

William Roche

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EDUCATION

New York University

Pursuing Bachelor of Science

Major: Computer Science, Minor: Mathematics

New York, NY

Expected 2027

The College Of New Jersey

Major: Computer Science, Minor: Mathematics

GPA: 3.92 | Dean's List (4/4 Semesters) | Upsilon Pi Epsilon Honor Society

Ewing, NJ

Attended 2023–2025 (Transferred)

Relevant Coursework: Object Oriented Programming, Data Structures, Discrete Structures, Computer Architecture, Analysis and Implementation of Algorithms, Operating Systems, Calculus, Mathematical Proof Writing, Advanced Linear Algebra, Probability and Statistics, Mechanics, Creating and Understanding Financial Statements

Programming Languages: Python, C++, C, Java, SQL, Javascript, Typescript, MATLAB

Dev Tools: HTML, CSS, Git, Docker, FastAPI, REST APIs, Next.js, React, Tailwind CSS, Vercel

EXPERIENCE

Quantum Device Fabrication & Performance Analysis Intern

Shabani Lab | NYU Center for Quantum Information Physics

June 2025 – Present

- Working towards the fabrication of a vertical graphene josephson junction for use in superconductive qubits.
- Considering approach strategies and performing interface quality analysis via atomic force microscopy.

Quantum Computing Research Assistant

Mentored Research | The College of New Jersey

Jan 2025 – May 2025

- Studied core principles of quantum mechanics, quantum computing, and quantum algorithms.
- Applied linear algebra and group theory concepts to support research efforts.
- Analyzed quantum algorithms, focusing on Grover's Algorithm and Shor's Algorithm, to evaluate potential applications and computational advantages.

Blockchain & Digital Assets Research Assistant

Mentored Research | The College of New Jersey

Sep 2024 – May 2025

- Researching distributed ledger technologies, focusing on consensus mechanisms. (Proof-of-Work, Proof-of-Stake, etc.)
- Performing in-depth analysis on security protocols for various blockchain networks.
- Leveraging expertise to assess the scalability potential of in-demand cryptocurrencies.

Social Media Management & Growth Strategist

Freelance Management

Jan 2024 – May 2025

- Grew to 3M+ views, 20K followers, and a 5-figure income through an in-depth understanding of social media algorithms.
- Worked with small-scale brands and other creators to build a consistent revenue stream.

Web Application Developer

The College of New Jersey

Sep 2023 – May 2024

- Initiated the development of a Progressive Web Application to augment the TCNJ Library mobile application.
- Responsible for Study room, printer, computer finder features, user interface, and maintenance on motion sensors.
- Coordinated with school administration to align project scope with library needs.

PROJECTS

Songify | [<https://songify-wjr.vercel.app/>]

- Built AI-powered song recommendation app using Next.js, React, Cohere API, and TMDB API.
- Employed REST API principles, styled with Tailwind CSS v4.0, and deployed through Vercel.

Live Stock Tracker | [<https://stocktracker-z7er.onrender.com>]

- Engineered a real-time stock tracking system using FastAPI and WebSocket protocols to automate market status monitoring.
- Developed a responsive single-page application with dynamic theming, integrating Chart.js for interactive price visualizations and WebSocket-driven live updates without page refreshes.
- Containerized the application using Docker Compose, creating a scalable architecture with separate frontend and backend.

Custom Linux Shell | [<https://github.com/WillRoche2587/linuxShell>]

- Unix-like shell with features including command history navigation, piping, I/O redirection, background execution, and built-in commands (cd, exit, etc.).
- Leverages system calls like fork, execvp, pipe, and chdir to manage processes, directories, and inter-process communication while maintaining a buffer for command history.