

MATTHEW TAVARES

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EDUCATION

B.S. Computer Science | Rensselaer Polytechnic Institute | Troy, NY | May 2026

Dean's Honor List; IBM Quantum Challenge Achievement; RCOS; Sigma Chi Fraternity

TECHNICAL SKILLS

Languages: Python, C++, C, SQL, Java

Frameworks/Libraries: OpenCV, pytest, NumPy, pandas, Matplotlib, Qiskit

Tools/Platforms: Git, GitHub, Linux, Jupyter Notebook, MongoDB, AWS, JSON, REST APIs

EXPERIENCE

Software Engineer Intern | HARP Research, Inc. | Troy, NY

Sep 2024 - Jan 2025

- Built a Python and Matplotlib UI to visualize and manipulate complex graph data structures, improving research prototyping and validation.
- Implemented an object-oriented Python API for Hurwitz Quaternion Integers with 15+ core operations, including Euclidean division, conjugation, and equivalence handling.
- Added pytest unit tests for correctness and exception handling, improving reliability of mathematical operations and library behavior.
- Designed 50+ graph operations and 3 notation systems for node insertion, connectivity analysis, and scalable multi-layer relationship modeling.

AI Trainer (Python & C++) | Outlier | Remote

Dec 2024 - Present

- Designed practical coding tasks requiring 50+ agent tools like GitHub and Slack to improve how AI models use external API integrations.
- Constructed stress tests and scoring rubrics with 25+ weighted criteria for AI-generated code quality, reproducibility, security and instruction following constraints to support reinforcement learning.
- Reviewed 200+ code responses to identify logic bugs, edge-case failures, and hallucinated behavior.

Financial LLM Researcher | FINOS | Troy, NY

May 2024 - Aug 2024

- Evaluated FinGPT benchmark tasks across GPT-4o, Llama 3, and Mistral using 0-shot and 1-shot prompting for regulatory text processing.
- Automated benchmarking by developing Python scripts for 300 financial regulatory tasks for financial abbreviations, definition extractions, and named-entity recognition.
- Co-organized the COLING 2025 Regulations Challenge, contributing to website development and dataset preparation.

PROJECTS

AI Video Editor | Software Developer | C++, OpenCV |

Aug 2023 - Dec 2023

- Built a C++ CLI video editor to import, automatically trim, and export media, deployed in a professional editing production environment.
- Used OpenCV computer vision library for face detection, blur detection, and compression analysis to drive optimized cut decisions.
- Reduced personal manual editing time by ~60% after deployment over 50+ videos.

Quantum Wordle | Software Developer | Python, Jupyter Notebook, Qiskit

September 2024 - January 2025

- Built a fully playable CLI Wordle game in Python, bridging classical game logic with a Qiskit-powered quantum backend for probabilistic letter feedback across a 2,315-word dictionary.
- Engineered a Grover-inspired quantum search engine using Qiskit, evaluating all 5 letters simultaneously with custom quantum circuits and 200-shot sampling to identify correct letter positions.
- Designed a probabilistic feedback algorithm using chained CRY gates and dynamic state-to-letter remapping, collapsing a 5-qubit measurement into variable in-game feedback.