

# Edward (Eddie) Guo

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## Education

### University of Alberta | Edmonton, AB

Bachelor of Science in Engineering

Sep. 2020 – Present

### University of Alberta | Edmonton, AB

Bachelor of Science Honors Neuroscience (cumulative GPA: 4.00/4.00)

Transferred to the Faculty of Engineering at the University of Alberta June 2020

Sep. 2018 – Apr. 2020

### Old Scona Academic High School | Edmonton, AB

Alberta High School Diploma (graduating grade: 95%)

Sep. 2015 – Jun. 2018

## Technical Skills

**Programming:** C++, Python, R, Arduino

**Markup and Version Control:** Git,  $\text{\LaTeX}$ , HTML, CSS

**Software:** GitHub, SPSS, Graphpad Prism, MS Office

**Design:** Fusion 360

## Research and Clinical Experience

### Zochodne Lab | Li Ka Shing Center for Health Innovation, Edmonton, AB

Undergraduate Research Student

Oct. 2018 – Present

- Current project: researching the effects of acute and chronic cutaneous denervation (defined here as a loss of axons) on differential mRNA expression in skin keratinocytes.
- Techniques: mouse nerve microsurgery (sciatic nerve crush), mouse harvesting, mouse intranasal injections, electroporation, immunohistochemistry, co-IP, Western blot, confocal microscopy.

### Neurosurgery Shadow | Walter C. Mackenzie Hospital, Edmonton, AB

Shadow in the Neurosurgical Operating Room

Jul. 2019

- Shadowed for three surgical cases: deep brain stimulation for Parkinson's disease, microvascular decompression for trigeminal neuralgia, and percutaneous rhizotomy for trigeminal neuralgia.

### Kalra Lab | Heritage Medical Research Centre, Edmonton, AB

Data Auditor

Oct. 2018 – Jun. 2019

- Audited MRI scans and patient data forms for the Canadian Amyotrophic Lateral Sclerosis Neuroimaging Consortium (CALSNIC).

### Baker Lab | Cross Cancer Institute, Edmonton, AB

Gene Researcher for a Week Program

Mar. 2018

- Researched DNA mutations associated with colorectal cancer.
- Techniques: Western Blot, qPCR.

## Employment

### Teaching Assistant | University of Alberta

Sep. 2020 – Present

Introduction to Tangible Computing I & II (CMPUT 274 & 275)

- CMPUT 274 & 275 is the honours stream of introductory Computing Science and Computer Engineering courses. Topics include introductory programming, systems, algorithms, and data structures in Python and C++.
- Responsibilities: answering questions during lectures, attending weekly TA meetings.

### Edmonton Fencing Club | Edmonton, AB

Nov. 2016 – Present

Fencing Coach

- Coaching children to fence and refereeing fencing competitions.
- Fixing and making fencing blades and wires.
- Facilitating demonstrations and open houses.

## Project Experience

### NeurAlbertaTech | University of Alberta

Hardware Team | Eye-Tracking Team Lead

Jan. 2020 – Present

- Modelling and building an eye-tracking apparatus along with software that returns a real-time vector in the direction that the user is looking.
- Creating an application that integrates eye-tracking, body-tracking, and EEG signals. Software driven by PyQt5, Lab Streaming Layer, fast Fourier transforms, and multithreading.

### Introduction to Tangible Computing II (CMPUT 275) | University of Alberta

EEG Visualizer

Apr. 2020 – May 2020

- The application takes an electroencephalogram (EEG) data stream over a local network and visualizes both the raw and transformed signals in a Matplotlib figure embedded in a PyQt5 user interface.
- The program implements the radix-2 decimation-in-time fast Fourier transform algorithm.

Driving Route Finder

Apr. 2020 – May 2020

- A route finder where the user can indicate a start and end point anywhere in the city of Edmonton using a joystick.
- The program uses a client-server model with a desktop C++ program communicating with an Arduino client.
- A desktop C++ program computes the shortest route possible using either the A\* or Dijkstra algorithm and displays it on an Adafruit 3.5" touchscreen display on an Arduino Mega2560.

## Volunteering

### Youreka Canada

Associate Director of Programs | Youreka Canada

May 2020 – Present

- Curating the national Youreka curriculum and analyzing previous curricula. Topics are focused on introductory bioinformatics techniques in the biomedical sciences.
- Coordinating with the Clark laboratory at the Werklund School of Education at the University of Calgary to develop a multi-year research study of the educational effectiveness of the Youreka program.
- Providing judging and awards criteria for student research projects at both the regional and national symposia. This includes selecting promising projects for peer-reviewed journal publications.
- Conducting national teaching sessions and distributing curriculum material to the regional academic directors.

National Operations Committee Member   Youreka Canada	<b>May 2020 – Present</b>
<ul style="list-style-type: none"> <li>Spearheaded a curriculum bifurcation pilot project for Youreka Edmonton.</li> <li>National short-term strategy and execution.</li> <li>Collaboration on Youreka Canada organizational policy and procedures.</li> </ul>	
Vice President of Academics   Youreka Edmonton	<b>May 2019 – Present</b>
<ul style="list-style-type: none"> <li>Provided four live video lectures to all Youreka Canada chapters (University of Alberta, Calgary, Windsor, Queen's) and created slide sets, worksheets, and Python 3 code on introductory statistics during the COVID-19 pandemic.</li> <li>Lectured an eight-week program to a group of 60 high school and undergraduate students (2020 cohort).</li> <li>Presided over all academic sessions and supplementary material.</li> </ul>	
Senior Investigator   Youreka Edmonton	<b>Feb. 2019 – May 2019</b>
<ul style="list-style-type: none"> <li>Mentoring high school students to do research involving bioinformatics.</li> <li>Facilitating and ensuring quality of projects, and compiling team data for a public research symposium.</li> <li>Received best senior investigator award for exemplary leadership of a research team.</li> </ul>	
<b>Canadian Blood Services   Edmonton, AB</b>	
Stem Cell Board Coordinator	<b>Sep. 2019 – Present</b>
<ul style="list-style-type: none"> <li>Planning, coordinating, and executing Canadian Blood Services stem cell related events (ex: patient campaigns) with staff and volunteers. There are typically one or two stem cell recruitment events per month.</li> </ul>	
Stem Cell Board Member	<b>Sep. 2018 – Present</b>
<ul style="list-style-type: none"> <li>Planning and executing Canadian Blood Services stem cell related events.</li> <li>Providing public education about stem cell donations (ex: presentations at major Edmonton high schools and university student groups, exhibitions at the Telus World of Science, etc.).</li> </ul>	
Edmonton NextGen Lifeline Committee	<b>Sep. 2018 – Present</b>
<ul style="list-style-type: none"> <li>Recruitment for blood donations and informing the public about blood and stem cell donations.</li> <li>Lead developer of a volunteer database framework, digitization and automation of volunteer resources (volunteer contracts, event forms, event data).</li> <li>Created a Python 3 Tkinter application that queries and analyzes volunteer contracts from an SQL database.</li> <li>Migrated Canadian Blood Services Youth Committee event data from 2011-2019 to an SQL database.</li> </ul>	
Summer Youth Program	<b>Jun. 2018 – Aug. 2018</b>
<ul style="list-style-type: none"> <li>Volunteer of the month, June 2018.</li> </ul>	
<b>Edmonton World Health Organization (eWHO)   University of Alberta</b>	
Vice President Finance	<b>Apr. 2019 – Jun. 2020</b>
<ul style="list-style-type: none"> <li>Wrote grant applications for the eWHO conference.</li> <li>Managed eWHO funds.</li> </ul>	
<b>Office of the Registrar's Student Advisory Committee   University of Alberta</b>	
Member	<b>Oct. 2018 – Apr. 2020</b>
<ul style="list-style-type: none"> <li>Provide feedback on student services (ex: University of Alberta Calendar, admissions website).</li> <li>Give input on potential University of Alberta projects (ex: Green and Gold Getaway).</li> </ul>	
<b>Brain Awareness Movement   University of Alberta</b>	
Director of Education	<b>Apr. 2019 – Sep. 2019</b>
<ul style="list-style-type: none"> <li>Organizing and giving presentations throughout Edmonton on brain awareness.</li> </ul>	
Event Facilitator	<b>Oct. 2018 – Apr. 2019</b>
<ul style="list-style-type: none"> <li>Outreach for sponsorships and event planning.</li> </ul>	

## Sports

### Fencing (Foil)

Feb. 2011 – Present

#### International

- 23rd Guatemala Junior (U20) World Cup Dec. 2016
- Ranked A16 in the USA (qualified for Division 1) Dec. 2016

#### National

- 3rd Senior (Open) Canada Cup West, Winnipeg, MB Nov. 2018
- 2nd Junior (U20) Canada Cup West, Winnipeg, MB Nov. 2018
- 2nd Cadet (U17) Western Canadian Championships, Calgary, AB Nov. 2017
- 3rd Cadet (U17) Canada Cup, Longueuil, QC May 2015
- 3rd Y14 Canada Cup, Richmond, BC Dec. 2013

### Table Tennis

Jan. 2006 – Jul. 2011

- 1st U-1500 Round Robin Milwaukee Table Tennis Open Jul. 2011
- Halifax 2011 Canada Winter Games – 5th team, 19th individual Feb. 2011
- See the CBC interview [here](#).

## Certifications

### Construction Safety Training System (CSTS 2020) – Fundamentals

Aug. 2020

Alberta Construction Safety Association

### Engineering Laboratory Safety Orientation & Training

Jul. 2020

University of Alberta

### Fundamentals of Reinforcement Learning

Mar. 2020

University of Alberta and Alberta Machine Intelligence Institute on Coursera

### CCAC Training for Animal Users Part II: The Care and Use of the Laboratory Mouse

Jun. 2019

University of Alberta (Research Area: Health Sciences)

### CCAC Training for Animal Users Part I: Ethics of Animal Use (IAUTP)

May 2019

University of Alberta

### Concepts in Biosafety 2018

May 2019

University of Alberta

### Laboratory and Chemical Safety 2018

May 2019

University of Alberta

### WHMIS 2019

Jan. 2019

University of Alberta

### Emergency First Aid Level A CPR and AED

Jul. 2018

St. John Ambulance

### Diplôme d'études en langues française niveau B1 (translation: French studies diploma level B1)

May 2018

Ministère de l'Éducation nationale (translation: Ministry of National Education)

### Advanced Rudiments First Class Honours with Distinction

Oct. 2015

The Royal Conservatory of Music

### Grade 8 Piano First Class Honours

Oct. 2015

The Royal Conservatory of Music

## Honours and Awards

### Louise McKinney Post-Secondary Scholarship

Sep. 2020

- Awarded on the basis of superior academic achievement (top 1.5-2% of faculty) to students at the University of Alberta who are also Alberta residents.

### Dean's Honor Roll 2019-20, Faculty of Science

Sep. 2020

- Awarded to students at the University of Alberta with a Grade Point Average of 3.5 or higher.

### STEM Fellowship Undergraduate Big Data Challenge: 2nd Place Public and Personal Health Decisions Research Excellence Awards

Jul. 2020

- Project titled "Deep learning transcriptomic model for prediction of pan-drug chemotherapeutic sensitivity."
- Hackathon theme: *Personal and Public Health Decisions in a New Open Data Reality*. 523 participants across Canada and America. See the manuscript and source code [here](#). See the video [here](#).

### COVID-19 Data Science Hackathon Post-Secondary Student Award

May 2020

- Developed an interactive application using a multivariate regression model to better understand the impacts of age, poverty, income, and population density on the spread of the COVID-19 virus. See the source code [here](#).
- The hackathon was hosted by Alberta Innovates, Cybera, and the Pacific Institute for Mathematical Sciences. 120 individuals and teams competed in the hackathon.
- See the University of Alberta story [here](#). Listen to the Genome Alberta interview [here](#). See the Alberta Innovates media announcement [here](#) (my team is called "Youreka Data Science"). See the Cybera media announcement [here](#).
- Awarded by Alberta Innovates.

### Sci5 Outstanding Achievement in Science Scholarship

Mar. 2020

- Awarded to 4 well-rounded students with strong academic achievement, extracurricular involvement, and recommendation letters.
- Awarded by the Interdepartmental Science Students' Society at the University of Alberta.

### Louise McKinney Post-Secondary Scholarship

Dec. 2019

- Awarded on the basis of superior academic achievement (top 1.5-2% of faculty) to students at the University of Alberta who are also Alberta residents.

### University of Alberta Undergraduate Scholarship

Sep. 2019

- Awarded to students with superior academic achievement.

### T4K Undergraduate Leadership Scholarship

Sep. 2019

- Awarded to students at the University of Alberta with superior academic achievement who demonstrate leadership through involvement and participation in university or community organizations, sports activities, or cultural activities.

### Faculty of Science Undergraduate Scholarship

Sep. 2019

- Awarded to students with superior academic achievement enrolled in the second, third, or fourth year of an undergraduate degree in the Faculty of Science at the University of Alberta.

### Dean's Honor Roll 2018-19, Faculty of Science

May 2019

- Awarded to students at the University of Alberta with a Grade Point Average of 3.5 or higher.

### Sci5 Outstanding Achievement in Science Scholarship

Apr. 2019

- Awarded to the top 5 students in the Faculty of Science at the University of Alberta who also demonstrate exceptional extracurricular activities.

- Awarded by the Interdepartmental Science Students' Society at the University of Alberta.

**Alexander Rutherford Scholarship****Aug. 2018**

- Awarded to high school graduates with exceptional academic standing over all three years of high school.

**Service Award****Jun. 2018**

- Awarded by Old Scona Academic High School.

**Jujie Luan Travel Bursary****Mar. 2013**

- Awarded to upcoming fencers travelling for competitions.

**Recognition of Accomplishment at the Canadian Table Tennis Championships****Jan. 2011**

- Awarded for exceptional performance at the 2011 Canadian Table Tennis Championships.

## Research Grants

**Alberta Innovates Summer Research Studentship****Apr. 2020**

- Grant for summer research project titled "Skin and Nerves: Understanding the dialogue between axons and skin cells to restore sensation."
- Awarded by the Undergraduate Research Initiative, University of Alberta.

**Office of the Provost and VP (Academic) Summer Studentship Award****May 2019**

- Grant for summer research project titled "Axon regrowth and plasticity in diabetic neuropathy: the role of growth cone molecules."
- Awarded by the Faculty of Medicine and Dentistry, University of Alberta.