

# Alroy Zhang

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## ⚙ Skills

- **Technologies:** Python, Google Colab, TensorFlow, Keras, Scikit-learn, OpenCV, Pandas, NumPy, Matplotlib, Seaborn, Git, Linux, C++, Markdown, T<sub>E</sub>X, HTML, CSS, MySQL, Tableau
- Solid background in **Applied Mathematics, Statistics, and Deep Learning.**
- Capable of quick adaptation and acquiring new skills through **self-study.**
- Strong **communication, presentation, team work** and **problem-solving** skills.

## 📁 Projects

### Detecting COVID-19 with Chest X-Ray

(Python, TensorFlow/Keras, Scikit-learn, OpenCV)

- > All image data, provided by Kaggle online, were pre-processed using **OpenCV** and **Scikit-learn** libraries.
- > Built deep **Convolutional Neural Networks (CNN)** to distinguish between three classes of patients: normal, covid-positive and pneumonia.
- > Obtained an **overall accuracy of 95% - 98%.**

### Rock-Paper-Scissors Classifier

(Python, TensorFlow/Keras, Matplotlib)

- > Used deep **Convolutional Neural Networks (CNN)** to build a **multi-class classifier** to distinguish between rocks, paper and scissors.
- > Strategies used in optimization: **dropout regularization and data augmentation**
- > Obtained an **overall accuracy of 92% - 95%.**

### IMDB Movie Reviews Sentiment Analysis

(Python, TensorFlow/Keras, Matplotlib)

- > Used **Recurrent Neural Networks (RNN)**, **bidirectional Gated Recurrent Units (GRU)** and **LSTM** to perform **sentiment analysis** on texts in TensorFlow's built-in datasets.

## 🎒 Experience

### University of Waterloo Undergraduate Research Assistant (URA)

Sept. 2020 – Dec. 2020

*Department of Applied Mathematics*

*Remote*

- > **Developed codes in C++** on a linux machine to conduct **numerical simulations** of internal waves (IW) generation.
- > Learned about dispersive wave equations and some numerical methods for solving simple wave equations.

### EasyPath Edu.

Apr. 2019 – Present

*High School Mathematics Instructor and Workshop Host*

*Online*

- > Instructed **over 35 students** results in **8-10% grades' improvement** of each person with approx. **500 hours of experience.**
- > Ignited students' passion in learning math; featured on company's official website multiple times for **excellent teaching style** and received at least **95% student satisfaction.**
- > Hosted **5 events and workshops** to offer guidance and advice for high school students in selecting university based on each person's academic interest and programs they wanted to study.

### Bayview Secondary School Physics Club

Sept. 2018 – June. 2019

*Vice President*

*Richmond Hill, ON*

- > Coordinated **the first** Canadian Young Physicists' Tournament in school offering students opportunity to challenge themselves academically; **increased participation from 10 to 60.**

## 🎓 Education

### University of Waterloo

September 2019 – Present

*Major in Applied Mathematics with Scientific Computing*

*Waterloo, ON*

- > Candidate for Bachelor of Mathematics. (Current major average: 91%)