# Lucy O'Toole

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**Objective:** Seeking a research engineering position
**Available:** June 1st (Part-Time), Sept 1st (Full-Time)

## EDUCATION

**Worcester Polytechnic Institute** | B.S. Mathematical Science, B.S. Computer Science | GPA: 3.79 | Expected graduation: August 2025

**Coursework:** Graph Theory, Group Theory (Rubik's Cube), Real Analysis I/II, Graduate Linear Algebra, Operating Systems, Computer Networks, Machine Organization, Theory of Computation, Linear Programming

## RESEARCH EXPERIENCE

**WPI Major Qualifying Project: "Perfect State Transfer in Weighted Quantum Walks"** | Jan 2025-Present | Researching linear algebra, group theory, and graph theory methods for quantum walks on graphs. Applications in Quantum Computing research and development. Published: http://digital.wpi.edu/concern/student_works/7s75dh71c?locale=en

**WPI Interactive Qualifying Project: "Web Scraping Needs and Limitations"** | Jun-Aug 2024 | Researched web scraping methods and applications for automated data collection. Identified limitations through background research, interviews, and surveys. Developed recommendations for new technological features. Published: http://digital.wpi.edu/concern/student_works/7s75dh71c?locale=en

## PROFESSIONAL EXPERIENCE

**Qualcomm Inc. - Software Engineer** | Nov 2021-Jan 2023 |
Applied network design optimization research to neural networks. Co-invented patent-pending system for parallelizing neural networks. Collaborated on network optimization techniques for neural network training.

**Reservoir Labs Inc. - Engineering Staff** | Jun-Nov 2021 |
Conducted R&D for computer network design optimization. Created programs analyzing impact of fiber optic cable additions between datacenters. Company acquired by Qualcomm.

## PATENTS

N. Sebastián, et al. "Systems and Methods for Parallelizing Neural Networks Using Bottleneck Structures" (Unpublished, pending)

N. Amsel, et al. "Multi-Domain Network Data Flow Modeling" Appl. 18/049,159 (Pending)

https://patents.justia.com/inventor/lucia-regina-o-toole

## RESEARCH AREAS

Quantum Computing, Performance Optimization, Theory, Systems, Networks, Algorithms

## TECHNICAL SKILLS

Java, Python, R, SQL, C++, OCaml, LaTeX

## ACTIVITIES

Philharmonic Orchestra (Cello), Artisanal Bread Baker, SCUBA, Sailing

## AWARDS

Merit. Math Award May 2nd, Pi Mu Epsilon (Alpha), WPI Dean's List 22-24, Putnam Score 14, PROMYS Star of the Week