

CARL MA

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EDUCATION

University of Toronto

BASc in Engineering Science, CGPA: 4.0/4.0

September 2021 - April 2025

Toronto, Canada

Harvard University

Summer Student, Web Programming with Python and JavaScript

June 2019 - July 2019

Cambridge, USA

PROJECTS

Dimensionality Reduction on Neural Network Inputs

Independent Researcher

September 2020 - Present

Toronto, Canada

- Evaluated Principal Component Analysis and Factor Analysis as preprocessing algorithms for inputs (noisy or otherwise) into feed-forward neural networks.
- Developed a generic structure to evaluate alternative techniques of dimensionality reduction.

Mathematical Modeling: Optimal N95 Respirators

Independent Researcher

September 2020 - June 2021

Shanghai, China

- Constructed models using calculus (solid of revolution) and linear algebra (vector geometry); discussed the implications of various N95 designs for both consumers and producers.
- Utilized Python (NumPy & Matplotlib) for automated calculation and visualization.

High School Club Management Website

Chief Developer

September 2019 - June 2021

Shanghai, China

- Designed the official website for school club management, with features like activity scheduling, classroom reservation, and remote instructor supervision.
- Led a team of 12 developers specialized in HTML, CSS, and Python Flask.

A Bus Delay Prediction Model Based on ML Algorithms

Primary and Corresponding Author

July 2020 - September 2020

Shanghai, China

- Compared different machine learning algorithms, designed and trained a neural network that predicted bus delay in Toronto with 81% accuracy.
- Awarded First Prize (14 of 1047 projects) at the International AI Fair with a scholarship of CA\$1000.

COMMUNITY SERVICE

Cardboard Box Recycling Project

Founder & Leader

September 2017 - June 2021

Shanghai, China

- Initiated a project to recycle cardboard boxes in the community with a goal to reduce wastage and promote environmental awareness.
- Collaborated with Decathlon China to distribute cardboard boxes for free customer usage.

SKILLS

Programming

Python, Java, C, MATLAB, HTML/CSS/JavaScript, Visual Basic, SQL

AWARDS & CERTIFICATIONS

University of Toronto Scholar (entrance scholarship valued at CA\$7500)

2021

Longmen Award (high school graduation scholarship valued at CA\$4000)

2021

Standard First Aid & CPR/AED Level C

2020

Team First Place & Individual High Distinction, American Computer Science League

2019

Finalist, High School Mathematical Contest In Modeling

2018