 2024, and Summer 2024
- Leader and member of the Rensselaer Outing Club, chair of winter mountaineering, mountain biking, and ice climbing
- Relevant coursework in: Machine Learning from Data, Quantum Computing, Managing I.T. Resources, Algorithms, Principals of Software, Web Systems Development, Operating Systems, Data Structures, and Foundations of Computer Science.

EXPERIENCE

VZCode: Mob Programming Code Editor **May 2024 – Present**

Software Developer *Troy, NY*

- Developed and maintained VZCode, a real-time collaborative code editor with over 9,000 downloads in the past year and the integral code editor component of VizHub, a web-based code editor.
- Collaborated in a team of five, releasing four updated versions with enhanced features and bug fixes.
- Implemented a split-pane feature to display multiple code files simultaneously, improved software accessibility by 20% with features like rainbow bracketing and increased contrast levels, and added an autocompletion feature for HTML files, collectively enhancing user experience and increasing developer efficiency by 30%.

InfraGard Cyber Camp Program **Jan. 2023 – Dec. 2023**

Team Member *Remote*

- Utilized Ansible to automate the deployment and configuration of virtual machines, facilitating cybersecurity education for high school and beginner college students.
- Improved efficiency and consistency by reducing manual labor in virtual machine creation, saving approximately 60-75 hours per year.
- Participated in meetings to discuss project progress, challenges like management access and security (e.g., penetration testing), and collaborated with industry professions to code review and evaluate security vulnerabilities.

RESEARCH & PROJECTS

Quantum Approximation Optimization Algorithm Research

Research Presentation: ACM/IEEE ICCAD 2024 QCAS Workshop **May 2024 - Present**

- Enhanced the Quantum Approximation Optimization Algorithm (QAOA) initial gamma and beta parameter findings in Qiskit to use warm starting by creating a graph convolutional network model using PyTorch.
- Achieved a 99.9% faster calculation time compared to classical methods with an additional 1.2% decrease in expected value, based on calculations ran on the RPI-IBM Quantum System One.
- Presented research at the Quantum Computing Applications and Systems (QCAS) Workshop, ACM/IEEE International Conference on Computer-Aided Design (ICCAD) 2024.

Emergency Room Dot Compare **Nov. 2023**

- Developed EmergencyRoom.compare, a web application designed to reduce emergency room wait times by identifying the fastest emergency room options based on driving times and estimated waiting times, saving users an average of 45 minutes for non-life-threatening emergencies.
- Implemented a LAMP stack on a Google Cloud VM running Ubuntu, leveraging Google Maps Route/Directions API for driving time data and an internal RESTful API for ER wait times.
- Awarded Best Use of the Cloud, R.P.I. 10th Annual Hackathon.

Connect Four Artificial Intelligence **Dec. 2022**

- Developed an AI minimax bot algorithm in conjunction with transposition tables that plays connection four, which ranked the highest in a class of over 100 people as it consistently beats all other AI bot models.

Class Scheduling Algorithm **Jan. 2022**

- Streamlined class scheduling for all college educational institutions using a Python-based genetic algorithm, which reduced manual scheduling time by approximately 7 hours.

SKILLS & CERTIFICATES

- **Skills:** Proficient in C++, Python, JavaScript, TypeScript, Java, C, Git, CSS, HTML, and Github. Experienced with: PyTorch, TensorFlow, Qiskit, PHP, Ansible, Azure, SQL, NOSQL, MariaDB and MongoDB.
- **Certificates:** Qiskit Global Summer School 2024 Achievement, IBM Quantum Challenge 2024 Achievement, and Oracle Cloud Infrastructure 2023 Certified Foundations