Edward (Eddie) Guo

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Education

University of Calgary Jul. 2022 – Apr. 2025
Doctor of Medicine (MD)
- President of the Class of 2025
- Awarded $2,500 for academic achievements

University of Alberta Sep. 2020 – Apr. 2022
Bachelor of Science, Engineering Physics (Partially completed degree) GPA: 4.00/4.00
- Awarded $27,000+ for leadership and academic achievements
- Awarded $17,500+ for nerve regeneration and exoskeleton control systems research
- Top of class in English critical analysis, multivariable calculus, and organic chemistry II; SAT Math Level 2: 800/800

New College, University of Oxford May 2021 – Aug. 2021
Study Abroad, Magnetic Resonance Imaging and Stem Cell Engineering First Class Honours

University of Alberta Sep. 2018 – Apr. 2020
Bachelor of Science Honours, Neuroscience (Partially completed degree) GPA: 4.00/4.00

Research Experience

Project neuroArm Jul. 2022 – Present
Research Trainee (PI: Dr. Garnette Sutherland, Div. of Neurosurgery)
- Designing machine learning-driven platforms for surgical devices and education; projects include automatic surgeon identification using their surgical tool force profile, quantification of force components which differentiate 'expert' vs 'novice' surgeons, and an end-to-end platform to track surgical trainee progress
- Ideating and analyzing clinical trials to assess the efficacy of the SmartForceps system for surgical education

Collavidence Jul. 2022 – Present
Consultant (PI: Dr. Mayank Goyal, Div. of Neuroradiology)
- Investigating stroke clinical trials (e.g., ESCAPE-NA1); analyzing neuroimaging methods to recommend new standards of care
- Using computer vision and deep learning to automate semantic segmentation of brain lesions due to stroke
- Developing value propositions to aid clients globally for scientific fundraising in stroke research

Telerobotic and Biorobotic Systems Group Sep. 2021 – Present
Research Assistant (PI: Dr. Mahdi Tavakoli, Dept. of Electrical and Computer Engineering)
- Leading the development of a voice-controlled exoskeleton; users complete tasks 54% faster than using a mobile app; media coverage: CTV interview and University of Alberta interview
- Designing reinforcement learning algorithms for exoskeletons to personalize the patient rehabilitation process; implemented the state-of-the-art TD3 algorithm on a lower-limb exoskeleton to intelligently detect and set a user's desired walking speed

Zochodne Laboratory, University of Alberta Oct. 2018 – Oct. 2020
Research Assistant (PI: Dr. Douglas Zochodne, Div. of Neurology)
- Studied mouse models of peripheral nerve damage to improve patient outcomes after injury
- Performed mouse sciatic nerve microsurgery, electroporation, immunohistochemistry, co-IP, and Western blot

Academic Publications, Conferences, Abstracts

1. S. Becker, D. Clark, M. Gupta, S. Kannappan, B. Wong, E. Hernandez-Zavaleta, and **E. Guo**, "More than a Eureka Moment: Undergraduate Students' Reflective Understanding of Science Inquiry in a Citizen Science Project," *Alberta Science Education Journal*, vol. 48, no. 1, pp. 22-36, Jun. 2022.

2. **E. Guo**, P. Torabi, D. E. Nielsen, and M. Pietrosanu, "Deep learning transcriptomic model for prediction of pan-drug chemotherapeutic sensitivity," *STEM Fellowship Journal*, Jan. 2022, doi: 10.17975/sfj-2021-013.

3. S. Becker, D. Clark, M. Gupta, S. Kannappan, B. Wong, **E. Guo**, and E. Hernandez-Zavaleta, "Deepening Undergraduate Student Understanding of Science Inquiry by Reflecting on the Creation and Enactment of a Citizen Science Project," presented at the Canadian Society for the Study of Education XLIX Annual Conference, Canada, May 30–June 3, 2021.

Non-Academic Publications

A Gentle Introduction to Data Science with R Dec. 2020 – May 2022
- Authored an interactive e-textbook on R programming and data science used by 600+ students across Canada

Atom Magazine for Engineering Physics Dec. 2021 – Feb. 2022
- Founded and wrote the Atom Magazine for Engineering Physics; the first issue attracted 300+ readers in 6 countries

Employment

University of Alberta Sep. 2020 – Apr. 2022
Teaching Assistant, Introduction to Tangible Computing I & II
- Supported a class of 160+ students to understand algorithms and data structures in Python and C++
- Received an overall effectiveness rating of 93% from anonymized student feedback surveys
- Collaborated with a team of 16 teaching assistants to facilitate course delivery

Edmonton Fencing Club Nov. 2016 – Oct. 2020
Fencing Coach
- Coached classes of 5-25 children and teenagers and engaged their parents about their child's progress
- Gave private lessons, taught strategic fencing thinking, and resolved student conflicts

Research Grants

NSERC Undergraduate Student Researcher Award ($8,500) Mar. 2022
- Awarded for project titled "Intelligent control of a lower-limb exoskeleton"

Dean's Research Award ($500) Sep. 2021
- Awarded for project titled "Speech-based locomotion planning for lower-limb exoskeletons"

Alberta Innovates Summer Research Studentship ($6,000) Apr. 2020
- Awarded for project titled "Skin and Nerves: Understanding the dialogue between axons and skin cells to restore sensation"

Office of the Provost and VP (Academic) Summer Studentship Award ($2,600) May 2019
- Awarded for project titled "Axon regrowth and plasticity in diabetic neuropathy: the role of growth cone molecules"

Selected Sports Awards (of 18 International and National Awards)

Fencing (Foil) Feb. 2011 – Oct. 2020
- Accepted annually as a High Performance Program Athlete with the Canadian Fencing Federation Jan. 2013 – Dec. 2018
- Medalled in 5 Canadian national competitions in the open, U20, U17, and U13 categories Jan. 2013 – Dec. 2018
- Achieved USA Fencing A16 ranking (highest ranking in USA Fencing) Dec. 2016
- 23rd Place Guatemala Junior (U20) World Cup; represented Team Canada Dec. 2016

Selected Scholarships and Awards (of 21)

Peter Lougheed Scholarship ($10,000) Sep. 2021
- Awarded to University of Alberta students who demonstrate leadership through involvement in university or community organizations, sports activities, or cultural activities and academic achievement

Louise McKinney Post-Secondary Scholarship ($2,500 x3) Dec. 2019, Sep. 2020, Nov. 2022
- Awarded on the basis of superior academic achievement (top 1.5-2% of faculty) to students at the University of Alberta and Calgary who are also Alberta residents; awarded for the 2018/19, 2019/20, and 2021/22 academic terms

Undergraduate Big Data Challenge Research Excellence Award ($500) Jul. 2020

- Used unsupervised learning, feature selection, and neural networks to predict cancer response to chemotherapies

Alberta Innovates COVID-19 Hackathon Post-Secondary Student Award ($500) May 2020
- Created an interactive app to model how COVID-19 spreads given age, poverty, income, and population density
- Media coverage: University of Alberta Folio article and the Genome Alberta podcast

Leadership and Volunteer Experience

Calgary Medical Students' Association Sep. 2022 – Present
President
- Chairing the Committee on Accreditation of Canadian Medical Schools (CACMS) Independent Student Analysis Committee for evaluation of the MD Program at the Cumming School of Medicine
- Created a support and resource platform for students to share and access study materials; created multiple videos on course concepts, developed tools for career exploration, exams, shadowing, research, shared course notes
- Collaborated with Undergraduate Medical Education to arrange 6 small group and exam review sessions for students
- Provided governance, representation, and communication for all matters pertaining to the general welfare and activities of 400+ MD students at the Cumming School of Medicine

Youreka Canada Feb. 2019 – Present
Consultant, National Strategy Team (Jun. 2022 – Present)
- Collaborating on national equity, diversity, and inclusion policies affecting 200+ students across Canada
- Developing national and international expansion plans for regional Youreka branches

Vice President, Department of Programs (May 2020 – Jun. 2022)
- Led a team of 17 PhD, MD, and BSc students to create and deliver the Youreka national curriculum; generated 15,000+ hours of research education for 200+ high school and undergraduate students annually across Canada
- Published an academic paper highlighting student development in Youreka in the Alberta Science Education Journal (2022)

National Operations Committee Member (May 2020 – Jun. 2022)
- Co-led the creation of the first Youreka national financial aid and equity, diversity, and inclusion (EDI) policies; funded all 12 students who applied for bursaries for the 2021-22 program
- Spearheaded the first professional development and pedagogy training for 17 undergraduate teachers across Canada

Vice President of Academics (May 2019 – Jun. 2021)
- Taught a ten-week science program to a cohort of 30 high school and undergraduate students in Edmonton
- Taught all Youreka Canada branches and created slide sets, worksheets, and Python 3 code during the COVID-19 pandemic
- Spearheaded a pilot project for Youreka Edmonton that doubled student enrollment from 30 to 60 students from 2019 to 2020

Engineering Physics Club at the University of Alberta Sep. 2021 – Jun. 2022
Vice President External & Year Representative
- Invited by University of Alberta faculty to align the Engineering Physics curriculum with industry and research needs; engaged multiple stakeholder groups; implemented 2 core classes and 2 electives; preserved the co-op program
- Founded and wrote the Atom Magazine for Engineering Physics; the first issue attracted 300+ readers in 6 countries

Canadian Blood Services Jun. 2018 – Jan. 2021
NextGen Lifeline Committee Executive
- Coordinated and organized blood donation and stem cell events (e.g., patient campaigns) with staff and volunteers
- Created a software management system for volunteer contracts and event data
- Personally recruited 130+ blood donors and 350+ stem cell donors

Skills and Hobbies

Certifications	Standard First Aid CPR and AED Level C, Basic Life Support, DELF B1, Class 5 Driver's Licence
Skills	Machine learning, reinforcement learning, data science, research, teaching, curriculum development
Programming	R, Python, C++, MATLAB, VHDL
Software	Simulink, FMRIB Software Library, Git, LaTeX, HTML, CSS, R Markdown, Microsoft Office
Electronics	Arduino, Raspberry Pi, Zybo Z7 FPGA, oscilloscope, digital multimeter, Exo-H3
Hobbies and Interests	Fencing, running, rowing, skiing, reading, programming, math