

Edward (Eddie) Guo

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Education

University of Calgary

2022 – 2025

Doctor of Medicine (MD)

- Elected President of the Calgary Medical Students' Association
- Published 31 peer-reviewed publications (14 first-author); USMLE Step 1 (Pass)
- Awarded grants from OpenAI, Microsoft, Calgary Department of Surgery, and Calgary Students' Union to develop large language model software platforms for medical education and clinical practice

New College, University of Oxford

2021

Study Abroad, Magnetic Resonance Imaging and Stem Cell Engineering

First Class Honours

University of Alberta

2020 – 2022

Bachelor of Science, Engineering Physics (Partially completed degree)

GPA: 4.00/4.00

- Top GPA in cohort; top of class in multivariable/vector calculus, English critical analysis, and organic chemistry II
- Awarded grants for research on nerve regeneration and combining artificial intelligence with rehabilitation exoskeletons

Leadership and Volunteering

OSCE-GPT

Feb 2023 – Present

Co-Creator and Principal Software Developer

- Created [OSCE-GPT](#), an AI-powered app that offers communications and medical management practice with images, medical documentation, and feedback; 6,000+ users in 60+ countries
- Solely responsible for the entire development lifecycle of the application, including coding, testing, deployment, and outreach for use in medical and nursing education curricula across Canada
- Used in the University of Calgary RIME curriculum for medical students, NURS 289 for Calgary nursing students, and University of Manitoba for nursing students
- Collaborating with *Medical schools* – Calgary, McMaster, Ottawa, UBC; *Neurosurgery programs* – across the country; *Dermatology residents* – Calgary, Toronto; *Ophthalmology residents* – Toronto, McGill; *Allied Health* – Alberta Association of Nurses, Calgary nursing, Manitoba nursing, SAIT respiratory therapy
- Media coverage: [UCalgary News](#), [The Globe and Mail](#), [Toronto Star](#), [CBC](#), [Global News](#), [CTV News](#)

Medical Education Working Group

Feb 2023 – Present

Co-Founder, Editor-In-Chief, and Principal Software Developer

- Created a [Toronto Notes GPT](#), an AI model that provides medical knowledge using the Toronto Notes; creating a medical question bank in collaboration with Toronto Notes and University of Calgary Cards
- Created [PrepCaRMS](#), an AI-powered app that offers interview practice with all CaRMS R-1 specialties (users speak to their device and then it speaks back) and feedback based on the interview
- Created the [Royal College Oral Practice App](#), an AI-powered app that provides practice and feedback for Canadian residents oral board exams; the app features dynamically-added images; users speak to their device and then it speaks back
- Created [MedNoteAI](#), a GPT-powered app for automated generation of notes and questions from lecture videos, audio, and PDFs; powered by Flask, OpenAI Whisper API, and GPT-3.5

Calgary Medical Students' Association (CMSA)

Sep 2022 – Present

President (Elected)

- Chaired the Independent Student Analysis (ISA) Committee for [2024 accreditation cycle](#) of the Calgary MD Program by the [Committee on Accreditation of Canadian Medical Schools](#) (a 2-year process); led a team of 11 students and W21C researchers to create a 58-page ISA report on strengths, weaknesses, and recommendations for the Calgary MD program
- Advocated for and implemented “hot spot” reporting for identification of clerkship rotation sites with mistreatment issues; all clerkship rotation feedback blocks now have anonymous student reporting options
- Collaborated with faculty to create a response protocol package for students in crisis (e.g., self-harm, acute health crisis)
- Created an online platform for students to share and access study materials; created more than 1 GB of videos on course concepts, school notes, tools for career exploration, exams, shadowing, research
- Organized embroidered Patagonia merchandise for all Calgary MD students; acquired a 40% discount and 14-day free trial for AMBOSS for all Calgary MD 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 with faculty, administration, national collaborators, and other stakeholders

- Created [A Gentle Introduction to Data Science with R](#), an interactive e-textbook on R programming and data science used by 1,000+ students across Canada (Dec 2020 – May 2022)
- Led a team of 17 PhD, MD, and BSc students to create and deliver the Youreka national curriculum; generated 60,000+ hours of research education for 1,000+ high school and undergraduate students annually across Canada
- Collaborated on national equity, diversity, and inclusion policies affecting 200+ students across Canada
- Spearheaded the first professional development and pedagogy training program for 17 undergraduate teachers across Canada
- Taught a ten-week science program to a cohort of 30 high school and undergraduate students in Edmonton
- 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

- 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; successfully advocated to maintain the co-op program
- Founded and wrote the [Atom Magazine for Engineering Physics](#); the first issue attracted 300+ readers in 6 countries

Research

Project neuroArm

Jul 2022 – Present

- Creating natural language platforms as a clinical tool for physician consultation, automated notes, and education
- Designing machine learning-driven platforms for surgical devices and education, e.g., a surgeon's force profile
- Created [Eloquent Aid](#), an AI-powered app to assist identification of eloquent brain regions during awake craniotomies; users complete image-based tasks by speaking, and the app determines whether the answer is correct in real time; used by neurosurgeons at the University of Calgary and the College of Medicine and Philippine General Hospital

Telerobotic and Biorobotic Systems Group

Sep 2021 – Jun 2023

- Designed reinforcement learning algorithms for exoskeletons to personalize the patient rehabilitation process; implemented the TD3 algorithm with a lower limb exoskeleton to set a user's desired walking speed; [manuscript](#) published in [ICRA 2023](#); media coverage: [CTV](#) and [University of Alberta](#) interviews
- Led the development of a voice-controlled exoskeleton; users complete tasks 54% faster than using a mobile app

Publications

Manuscripts

1. **E. Guo**, M. Gupta, H. Rossong, L. Boone, B. Manoranjan, S. Ahmed, I. Stukalin, S. Lama, G. Sutherland*, "Healthcare Spending vs Mortality in CNS Cancer: Has Anything Changed?" *Neuro-Oncology Practice* [accepted].
2. **E. Guo**, C. Perlette, M. Sharifi, L. Grasse, M. Tata, V. K. Mushahwar, M. Tavakoli*, "Speech-Based Human-Exoskeleton Interaction for Lower Limb Motion Planning," *IEEE International Conference on Human-Machine Systems* [accepted].
3. J. S.G. Pascual, **E. Guo**, R. Yang, K. D. Langdon, S. Lama, G. Sutherland*, "Ruptured pial-pial collateral aneurysm associated with left internal carotid artery occlusion: Nuances of surgical management," *Journal of Neurosurgery: Case Lessons*, 7(12), CASE2454, Mar. 2024, doi: [10.3171/CASE2454](#)
4. Y. Park, A. Pillai, J. Deng, **E. Guo**, M. Gupta, M. Paget, C. Naugler*, "Assessing the research landscape and utility of large language models in the clinical setting: A scoping review," *BMC Medical Informatics and Decision Making*, Mar. 2024, doi: [10.1186/s12911-024-02459-6](#).
5. **E. Guo**, M. Gupta, S. Sinha, K. Rössler, M. Tatagiba, R. Akagami, O. Al-Mefty, T. Sugiyama, P.E. Stieg, G.E. Pickett, M. de Lotbiniere-Bassett, R. Singh, S. Lama, G. Sutherland*, "neuroGPT-X: Towards a Clinic-Ready Large Language Model," *Journal of Neurosurgery*, Oct. 2023, doi: [10.3171/2023.7.JNS23573](#).
6. **E. Guo***, M. Gupta, J. Deng, Y. Park, M. Paget, C. Naugler, "Automated Paper Screening for Clinical Reviews Using Large Language Models," *Journal of Medical Internet Research*, Sep. 2023, doi: [10.2196/48996](#).
7. A. Baghdadi, **E. Guo**, R. Singh, S. Lama, G. Sutherland*, "Force Profile as Surgeon-Specific Signature," *Annals of Surgery Open*, Sep. 2023, doi: [10.1097/AS9.0000000000000326](#).
8. S. Samnani, F. Sachedina, M. Gupta, **E. Guo**, V. Navani*, "Mechanisms and clinical implications in renal carcinoma resistance: narrative review of immune checkpoint inhibitors," *Cancer Drug Resistance*, Jun. 2023, doi: [10.20517/cdr.2023.02](#).

9. J. K. Mehr, **E. Guo**, M. Akbari, V. K. Mushahwar, M. Tavakoli*, “Deep Reinforcement Learning Based Personalized Locomotion Planning for Lower-Limb Exoskeletons,” *2023 IEEE International Conference on Robotics and Automation (ICRA)*, London, United Kingdom, 2023, pp. 5127-5133, doi: [10.1109/ICRA48891.2023.10161559](https://doi.org/10.1109/ICRA48891.2023.10161559).
10. 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.
11. **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](https://doi.org/10.17975/sfj-2021-013).

Invited Talks

1. “The Role of Artificial Intelligence in Geriatric Medicine Education,” *Canadian Geriatrics Society Annual Scientific Meeting*, Calgary, AB, Canada, Apr. 26, 2024.
2. “IEEE Humengineering Series: Changing the Medical Landscape with LLMs,” *IEEE Sight*, Schulich School of Engineering, University of Calgary, Jan. 11, 2024.

Conferences & Presentations (of 16)

1. I. Ma*, **E. Guo**, M. Gupta, O. Chen, M. Vergouwen, B. Chiang, M. Paget, C. Naugler, A. Harvey, “Using large language models to automate literature screening in undergraduate medical program evaluation,” *International Congress on Academic Medicine 2024*, Vancouver, BC, Canada, Apr. 12-15, 2024 [accepted].
2. A. Pillai, **E. Guo***, M. Gupta, “Assessing GPT-4 with vision for automated question explanations in undergraduate medical education,” *OHMES Health & Medical Education Scholarship Symposium*, Calgary, AB, Canada, Feb. 21, 2024.
3. Y.J. Park, B. Ma, **E. Guo**, M. Gupta, M. Ramien, “RIME-GPT: Leveraging AI to provide real-time, personalized clinical support for pediatric reactive infectious mucocutaneous eruptions (RIME),” *Pediatric Dermatology Research Alliance*, Nov. 9-11, 2023.
4. **E. Guo**, M. Gupta, S. Sinha, K. Rössler, M. Tatagiba, R. Akagami, O. Al-Mefty, T. Sugiyama, P.E. Stieg, G.E. Pickett, M. de Lotbiniere-Bassett, R. Singh, S. Lama, G. Sutherland*, “neuroGPT-X: Advancing Responsible Large Language Models for Clinical Use,” *CNS 2023*, Washington, DC, USA, Sep. 9-13, 2023.
5. **E. Guo**, M. Gupta, B. Wong, J. Ali, A. Pillai, P. Torabi, M. Paget, C. Naugler*, “Performance of ChatGPT on Case-Based Clinical Scenarios: Potential for Incremental Utility of Large Language Models in Medical Education,” *Association for Medical Education in Europe Glasgow 2023*, Glasgow, Scotland, Aug. 26-30, 2023, doi: [10.21955/mep.1115122.1](https://doi.org/10.21955/mep.1115122.1).
6. **E. Guo***, M. Gupta, J. Ali, A. Pillai, P. Torabi, “Large Language Models: Practicing Clinical Decision Making,” *Health and Medical Education Scholarship Symposium*, Calgary, AB, Canada, May 11, 2023.
7. **E. Guo**, A. Baghdadi, R. Singh, S. Lama, G. Sutherland*, “What Makes a Surgeon Unique? Machine Learning for Surgeon Identification Using Their Force Profile,” *2023 AANS Annual Scientific Meeting*, Los Angeles, CA, USA, Apr. 21-24, 2023.
8. **E. Guo**, A. Baghdadi, R. Singh, S. Lama, G. Sutherland*, “Machine Learning Characterization of Important Tool-Tissue Interaction Forces Using Bipolar Forceps,” *2023 AANS Annual Scientific Meeting*, Los Angeles, CA, USA, Apr. 21-24, 2023.
9. 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,” *Canadian Society for the Study of Education XLIX Annual Conference*, Canada, May 30-June 3, 2021.

Selected Research & Social Innovation Grants (of 15)

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| Innovation in Surgical Education Grant | Mar 2024 |
| • Awarded by the Department of Surgery and Office of Surgical Education in Calgary for the development of OSCE-GPT | |
| Students Union Quality Money Grant | Mar 2024 |
| • Awarded \$35,797 for the development of OSCE-GPT | |
| Microsoft for Startups Founders Hub | Mar 2024 |
| • Awarded Microsoft Azure and OpenAI credits for the development of OSCE-GPT | |
| Mach-Gaensslen Foundation: Undergraduate Summer Student Research Award | Feb 2024 |
| • Awarded for “Development and Use of a Novel Large Language Model (LLM) for the Management of Terminal Brain Cancers” | |
| OpenAI Researcher Access Program Grant | Jul 2023 |
| • Awarded for research to develop responsible large language models in medicine | |

Ontario Medical Student Education Research Grant

May 2023

- Awarded to create an interactive app for dermatology trainees to practice oral examinations

Selected Scholarships and Awards (of 22)

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

Peter Loughheed 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

Alberta Innovates COVID-19 Hackathon Post-Secondary Student Award (\$500)

Apr 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](#)

Selected Sports Awards

Fencing (Foil)

2011 – 2020

- Accepted annually as a High Performance Program Athlete with the Canadian Fencing Federation
- Medalled in 5 Canadian national competitions in the open, U20, U17, and U13 categories
- Received USA Fencing A16 ranking (highest ranking in USA Fencing)
- 23rd Place Guatemala Junior (U20) World Cup; represented Team Canada

2013 – 2018

2013 – 2018

2016

2016

Employment

University of Alberta

Sep 2020 – Apr 2022

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

- 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

Edmonton Fencing Club

Nov 2016 – Oct 2020

Fencing Coach

- Coached children and teenagers and engaged their parents about their child's progress
- Gave private lessons, taught strategic fencing thinking, and resolved student conflicts

Media Coverage

1. Calgary Department of Clinical Neurosciences 2022-2023 Annual Report: [The AI will see you shortly](#) (p.22-23) Mar 2024
2. Journal of Neurosurgery, Michael J. Link, MD and Matthew L. Carlson, MD: [Editorial. Who, or what, to believe](#) Oct 2023
3. AgeTech World, Jane Hall: [New AI app could hold key to better older patient-doctor communication](#) Oct 2023
4. The Canadian Press: [Calgary med student develops AI patient program](#) Sep 2023
5. CBC, Bill Graveland: [New app uses AI to help Calgary medical students practise interacting with patients](#) Sep 2023
6. Noovo Info, Bill Graveland: [De futurs médecins formés avec une application?](#) Sep 2023
7. U of C UToday, Kelly Johnston: [UCalgary students create app to help medical students learn how to talk to patients](#) Sep 2023
8. CTV News Edmonton, Adam Lachacz: [U of A integrating artificial intelligence into exoskeleton technology](#) Aug 2022
9. U of A Folio, Michael Brown: [Students develop online tool to predict COVID-19 spread based on demographics](#) Jul 2020
10. Cybera: [Alberta Innovates Announces Results from COVID-19 Data Science Hackathon](#) May 2020
11. Alberta Innovates: [Flattening the Curve and Promoting Economic Recovery through Innovation](#) May 2020
12. CBC, The Canadian Press: [Table tennis player, 10, turning heads in Halifax](#) Feb 2011
13. The Globe and Mail, Oliver Moore: [Just 10, Eddie has small size, huge potential](#) Feb 2011
14. Toronto Star: [10-year-old table tennis star competes against pros](#) Feb 2011
15. Government of Alberta: [Team Alberta named for Canada Winter Games](#) Jan 2011