Harry Chen

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Skills

C++ (2018-), Python (2019-), OpenGL (2019-), NumPy/SciPy/Matplotlib (2020-)
MATLAB, PyTorch, LaTeX, HTML/CSS/JavaScript, Linux, Windows, Git

Multivariable calculus (2019-), Linear algebra (2020-), Probability theory (2021-), Classical mechanics (2020-), Solid mechanics (2022-)

Education

University of Toronto / BASc in Engineering Science / 2022 - 2027
I am currently enrolled in the engineering science undergraduate program. I finished my first term with a GPA of 3.83, a 99 in calculus, and a 98 in programming.

St. Robert CHS / Ontario Secondary School Diploma / 2018-2022
I completed high school with a top-6 grade average of 99%. I was the executive of my high school's math club and a member of the programming club.

Experiences

UTAT Autonomous Drone Racing Team / Robotics Engineer / Oct. 2022 - Present
I am an active member of the UTAT Autonomous Drone Racing (ADR) team of the University of Toronto, which consists of largely graduate students. I am currently working on the path planning subteam to implement the "Geometrically Constrained Trajectory Optimization for Multicopters" paper.

DMOJ / Competitive Programmer / Nov. 2020 - Feb. 2022
I practiced algorithmic problem solving on the online judge DMOJ with a specialization in advanced mathematics and computational geometry. My account ranks 66th by points out of more than 140,000 registered users worldwide.

Personal Projects

Finite Element Analysis / Programming Experiment / Dec. 2022 - Present
In this ongoing project, I write C++ code from scratch to analyze the deflection and stress in solids under static load. I experiment with various FEM elements, different CG preconditioners, and mesh generation from scalar fields.

Spirula 🔗 **/** Online Graphing Calculator / Mar. 2022 - Oct. 2022
A personal passion project that renders 3D implicit surfaces defined by user-input equations. It consists of a parser for equations and a WebGL renderer that uses a modified raymarching algorithm to generate high-quality renderings in real time.

AVI4M Final Project 🔗 **/** High School Art Project / Nov. 2021 - Jan. 2022
I wrote C++ and GLSL code to generate artistic 3D renderings. I developed an adaptive marching cubes mesh generator and implemented a renderer based on Monte-Carlo path tracing with several physically-based reflectance models.