

# Edward (Eddie) Guo

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## EDUCATION

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- University of Alberta | Edmonton, AB** **Sep. 2020 – Present**  
Bachelor of Science in Engineering (GPA: 4.0/4.0)
- University of Alberta | Edmonton, AB** **Sep. 2018 – Apr. 2020**  
Bachelor of Science Honors Neuroscience (GPA: 4.0/4.0)  
Transferred to the Faculty of Engineering at the University of Alberta
- Old Scona Academic High School | Edmonton, AB** **Sep. 2015 – Jun. 2018**  
Alberta High School Diploma (graduating grade: 95%)

## RESEARCH AND CLINICAL EXPERIENCE

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- Zochodne Lab | Li Ka Shing Center for Health Innovation, Edmonton, AB** **Oct. 2018 – Present**  
Undergraduate Research Student
- 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** **Jul. 2019**  
Shadow in the Neurosurgical Operating Room
- Shadowed 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** **Oct. 2018 – Jun. 2019**  
Data Auditor
- Audited MRI scans and patient data forms for the Canadian Amyotrophic Lateral Sclerosis Neuroimaging Consortium.
- Baker Lab | Cross Cancer Institute, Edmonton, AB** **Mar. 2018**  
Gene Researcher for a Week Program
- Researched DNA mutations associated with colorectal cancer.
  - Techniques: Western Blot, qPCR.

## EMPLOYMENT

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- 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 and office hours, attending weekly TA meetings.
- Edmonton Fencing Club | Edmonton, AB** **Nov. 2016 – Present**  
Fencing Coach
- Coached children to fence and refereeing fencing competitions.
  - Fixed fencing equipment.
  - Facilitated demonstrations and open houses.

## TECHNICAL SKILLS

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

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

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

**Design:** Fusion 360

## PROJECT EXPERIENCE

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**NeurAlbertaTech | University of Alberta**

Hardware Team | Eye-Tracking Team Lead

**Jan. 2020 – Present**

- Designed an eye-tracking apparatus and software that returned a real-time vector in the direction that the user is looking.
- Created an application that integrates eye-tracking, body-tracking, and EEG signals.

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

EEG Visualizer

**Apr. 2020 – May 2020**

- The application takes an EEG data stream over a local network and visualizes both the raw and transformed signals 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.
- 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

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**Youreka Canada**

Associate Director of Programs | Youreka Canada

**May 2020 – Present**

- Leading the Programs Department to curate the national curriculum, which focuses on research and data science for high school and undergraduate students.
- Working 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.
- Conducting national teaching sessions and distributing curriculum material to the regional academic directors.

National Operations Committee Member | Youreka Canada

**May 2020 – Present**

- Collaboration on national short-term strategy and organizational policy.

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.
- Spearheaded a curriculum bifurcation pilot project for Youreka Edmonton that doubled student enrollment from 30 to 60 students from 2019 to 2020.
- Lectured an eight-week program to a group of 60 high school and undergraduate students (2020 cohort).

Senior Investigator | Youreka Edmonton

**Feb. 2019 – May 2019**

- Mentored high school students to do bioinformatics research.
- Received best senior investigator award for exemplary leadership of a research team.

**Canadian Blood Services | Edmonton, AB**

Vice President Volunteer Resources Committee

**Aug. 2020 – Present**

- Managing volunteer contracts, developing volunteer contracts, and maintaining volunteer accountability.

Stem Cell Board Coordinator

**Sep. 2019 – Aug. 2020**

- Planned and executed Canadian Blood Services' stem cell events (e.g., 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 (e.g., 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**

- Wrote grant applications for the eWHO conference.
- Managed eWHO funds.

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

Member

**Oct. 2018 – Apr. 2020**

- Provided feedback on student services (e.g., University of Alberta Calendar, admissions website).
- Gave input on potential University of Alberta projects.

**Brain Awareness Movement | University of Alberta**

Director of Education

**Apr. 2019 – Sep. 2019**

- Organized and presented throughout Edmonton on brain awareness.

Event Facilitator

**Oct. 2018 – Apr. 2019**

- Outreach for sponsorships and event planning.

## SPORTS

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<b>Fencing (Foil)</b>	<b>Feb. 2011 – Sep. 2020</b>
International	
• 23rd Guatemala Junior (U20) World Cup	<b>Dec. 2016</b>
• Ranked A16 in the USA (qualified for Division 1)	<b>Dec. 2016</b>
National	
• 3rd Senior (Open) Canada Cup West, Winnipeg, MB	<b>Nov. 2018</b>
• 2nd Junior (U20) Canada Cup West, Winnipeg, MB	<b>Nov. 2018</b>
• 2nd Cadet (U17) Western Canadian Championships, Calgary, AB	<b>Nov. 2017</b>
• 3rd Cadet (U17) Canada Cup, Longueuil, QC	<b>May 2015</b>
• 3rd Y14 Canada Cup, Richmond, BC	<b>Dec. 2013</b>
<b>Table Tennis</b>	<b>Jan. 2006 – Jul. 2011</b>
• 1st U-1500 Round Robin Milwaukee Table Tennis Open	<b>Jul. 2011</b>
• Halifax 2011 Canada Winter Games. See the CBC interview <a href="#">here</a> .	<b>Feb. 2011</b>

## CERTIFICATIONS

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<b>Construction Safety Training System (CSTS 2020) – Fundamentals</b>	<b>Aug. 2020</b>
Alberta Construction Safety Association	
<b>Engineering Laboratory Safety Orientation &amp; Training</b>	<b>Jul. 2020</b>
University of Alberta	
<b>Fundamentals of Reinforcement Learning</b>	<b>Mar. 2020</b>
University of Alberta and Alberta Machine Intelligence Institute on Coursera	
<b>CCAC Training for Animal Users Part II: The Care and Use of the Laboratory Mouse</b>	<b>Jun. 2019</b>
University of Alberta (Research Area: Health Sciences)	
<b>CCAC Training for Animal Users Part I: Ethics of Animal Use (IAUTP)</b>	<b>May 2019</b>
University of Alberta	
<b>Concepts in Biosafety 2018</b>	<b>May 2019</b>
University of Alberta	
<b>Laboratory and Chemical Safety 2018</b>	<b>May 2019</b>
University of Alberta	
<b>WHMIS 2019</b>	<b>Jan. 2019</b>
University of Alberta	
<b>Emergency First Aid Level A CPR and AED</b>	<b>Jul. 2018</b>
St. John Ambulance	
<b>Diplôme d'études en langues française niveau B1 (translation: French studies diploma level B1)</b>	<b>May 2018</b>
Ministère de l'Éducation nationale (translation: Ministry of National Education)	
<b>Advanced Rudiments First Class Honours with Distinction</b>	<b>Oct. 2015</b>
The Royal Conservatory of Music	
<b>Grade 8 Piano First Class Honours</b>	<b>Oct. 2015</b>
The Royal Conservatory of Music	

## HONOURS AND AWARDS

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- Louise McKinney Post-Secondary Scholarship (\$2500)** **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.
- Undergraduate Big Data Challenge: Research Excellence Award (\$600 and Scholarly Publication)** **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*. 524 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 (\$500)** **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](#).
- Sci5 Outstanding Achievement in Science Scholarship (\$500)** **Mar. 2020**
- Awarded to 4 well-rounded students with strong academic achievement, extracurricular involvement, and recommendation letters in the Faculty of Science at the University of Alberta.
- Louise McKinney Post-Secondary Scholarship (\$2500)** **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 (\$2000)** **Sep. 2019**
- Awarded to students with superior academic achievement.
- T4K Undergraduate Leadership Scholarship (\$1400)** **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 (\$500)** **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 (\$500)** **Apr. 2019**
- Awarded to the top 5 students in the Faculty of Science at the University of Alberta who also demonstrate exceptional extracurricular activities.
- Alexander Rutherford Scholarship (\$2500)** **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 (\$130)** **Mar. 2013**
- Awarded to upcoming fencers travelling for competitions.
- Recognition of Accomplishment at the Canadian Table Tennis Championships (\$220)** **Jan. 2011**
- Awarded for exceptional performance at the 2011 Canadian Table Tennis Championships.

## RESEARCH GRANTS

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### **Alberta Innovates Summer Research Studentship (\$6000)**

**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 (\$5000, declined)**

**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 (\$2600)**

**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.