

EDUCATION

- PhD, University of Toronto** 2023 - ???
Co-advised by David Lindell and Kyros Kutulakos
- Master's Degree, MIT** 2022 - 2023
Master of Engineering in Computer Science; GPA: **5.0/5.0**
Thesis: *How to Pack Anything*, Advised by Frédo Durand
- Bachelor's Degree, MIT** 2019 - 2023
Double Major in Computer Science and Mathematics; Minor in Public Policy; GPA: **4.9/5.0**

PUBLICATIONS & PREPRINTS

- (Accepted to SIGGRAPH 2023 journal track.)
Qiaodong Cui, **Victor Rong**, Desai Chen, and Wojciech Matusik. Dense, Interlocking-Free and Scalable Spectral Packing of Generic 3D Objects. 2023.
- (Sorted by last name. Published to ICALP 2022.)
Mingyang Deng, Yael Kirkpatrick, **Victor Rong**, Virginia Vassilevska Williams, and Ziqian Zhong. New additive approximations for shortest paths and cycles. 2022.
- (Preprint.)
Victor Rong, Alexandre Megretski, Luca Daniel, and Tsui-Wei Weng. Efficient certification for probabilistic robustness. 2021.

RESEARCH EXPERIENCE

- Research Intern at Luma AI** Summer 2023
Supervised by: Matt Tancik
I worked on improving the geometries obtained from NeRF-based methods.
- Software Engineer at Inkbit** 2022
Supervised by: Qiaodong Cui, Wojciech Matusik, and Frédo Durand
I helped develop a robust and efficient algorithm for packing meshes into a specified volume for 3D printing.
- Theoretical CS Undergraduate Researcher at MIT** Spring 2022
Supervised by: Virginia Vassilevska Williams
I helped develop and prove a novel additive approximation algorithm for girth in graphs.
- Graphics and ML Undergraduate Researcher at MIT** Spring 2021
Supervised by: Dima Smirnov and Justin Solomon
I implemented a sketch-to-3D learning pipeline by partitioning 3D shapes of a diverse range of classes into simpler parts and learned patch-based representations for each part.
- ML Undergraduate Researcher at MIT-IBM Watson AI Lab** 2020
Supervised by: Tsui-Wei Weng and Luca Daniel
I proposed an algorithm for probabilistic bounds on neural network outputs assuming a distribution of inputs and suggested a training pipeline for this setting.
- Research Intern at Uber ATG Toronto** Summer 2020
Supervised by: Siva Manivasagam, Shenlong Wang, and Raquel Urtasun
I implemented methods for reconstructing and compressing shapes from point clouds, particularly LiDAR scans. I gave a poster presentation to the rest of the lab illustrating my findings.

TEACHING & LEADERSHIP EXPERIENCE

- Graduate TA for Computer Vision (MIT)** Spring 2023

I was a TA for a computer vision course for undergraduate and graduate MIT students. My responsibilities were to grade problem sets and hold office hours. Anonymous evaluations rated me **6.7/7.0**.

Eta Kappa Nu Co-president 2022 - 2023

I led MIT's honor society for EECS undergraduates. The organization held tutoring services, community events, and student-faculty events.

Undergraduate TA for Introduction to Linear Algebra (MIT) Fall 2022

I was a TA for an introductory linear algebra course aimed towards MIT undergraduate students. My responsibilities were to design and teach recitations for around 20 students, and hold office hours. Anonymous evaluations rated me **6.9/7.0**.

Curriculum Designer for MIT Momentum Summer 2022

I helped create a curriculum for non-profit to teach underrepresented high schoolers machine learning during a summer program.

UA for Introduction to Differential Equations (MIT) Spring 2022

I was an assistant for an introductory differential equations course for MIT undergraduate students. I held office hours and designed exam review material for students. Anonymous evaluations rated me **6.4/7.0**.

AWARDS

Eta Kappa Nu Honor Society, MIT

Putnam Competition Top 30 in 2019, 2021, 2022

USA Mathematical Olympiad Winner in 2017, 2018, 2019; Third Place in 2017

International Mathematical Olympiad Silver Medallist in 2017, 2018; Gold in 2019

International Olympiad in Informatics Silver Medallist in 2018, 2019

OTHER PROJECTS

Radiance Fields Out of Stained Glass Pieces Spring 2022

Final project for Advances in Computer Vision (G)

I proposed a novel parameterization of radiance fields using triangle soups and implemented a differentiable rendering pipeline for this framework based on NeRF.

Surface Reconstruction Using Boundary Integral Equations Fall 2021

Final project for Fast Methods for PDEs and Integral Equations (G)

I implemented the Barnes-Hut algorithm to solve the boundary integral corresponding to the PDE formulation of Poisson Surface Reconstruction.

Geometry Processing for Real-Time Pencil Sketching Spring 2021

Final project for Shape Analysis (G), with Eric Zhang

We rendered triangle meshes with sketch-like textures by computing mesh principal curvatures in real-time WebGL fragment shaders.

Learning Commutative Actions Over Graphics Representations Fall 2020

Final project for Computational Cognitive Science

I proposed a novel commutative autoencoder module based on circulant matrices which can be made efficient using the fast Fourier transform.

SKILLS

Relevant Coursework

Artificial Intelligence, Advanced Algorithms (G), Software Construction, Computational Cognitive Science, Computer Graphics, Intro to Stochastic Processes (G), Shape Analysis (G), Computational Photography, Fast Methods for PDEs (G), Computer Vision (G)

Languages, Libraries, Software, etc.

C/C++, CUDA, C#, Java, Rust, Python, PyTorch, Julia, OpenGL, CSS, HTML, JavaScript