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**   **May 2027**

- **Concentrations**: Artificial Intelligence, Machine Learning, Data Science, and Information Security
- **Coursework:** Quantum Computing & Information, Algorithms, Discrete Math, Linear Algebra, Computer Organization, Data Structures, Web Science & Systems Development, Database Systems

The Chinese University of Hong Kong (CUHK)   **Shatin, Hong Kong**
Computer Science Affiliated Study Abroad   **Spring 2026**

TECHNICAL SKILLS

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

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

EXPERIENCE

Quantum Computing & Cybersecurity Research Intern | RPI School of Science   **Summer 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.
- Towards NISQ-era practicality of using quantum kernels with support vector machines (SVMs) for network intrusion detection, leveraging both simulator and real IBM quantum hardware for the cybersecurity practitioner's future 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

Gamma Nu Eta (GNH) & Upsilon Pi Epsilon (UPE) CS & ITWS Honor Societies

ISC2 Chapter Member | Capital District NY   **Aug 2024 – Present**

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

Student Leader & Admin | Rensselaer Cybersecurity Collaboratory   **Aug 2023 – May 2025**

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

Board Member | ACM-W (Women in Computing) | RPI   **Aug 2023 – May 2024**

- Provided mentorship to underrepresented first-year CS students & led Spring 2024 fundraising strategy as finance chair

Team 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

Interests

Principal second violinist (RPI Orchestra) | realism painting (oil & acrylic) | cross-country & downhill skiing