Brenna Li

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Summary

I am a final-year PhD candidate working at the intersection of Human-Computer Interaction (HCI) and Healthcare AI, researching intelligent conversational systems to enhance patient-provider communication and optimize clinical workflows. My dissertation explores the design and evaluation of a pre-consultation chatbot-summary system that gathers patient information before appointments and generates a structured summary for physicians to review. Through real-world in-clinic studies, I have demonstrated that this system enhances patient engagement with their medical records and better prepares physicians, which ultimately strengthens communication and efficiency (Link to demo). Beyond pre-consultation, I conduct empirical studies to understand whether AI scribes (documentation assistants) reduce physicians' administrative workload and how this impacts their relationship with patients. My research highlights the constraints, workarounds, and learning curves physicians face when integrating AI into their workflows, helping identify key design principles for future intelligent clinical assistants. My long-term vision is to create a seamless, personalized healthcare experience where patients and providers are supported at every stage—pre-consultation, consultation, and post-consultation—fostering greater collaboration among diverse healthcare stakeholders. I am passionate about finding solutions to enhance existing workflow and interaction, ensuring that technology empowers rather than diminishes human connections.

Education

University of Toronto – PhD. in Computer Science 2025 (expected)
- *Design and evaluation of large-language model chatbots for clinical pre-consultation*
- Advisors: Professor Khai Truong and Professor Alex Mariakakis

University of Toronto – MSc. in Computer Science 2020
- *Understanding the impact of ambient digital scribes on physicians' workflows*
- Advisor: Professor Khai Truong

University of British Columbia – BSc. in Integrated Sciences 2017
- Computer Science, Neuroscience, and Human physiology
- Advisor: Professor Paul Pavlidis

Awards and Recognition

CHI Doctoral Colloquium 2024
- One of twenty-one students (19% acceptance) selected to present my PhD research

Natural Science and Engineering Research Council of Canada (NSERC) – CGS D 2022
- National scholarship awarded to top 10% PhD applicants ($105,000 over 36 months)

Ontario Graduate Scholarship (OGS) 2022
- Province of Ontario scholarship – awarded but declined ($15,000)

Mitacs Accelerate 2019
- Industry partnership research award ($15,000)

UBC Undergraduate Research Competition 2016
- Best poster and undergraduate thesis award ($100)

Natural Sciences and Engineering Research Council of Canada (NSERC) - USRA 2015
- Undergraduate Student Research Award ($4500)

IEEE World Haptics Conference 2015 Chicago 2015
- 1st place in the student innovation challenge ($1500)

Presentations, Invited Talks and Demos

University of Zurich School of Information – Guest speaker	Jan 2025
Google Research Health AI Group – Guest speaker	July 2024
Simon Fraser University ixlab – Guest speaker	March 2024
University of British Columbia eDapt Group – Guest speaker	March 2024
University of Toronto ARIA Conference – Demo presenter	November 2023
Telus Health Medical Board – Guest speaker	December 2021
CRA-Graduate Student Women's Workshop – Poster presenter	April 2021

Publications – Papers in Progress

1. **Brenna Li**, Katherine Jelich, Nina Huang, Khai Truong, and Alex Mariakakis. *AI scribes in practice – understanding how general practitioners incorporate the technology into their workflow.* (In preparation for Lancet Digital Health)
2. **Brenna Li**, Katherine Jelich, Nina Huang, Khai Truong, and Alex Mariakakis. *The ambient listener in the room – understanding the impact of AI scribes on patient-physician relationships* – (In preparation for JAMA)
3. **Brenna Li**, Anna Kirik, Liam Bakar, Khai Truong and Alex Mariakakis. *Enhancing Patient-Centered Care Through Pre-Consultation Summaries: A Pathway to Improved Communication and Understanding* - (In preparation for CSCW)
4. **Brenna Li**, Jeb Thomas, Khai Truong and Alex Mariakakis. *Bridging the Communication gap with Pre-consultation Summaries - Design Workshop with Patients and Physicians Understanding their Consultation Needs* - (In preparation for CHI'26)

Publications – Full Papers

1. **Brenna Li**, Saba Tauseef, Khai Truong, Alex Mariakakis. *A Comparative Analysis of Information Gathering by Chatbots, Questionnaires, and Humans in Clinical Pre-Consultation*. In Proceedings of the 2025 ACM Conference on Human Factors in Computing Systems (CHI). To Appear, April 2025. (Acceptance rate 25%)
2. Georgianna Lin, **Brenna Li**, Jin Yi Li, Chloe Zhao, Khai Truong, and Alexander Mariakakis. *Users' Perspectives on Multimodal Menstrual Tracking Using Consumer Health Devices*. In Proceedings of the ACM Interaction Mobile Wearable Ubiquitous Technology (IMWUT). Article 116, August 2024.
3. **Brenna Li**, Ofek Gross, Noah Crampton, Mamta Kapoor, Saba Tauseef, Mohit Jain, Khai N. Truong, and Alex Mariakakis. *Beyond the Waiting Room: Patient's Perspectives on the Conversational Nuances of Pre-Consultation Chatbots*. In Proceedings of the 2024 ACM Conference on Human Factors in Computing Systems (CHI). Article 438, May 2024. (Acceptance rate 26%)
4. Georgianna Lin, Pierre-William Lessard, Minh Ngoc Le, **Brenna Li**, Fanny Chevalier, Khai N. Truong, and Alex Mariakakis. *Functional Design Requirements to Facilitate Menstrual Health Data Exploration*. In Proceedings of the 2024 ACM Conference on Human Factors in Computing Systems (CHI). Article 687, May 2024.(Acceptance rate 26%)
5. **Brenna Li**, Tetyana Skoropad, Puneet Seth, Mohit Jain, Khai Truong, and Alex Mariakakis. *Constraints and Workarounds to Support Clinical Consultations in Synchronous Text-based Platforms*. In Proceedings of the 2023 ACM Conference on Human Factors in Computing Systems (CHI). Article 342, April 2023. (Acceptance rate 24%)
6. **Brenna Li**, Noah Crampton, Sophie Yu, Simon Tian and Khai Truong. *Automating Clinical Documentation with Digital Scribes: Understanding the Impact on Physicians*. In Proceedings of the 2021 SIGCHI Conference on Human Factors in Computing Systems (CHI). Article 658, May 2021. (**Best Paper Honorable Mention**, Top 5%)
7. Dmitry Tebaykin, Shreejoy Tripathy, Nathalie Binnion, **Brenna Li**, Richard C. Gerkin, and Paul Pavlidis. *Modeling sources of interlaboratory variability in electrophysiological properties of mammalian neurons.* Journal of neurophysiology Volume 119, Article 4. 2018.
8. Ogan B. Mancarci, Lilah Toker, Shreejoy Tripathy,**Brenna Li**, Rocco, B.R., Sibille, E.L., Pavlidis, P. *Cross-laboratory analysis of brain cell type transcriptomes with applications to interpretation of bulk tissue data*. eNeuro. 2017.
9. Shreejoy Tripathy, Lilah Toker, **Brenna Li**, Cindy Crichlow, Dmitry Tebaykin, Ogan B. Mancarci, and Paul Pavlidis. *Transcriptomic correlates of neuron electrophysiological diversity.* PLos Computational Biology. Volume 13, Article 10. 2017.

Publications – Full Papers (Non-archived)

1. Tu, T., Palepu, A., Schaekermann, M., Saab, K., Freyberg, J., Tanno, R., Wang, A., **Li, B.**, ... & Natarajan, V. (2024). Towards conversational diagnostic ai. arXiv preprint arXiv:2401.05654. [cited 110 times]

Publications - Short Papers and Extended Abstracts

1. Nina Huang[1], Katherine Huang[1], **Brenna Li**, Khai Truong, and Alex Mariakakis *Physicians' lived experiences with AI Scribes.* In CHI '25 Workshop on Envisioning the Future of Interactive Health, Yokohama, Japan 2025.
2. **Brenna Li**. *Designing Conversational Agents to Facilitate Patient-Physician Communication and Clinical Consultation.* In Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems (CHI EA'24). May 2024.
3. **Brenna Li**, Amy Wang, Patricia Strachan, … Christopher Semturs, and Mike Schaekermann. *Conversational AI in health: Design considerations from a Wizard-of-Oz dermatology case study with users, clinicians and a medical LLM*. In Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems (CHI EA'24). May 2024.
4. Yuyang Liu, Jienan Yao, **Brenna Li**, Zhen Gou, Chloe Pou-Prom, Joshua Murray, Amol Verma, Muhammad Mamdani and Marzyeh Ghassemi. *Visualization of deep models on nursing notes and physiological data for predicting health outcomes through temporal sliding windows.* In Explainable AI in Healthcare and Medicine. Pages 115-129. 2021.
5. Lillio Mok, **Brenna Li**, Stephen Gou and, Joseph J. Williams. *Understanding and Correcting Inaccurate Calorie Estimations on Amazon Mechanical Turk.* In Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA'19). May 2019.

Work Experience

Google – Health AI Student Researcher 07/2023 - 12/2023

- Developed user-based evaluation metrics of medical large language models.
- Performed qualitative and quantitative analysis comparing patient-bot and patient-doctor conversations.
- First-authored a CHI Late-breaking-work submission.

University of Toronto – Graduate Application Reviewer 10/2022 – 02/2023

- Reviewed, ranked and assessed incoming graduate student applications for the computer science department.

Samsung AI Research – Research Intern 06/2022 – 12/2022

- Studied machine and human comprehension of narrative image descriptions to inform design improvements for the Gallery application.

BC Cancer Agency – Computational Biologist (Developer) 09/2017 – 09/2018

- Developed features to track samples for the Laboratory Information Management Systems team using Python, SQL, and R.
- Developed a central authentication service for all web services at the Genome Science Centre (GSC) in javascript using expressJS.

UBC Paul Pavlidis Lab – Undergraduate Research Assistant 06/2014 – 06/2017

- Led a project using R to identify marker genes for estimating cell type proportions and neuron naming in microarray data.
- Supervised undergraduates in data collection, curation, and analysis on neuroelectro.org and Gemma databases.

Teaching Experience

Teaching Assistant for CSC 318 – Introduction to User-centered Design 2018 – Present

- Served as Teaching Assistant for over 10 terms, holding roles as Course TA, Lead

TA, and Course Prep TA.

- Course TA: Supervised a class of over 30 students, managing up to 6 project groups per term. Guided each group through the iterative design process, conducted in-class tutorials, provided detailed project feedback, and graded assignments.
- Lead TA: Supported the course instructor in preparing materials, revamped the grading rubric to enhance consistency among TAs, and led tutorials and grading sessions to train and assist other TAs.
- Course Prep TA: Dedicated a summer term to developing new presentation materials, creating sample projects, and designing assignments to support a flipped classroom model.

Teaching Assistant for CSC 207 – Software Design 2019 – 2021

- Served as Teaching Assistant for 4 terms, taking on roles as Course TA and Lead TA.
- Course TA: Conducted weekly tutorials to support students in individual assignments and guided project groups in software design principles. Reviewed and graded group projects, supervised exams, and marked assignments.
- Lead TA: Assisted the course instructor with material preparation and led tutorial and grading sessions to train and support other TAs.

Teaching Assistant for CSC 108 – Introduction to Programming with Python 2019

- Course TA: Held weekly office hours to support students with assignment completion, actively engaged in answering questions on Piazza, and graded assignments and exams.

Mentoring Experience

Current Mentees

- Jeb Thomas – UofT BSc., Computer Science Specialist, Incoming UofT PhD.
- Katherine Jelich – UofT BSc., Computer Science Specialist, Incoming UofT MSc.
- Nina Huang – UofT BSc., Double Major in Computer Science & Psychology
- Anna Kirik – UofT & National University of Kyiv-Mohyla Academy BSc., Computer Science
- Saba Tuseef – Medical Resident at Toronto Metropolitan University

Past Mentees

- Liam Bakar – Now: MSc., Computer Science at University of Washington
- Jiaqi Guo – Now: MSc., Computer Science at Mcgill University
- Ofek Gross – Now: MScAC in Health AI at University of Toronto
- Mitsuka Kyokara – Now: UofT BSc., Computer Science Specialist
- Mamta Kapoor - Now: Medical Resident at Northern Ontario School of Medicine.
- Tetiana Skoropad – Now Front-end Developer for Cuberic
- Sophia (Yu) Xia – Now: Data Analytic Manager at Yorkville University
- Simon (Xirong) Tian – Now: Data Analyst at Jitech

Community Involvement

Academic

- Associate Chair (ie Associate Editor) for ACM CUI 2025 - Present
- Reviewer for ACM CHI, ACM IMWUT, ACM CSCW, NPJ Digital Medicine 2021 - Present

External Service

- UofT DGP Doctoral Consortium – Organizer 2023 - Present
- Graduate Application Assistance Program (GAAP) – Mentor 2022 - 2023

- Prime Mentors of Canada – Mentored students in the TDSB on conducting research 2021 - 2022
- UofT Computer Science Graduate Student Society – Social Coordinator 2018 - 2022
- UofT DGP Social – Social Coordinator 2018 - 2021
- HerCodeCamp, coding workshop for high school students - Director of Finance 2019 - 2021
- UBC Korle-Bu Neuroscience Club – President 2013 - 2017