

Bryan Deng

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Education

- 2019–Present **St. Robert Catholic High School, IB Program.**
- High level courses: Mathematics, Physics, Economics.
 - Standard level courses: English, Chemistry, French.




Work Experience

- July–Aug 2022 **Summer Work Student Exchange Program, YMCA, 8 weeks.**
- Took 3 trains totalling 15 hours to the French speaking town of St. Honoré, Quebec.
 - Lived with a host family and worked in a local daycare.
 - Learned about and immersed in French and local culture by participating in weekly activities throughout the city of St. Honoré.
- July–Aug 2021 **Summer Camp Counsellor, CITY OF TORONTO, 8 weeks.**
- Organized and lead sports, arts, and other activities.
 - Looked after groups of 20-30 campers aged 5-12.

Volunteer Experience

- Aug 2019 **Summer Camp Volunteer, REENA, 70 hours.**
- Encouraged individuals with developmental disabilities to participate in recreational and social activities.
 - Helped out and socialized with participants in daily activities and excursions.
- July 2019 **Summer Youth Volunteer Program, PROVIDENCE HEALTH CARE, 90 hours.**
- Enhanced mealtime experiences of elderly residents by assisting them with their daily meals.
 - Socialised with residents, assisted with those unable to feed themselves.

Programming Projects

- Jul 2022 **RayJL, Julia**, Fully functional and optimized ray-tracing package, [GitHub Link](#) .
- 100+ hours spent over 9 weeks.
 - Uses custom built linear algebra library including vectors and matrices.
 - Support for spheres, poly-meshes and OBJ files.
 - Lambertian reflectance, Fresnel refraction, shading engine and anti-aliasing.
- Jul 2021 **DeepNN, Python**, Artificial neural network implemented from scratch, [GitHub Link](#) .
- 200+ hours spent over 12 weeks.
 - Support for feed-forward layers, multiple activation functions and mini-batch gradient descent.
 - Able to achieve 95% training accuracy on the MNIST data set in under 2 minutes.
- Apr 2020–Present **Competitive Programming Solutions, C++, Python, Java**, [GitHub Link](#) .
- 1200+ solutions and 40,000+ lines of code submitted to dmoj.ca and codeforces.com.
 - Implementations of countless algorithms such as graph theory and dynamic programming, and data structures such as segment trees and sparse tables.

Competitions and Awards

Aug–July 2022 **Remarkable Students**, *Member of Team FourSight – 2022 Grand Prize Winner.*

- Over \$10,000 awarded in funding.
- Created website using Django to demonstrate and provide interactive visualizations for cancer cell detection neural network.

2021–Present **Math Competitions.**

- 2021 Waterloo CEMC Euclid Competition - Distinction Award.
- 2022 Waterloo CEMC Euclid Competition - 82 points (top 5% in Canada, Distinction Award).
- 2021 AMC 12A - 91.5/150 (top 5% internationally, invited to AIME).
- 2021 AMC 12B - 93/150 (top 2.5% internationally, invited to AIME).

2021–Present **Coding Competitions.**

- School coding club execute and curriculum coordinator.
- 2021 Waterloo CEMC CCC, Jr. Division - 69/75 (top 2.5% in Canada)
- 2022 Waterloo CEMC CCC, Sr. Division - 39/75 (top 10% in Canada)
- USA Coding Olympiad - Silver Division

Academic Projects

Oct 2021–Aug 2022 **IB Extended Essay**, *To what extent can the genetic algorithm be applied in constructing decision trees for data classification?*, GitHub Link [↗](#).

- Analyzed the effectiveness of mimicking biological evolution for optimizing decision trees, a model for supervised machine learning.
- Custom designed implementation of the genetic algorithm pipeline tailored to decision trees.

Extra Curricular Activities

Apr 2020–Present **Cross Country.**

- School cross country team.
- 2022 Toronto Waterfront Half-Marathon – 1 hour 57 minutes.
- 2022 Mississauga Half-Marathon – 2 hours 16 minutes.
- Completed the 2022 Toronto Tough Mudder 10k obstacle course.
- Huron Heights 6k – 27 minutes 55 seconds.
- YRAA 6k – 26 minutes 46 seconds.

2019–Present **Debate.**

- School debate team.
- Qualified for the provincial level of the Ontario Student Debate Union competition.
- Participated in many debate competitions such as McGill University British Parliamentary, Harvard World Schools and more.

2018–Present **Speedcubing**, WCA Link [↗](#).

- 3x3 Rubik's Cube official single – 17.02.
- 4x4 Rubik's Cube official single – 1:08.92.