JONATHAN ROBERT ROTH

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EDUCATION

University of Maryland, College of Computer, Mathematical and Natural Sciences — May 2026
Bachelor of Science, Computer Science Major — GPA: 3.5
General Business Minor

Relevant Coursework

- Object-Oriented Programming, Computer Networks, Cybersecurity, Machine Learning, Artificial Intelligence, Data Science, Quantum Computing, Web Development, Data Structures and Algorithms, Systems Programming, Programming Languages, Discrete Math, Linear Algebra, Applied Statistics, Video Game Programming

EXPERIENCE

University of Maryland — College Park, Maryland
Quantum Computing Research — 2025 - Current

- Researched reversible computational optimizations on minimizing circuit complexity and space complexity
- Utilized Python and reinforced learning techniques to optimize complexity tradeoffs in quantum circuits
- Designed and analyzed algorithms and made mathematical operations on circuit design and complexity.

Wawa — Bel Air, Maryland
Customer Service/Retail Associate — 2020 - 2024

- Developed strong communication and customer communication as well as teamwork and operation efficiency.
- Lead co-workers through various situations as needed in a team leadership role

SKILLS

Proficient Languages: C, C++, C#, Python, JavaScript, Java, SQL, HTML, CSS
Libraries/Frameworks: Node.js, Express, React, MongoDB, Flask, PyTorch, Pandas, NumPy, Matplotlib, OpenSSL, Qiskit
Tools: Docker, Git, GitLab Wireshark, Linux, Nginx, MySQL, Unity, GDB, Nmap, Kubernetes
Concepts: Linear Algebra, Probability & Statistics, Optimization, Discrete Math, Algorithms, Data Structures

PROJECTS

Machine Learning Basketball Prediction Model

- Developed machine learning application that processes raw statistical data to generate outcome predictions
- Utilized data processing and feature engineering to train predictive models based on historical datasets
- Deployed the predictive model with Flask backend and React frontend to serve predictions to users

Game Development Project

- Developed a playable 3D video game using Unity and C#, developing UI, game logic, and physics logic
- Designed modular object-oriented architecture for gameplay systems and physics interaction in the unity engine.
- Used Git workflows like branching merging and push/pulling to coordinate development amongst a team

HTTP Server

- Built a lightweight HTTP server using socket programming and TCP/IP networking concepts
- Implemented HTTP request parsing, routing, and static file serving for HTML, CSS, and JavaScript
- Deployed and hosted personal website on HTTP server

Music Profile Web Application

- Built a full-stack web application that allows users to create profiles and save favorite music with Spotify API
- Developed a backed server using Node.JS and Express.Js to handle authentication, API requests and user data
- Designed and implemented a NoSQL database using MongoDB and encryption to store user data securely

ACTIVITIES

Engineering Club, *Secretary* — 2023 - 2025

- Participated in engineering-based projects under professional guidance to accomplish and solve problems
- Worked with groups like VME to build devices and assistive technology for individuals with disabilities

AI/Machine Learning Club, *Member* — 2024 - 2026

- Contributed to machine learning projects and research tasks with fellow peers
- Developed real-world uses of machine learning techniques to solve problems in various fields

Tutoring, *Freelance* — 2023 - Current

- Assisted peers in other fields with computer science concepts who are unfamiliar with them
- Explained topics in Python and helped improve understanding of coding fundamentals and problem solving