

MARY COTRUPI

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EDUCATION

Rensselaer Polytechnic Institute (RPI)

Troy, NY

B.S. in Computer Science and Information Technology & Web Science | GPA: 3.8/4.0

Expected May 2027

Gamma Nu Eta (GNH) & Upsilon Pi Epsilon (UPE) Honors

- **Concentrations:** Artificial Intelligence, Machine Learning, Data Science, and Information Security
- **Coursework:** Quantum Computing & Information, Data Structures, Computer Organization, Foundations of Computer Science (Discrete Math), Introduction to Algorithms, Principles of Software, Web Science & Systems Development, Linear Algebra, Managing IT Resources

TECHNICAL SKILLS

Technologies: Python, C, C++, Java, Qiskit, R, HTML/CSS/JavaScript, Git, Linux, MS Azure, Nmap, BurpSuite, Wireshark, Assembly (MIPS), MongoDB, Verilog

Certifications: ISC2 Certified in Cybersecurity (CC), CompTIA IT Fundamentals+ (ITF+)

EXPERIENCE

Quantum Computing & Cybersecurity Research Intern | RPI School of Science

May – Aug 2025

Quantum machine learning kernels for network intrusion detection: a comparative NISQ application

- **Cotrupi, Mary L.** and Brian R. Callahan, Forthcoming. "Towards Practical Quantum Kernels for Network Intrusion Detection." Proceedings of the First AAAI Symposium on Quantum Information & Machine Learning (QIML). AAAI Fall 2025 Symposium, Arlington, VA. Nov. 6-8, 2025.
- Discovered high practicality of using quantum kernels with classical support vector machines (SVMs) for network intrusion detection, leveraging both simulator and real IBM quantum hardware for the cybersecurity practitioner's benefit.

Cybersecurity Research Assistant | Rensselaer Cybersecurity Collaboratory

Aug 2024 – May 2025

Ethics of Generative AI for Cybersecurity Training

- Callahan, Brian, Quinn Colognato, and **Mary Cotrupi**. 2024. "Generative AI for Cybersecurity Awareness Training: Skills, Strategies, and Accountabilities." BSides St. Pete Conference, FL. Sep. 14, 2024
- Studied the ethical use of gen. AI in cybersecurity awareness training by comparing trainings developed by prompt engineers, cybersecurity experts, and hybrid roles.

Augmented Reality CTF Pedagogy

- Callahan, Brian Robert, Sanya Joseph, Shoshana Sugerman, Quinn Colognato, **Mary Cotrupi**, et al. "RC3TF, an Augmented Reality CTF: A case study in improving cybersecurity pedagogy for the undergraduate research laboratory." Proceedings of the 20th Annual Symposium on Information Assurance (ASIA). University at Albany. Albany, NY. Jun. 3-4, 2025

Cyber Sentinel Challenge Participant | U.S. Department of Defense, Correlation One

June 2025

- Top 5% finisher among 2100+ selected players in the DoD's annual national cybersecurity competition, applying skills in forensics, malware analysis, reverse engineering, networking & reconnaissance, OSINT, and web security.

LEADERSHIP & PROJECTS

Student Leader & Admin | Rensselaer Cybersecurity Collaboratory

Aug 2023 – May 2025

- Led CTF team meetings on topics including reverse engineering, insider threats, and cyber forensics

ISC2 Chapter Member | Capital District NY

Aug 2024 – Present

- Co-organized monthly chapter meetings, bringing together students and cybersecurity professionals in the capital area

Developer | Mongoose | RPI ITWS-4500

Spring 2025

- AI-powered resume optimization platform built with MongoDB, Express, React.js, Node.js, and Python (FastAPI) to automate resume enhancement using job description analysis. Integrated ATS scoring & hosted on MS Azure

Board Member | ACM-W (Women in Computing) | RPI

Aug 2023 – May 2024

- Mentored 1:1 underrepresented first-year CS students and led Spring 2024 fundraising strategy as finance chair

Web Designer & Media Manager | The Porch

July 2021 – Present

- Built <https://theporchnh.com> with HTML/CSS/JS, & WordPress, implementing SEO practices to reach 4000+ users