

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

Technical Skills

Programming (proficient): C++, Python

Programming (familiar): Arduino, R

Markup and Version Control: Git, \LaTeX , HTML, CSS

Design: Fusion 360

Software: GitHub, SPSS, Graphpad Prism

Microsoft Office: Word, Powerpoint, Excel, OneNote

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 and rat harvesting (sciatic nerve, saphenous nerve, dorsal root ganglion, footpad biopsy), mouse intranasal injections, electroporation, electrophysiological testing, 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

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

Jan. 2020 – Present

Hardware Team | Eye-Tracking Team Lead

- 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

May 2020 – Apr. 2020

EEG Visualizer

- 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

May 2020 – Apr. 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

May 2020 – Present

Associate Director of Programs | Youreka Canada

- Curating the national Youreka curriculum and analyzing previous curricula. Topics are focused on introductory bioinformatics techniques in the biomedical sciences.
- Providing judging and awards criteria for student research projects at both the regional and national symposia.
- Editing promising projects for undergraduate journal publications.
- Conducting national teaching sessions and distributing curriculum material to the regional academic directors.

National Operations Committee Member | Youreka Canada

May 2020 – Present

- Spearheaded a curriculum bifurcation pilot project for Youreka Edmonton.
- National short-term strategy and execution.
- Collaboration on Youreka Canada organizational policy and procedures.

Vice President of Academics | Youreka Edmonton

May 2019 – Present

- 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.
- Lectured an eight-week program to a group of 60 high school and undergraduate students (2020 cohort).
- Presided over all academic sessions and supplementary material.

Senior Investigator | Youreka Edmonton

Feb. 2019 – May 2019

- Mentoring high school students to do research involving bioinformatics.
- Facilitating and ensuring quality of projects, and compiling team data for a public research symposium.
- Received best senior investigator award for exemplary leadership of a research team.

Canadian Blood Services | Edmonton, AB

Stem Cell Board Coordinator

Sep. 2019 – Present

- 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.

Stem Cell Board Member

Sep. 2018 – Present

- Planning and executing Canadian Blood Services stem cell related events.
- 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.).

Edmonton NextGen Lifeline Committee

Sep. 2018 – Present

- Recruitment for blood donations and informing the public about blood and stem cell donations.
- Lead developer of a volunteer database framework, digitization and automation of volunteer resources (volunteer contracts, event forms, event data).
- Created a Python 3 Tkinter application that queries and analyzes volunteer contracts from an SQL database.
- Migrated Canadian Blood Services Youth Committee event data from 2011-2019 to an SQL database.

Summer Youth Program

Jun. 2018 – Aug. 2018

- Volunteer of the month, June 2018.

Edmonton World Health Organization (eWHO) | University of Alberta

Vice President Finance

Apr. 2019 – Jun. 2020

- Writing grant applications for the eWHO conference.
- Managing eWHO funds.

Office of the Registrar's Student Advisory Committee | University of Alberta

Member

Oct. 2018 – Apr. 2020

- Provide feedback on student services (ex: University of Alberta Calendar, admissions website).
- Give input on potential University of Alberta projects (ex: Green and Gold Getaway).

Brain Awareness Movement | University of Alberta

Director of Education

Apr. 2019 – Sep. 2019

- Organizing and giving presentation throughout Edmonton on brain awareness.

Event Facilitator

Oct. 2018 – Apr. 2019

- Outreach for sponsorships and event planning.

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

Fundamentals of Reinforcement Learning

University of Alberta and Alberta Machine Intelligence Institute on Coursera

Mar. 2020

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

University of Alberta (Research Area: Health Sciences)

Jun. 2019

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

University of Alberta

May 2019

Concepts in Biosafety 2018

University of Alberta

May 2019

Laboratory and Chemical Safety 2018

University of Alberta

May 2019

WHMIS 2019

University of Alberta

Jan. 2019

Emergency First Aid Level A CPR and AED

St. John Ambulance

Jul. 2018

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

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

May 2018

Advanced Rudiments First Class Honours with Distinction

The Royal Conservatory of Music

Oct. 2015

Grade 8 Piano First Class Honours

The Royal Conservatory of Music

Oct. 2015

Honours and Awards

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. The application was developed with R Shiny and dygraphs and embedded in a website. The program utilized data from the Alberta Data Institute's data analytics platform: [Dataxch.ai](https://dataxch.ai).
- The goal of the hackathon was to collect and curate worldwide open data and to refine, transform, and link that data to provide a visualization regarding the impact of COVID-19. The two themes were: (1) overall understanding of the efforts to flatten the curve and (2) economic recovery especially for Alberta and Canada.
- Hackathon hosted by Alberta Innovates, CYBERA, and the Pacific Institute for Mathematical Sciences. 120 individuals and teams competed in the hackathon.
- See the project [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.

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.

Undergraduate Researcher Stipend

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.

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.

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.

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.