

# Matthew C. Voynovich

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## EDUCATION

### RENSSELAER POLYTECHNIC INSTITUTE

Troy, NY

B.S. in Computer Science and Information Technology & Web Science

Aug 2023 - Expected May 2026

Concentration in AI, Machine Learning, and Data Science

**Cumulative GPA:** 3.97/4.0; Dean's List 2023-2024

**Relevant Coursework:** Data Structures, Algorithms, Foundations of Computer Science, Discrete Mathematics, Numerical Techniques in Computing, Intro to Logic Based AI, Computer Organization, Web Science Development, Computational Vision, Intro to AI, Math Foundations of Machine Learning

**Technical Skills:** Advanced in SQL, PHP, JavaScript, Java, HTML/CSS, React, Node.js, Express.js, MongoDB, Python, C, C++ (Data Structures Implementation), Machine Learning Techniques (Convolutional Neural Networks, PyTorch, etc)

**Awards and Leadership:** 3x Dean's Honor List; Head of Events/Coach for Rensselaer Running Club, UPE Honor Society (Computing and Information) Member

### ROSLYN HIGH SCHOOL

Roslyn Heights, NY

Weighted GPA: 103.5

Sep 2019 - June 2023

National Honor Society, Science National Honor Society, Cross Country and Track Captain;

## WORK EXPERIENCE

### INVESTIGATIONS OF QUANTUM PHASE ESTIMATION

RPI, NY

Undergraduate Researcher, RPI

Jan 2025 – Present

- Researching applications of Quantum Phase Estimation (QPE) in Quantum Signal Processing
- Studying Shor's algorithm for decryption and expanding to period finding in periodic functions
- Exploring the mathematical foundations of quantum Fourier transforms, eigenvalue estimation, and phase estimation techniques to enhance signal processing methods.
- Designing, implementing, and optimizing quantum circuits using Qiskit, leveraging IBM's quantum computing framework to simulate and test QPE-based algorithms. Testing said quantum programs on the RPI Quantum Computer, evaluating performance and accuracy of phase estimation techniques

## PROJECTS

### HOMEFUL

RPI, NY

Developer

Nov 2024 – Dec 2024

- Developed a web application designed to help students compare off-campus housing options around RPI while also evaluating on-campus alternatives.
- Built using Node.js, Express.js, Vue.js, and MongoDB, the platform provides an intuitive interface for browsing, filtering, and analyzing housing listings based on factors like price, location, amenities, and lease terms.
- Developed a RESTful API to efficiently manage and retrieve housing data, ensuring seamless integration between the front-end and back-end.

### AUTOMATED REASONING LIGHTUP (AKARI) SOLVER

RPI, NY

Developer

Nov 2024 – Dec 2024

- Solved the popular logic puzzle, Akari, using Z3, a SMT solver, applying automated reasoning techniques to efficiently solve puzzle configurations.
- Implemented constraint-based algorithms to validate board configurations against game rules and generate solutions dynamically. Utilizing automated reasoning techniques to efficiently solve board states, ensuring logical accuracy.

### FRESH N' CLEAN

RPI, NY

Developer and Project Lead

Aug 2024 – Dec 2024

- Co-developed Fresh n' Clean, an on-demand laundry service platform connecting users with laundromats and independent contractors, similar to Uber.
- Utilized JavaScript, PHP, Google Maps API, and PayPal API to create an interactive and effective web application.
- Collaborated in a team using a modified Agile Scrum framework, focusing on iterative development and feedback loops.
- Managed group work effectively through GitHub Projects and Issues for task tracking and version control.

## ACTIVITIES

### RENSSELAER RUNNING CLUB

RPI, NY

Head of Events/Coach

Aug 2023 – Present

- Coordinate race and meeting schedules for the running club, ensuring effective event planning and smooth operations.
- Maintain a disciplined daily training regimen to prepare for competitive races, while also coaching club members to help them improve their personal fitness and performance.