

# Quinn Arbolante

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[www.quinncubostar.com](http://www.quinncubostar.com)

## Education

Northeastern University, Boston, Massachusetts

(Graduating Spring 2025)

Master's of Computer Science

- Graduate Courses Taken: Algorithms, Machine Learning, Computer Graphics, Pattern Recognition and Computer Vision

Northeastern University, Boston, Massachusetts

(Graduated Dec 2024)

Bachelor's of Computer Science and Mathematics, cum laude

3.62/4.00 cumulative GPA

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## Skills

- Languages: Python, C++, Rust, Java, JavaScript, HTML, CSS
  - C++-specific: SDL, OpenGL, Vulkan
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## Experience

Researcher, Northeastern University

(Jan 2023 - June 2024)

- Conducted graphics research on using depth buffers to determine the best way to simplify a mesh
- Created a headless renderer to do fast image processing of depth buffers of meshes
- Awarded Northeastern's PEAK Ascent Award of \$1500 for research
- Coded in Rust using Vulkan
- Submitted research to SIGGRAPH Asia 2023 and helped moderate events as a student volunteer at SIGGRAPH Asia 2023

Teaching Assistant, Northeastern University

(May 2023 - Aug 2023)

- Paid to conduct office hours and collaborate with professor on CS3530 (Applied Geometric Representation and Computation), a graduate course covering polygon triangulation, convex hulls, path finding, motion planning, collision detection, and mesh simplification
- Assisted students with coding in C++ and implementing algorithms such as A\* and gift wrapping

Fields Undergraduate Research Program, Toronto, ON

(July 2022 - Aug 2022)

- Participated in a paid math research experience for undergraduates (REU)
- Researched ways to solve partial differential equations with Monte Carlo methods (Metropolis-Hastings algorithm, Feynman-Kac formula)
- Implemented neural networks with Python (JAX) to represent equation solutions found by our methods

Software Engineering Coop, Nuvera Fuel Cells, Billerica, MA

(Jan 2022 - June 2022)

- Modeled and simulated fuel cells with finite element analysis methods
  - Used machine learning algorithms (cluster analysis, regression modeling) to analyze degradation of fuel cells
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## Projects

Raytracer (Rust)

(December 2023)

- Created a raytracer with a positionable camera and objects, anti-aliasing, depth of field, .obj loader, custom materials (<https://github.com/Cubostar/cubotracer>)
- Used nalgebra for the math library and rand for random number generation

Mesh Simplification (C++)

(December 2022)

- Implemented an algorithm for simplifying a 3D mesh via vertex decimation (Schroeder 1992) with OpenGL
- Created a presentation/demo video (<https://www.youtube.com/watch?v=HtsKxlg50b0>)
- Wrote shaders in GLSL

Seam Carving (Java)

(Mar 2021)

- Created a program that can decrease the resolution of an image by removing the least important seams
- Made a custom image processor to compute and remove seams and view process in real time