Brenna Li

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Summary

I am a third year PhD student studying in the intersection of Human Computer Interaction, Conversational Agents and Healthcare. I am particularly interested in the ways conversational agents, in the form of chatbots, can be used to facilitate communication between patients and physicians in remote settings. For my dissertation I will be working with real-world patients and physicians to explore the use and design of a chatbot that can act as a medium for patients and physicians to establish a bi-directional form of communicaiton, understanding and information gathering.

Education

02/2020 -	**University of Toronto (St. George Campus)** PhD Student in Computer Science, DGP Lab (HCI, Healthcare, Conversational Agents) Advisor: Professor Khai Truong and Alex Mariakakis
09/2018 - 01/2020	**University of Toronto (St. George Campus)** M.Sc. in Computer Science, DGP Lab Advisor: Professor Khai Truong
2012 - 2017	**University of British Columbia (Vancouver Campus)** B.Sc. Integrated Sciences – Computer Science, Neuroscience, Human Physiology Advisor: Professor Paul Pavlidis

Awards and Recognition

2022	**Natural Science and Engineering Research Council of Canada (NSERC) – CGS D** NSERC scholarship awarded to highest ranked PGS-D applicants – ($105,000) over 36 months.
2022	**Ontario Graduate Scholarship (OGS)** Province of Ontario scholarship – awarded but declined ($15,000)
2021	**ACM SIGCHI Gary Marsden Travel Awards** CHI conference travel grant winner ($500)
2019	**Mitacs Accelerate** Industry partnership research award ($15000)
2015	**Natural Sciences and Engineering Research Council of Canada (NSERC) - USRA** Undergraduate Student Research Award ($4500)
2015	**IEEE World Haptics Conference 2015 Chicago** 1st place in TPad Android Student Innovation Challenge ($1500)
2012-2017	**University of British Columbia, Faculty of Science, Dean's Honour List** Recognition of students with strong academic standing

Presentations and Publications

Publications

1. **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 CHI Conference on Human Factors in Computing Systems (CHI '21). (**Best Paper Honorable Mention**)

2. Yuyang Liu, Jienan Yao, **Brenna Li,** Zhen Gou, Chloe Pou-Prom, Joshua Murray, Amol Verma, Muhammad Mamdani and Marzyeh Ghassemi (2021). *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* (pp. 115-129). Springer, Cham.
3. Lillio Mok, **Brenna Li,** and Stephen Gou. *Understanding and Correcting Inaccurate Calorie Estimations on Amazon Mechanical Turk.* In Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems May 2019.
4. 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 Nov 2017
5. Tripathy, S.J., Toker, L., **Li, B.**, Crichlow, C., Tebaykin, D., Mancarci, B.O., Pavlidis, P. *Transcriptomic correlates of neuron electrophysiological diversity.* PLoS Comput Biol. Oct 2017

Work Experience

06/2022 - Present
Samsung AI Research Centre – Part-Time Research Intern
Leading a study on understanding differences in machine and human based narrative language based image description and retrieval.

09/2018 - Present
University of Toronto – Computer Science Department Teaching Assistant
Courses include CSC108, CSC207, CSC318, which ranges from first year introduction to python programming, to third year Human Computer Interaction design principles.

2017 – 2018
BC Cancer Agency Genome Science Centre – Full time Computational Biologist
Developed features to track laboratory submissions for the Laboratory Information Management Systems team using Python, SQL and R.
Developed a central authentication service for all webservices at the Genome Science Centre (GSC) in javascript using expressJS

2014 - 2017
UBC Dr. Paul Pavlidis Lab – Part-time Neuroinformatics Research Assistant
Conducted literature data analysis project on neuron naming characteristic.
Lead and managed a team of undergraduate students in performing data collection, curation, and analysis on neuron electrophysiology and gene expression databases, *NeuroElectro* and *Gemma*. neuroelectro.org, Gemma

2015
UBC Dr. Paul Pavlidis Lab – Full time Bioinformatics Co-op Student
Conducted a marker gene analysis project on identifying marker genes from blood cell types to estimate cell type proportions from microarray datasets using R.

Research Experience and Select List of Technical Projects

02/2020-Present
PhD Research Projects in Human Computer Interaction
Exploring use of chatbots to facilitate communication between patients and doctors
- First author paper submitted to CHI2023

Exploring the use of VR visualization to educate sanitation practices
- First author paper submitted to CHI2023

Exploring the sensemaking process of commercial devices for menstrual health
- Second author paper submitted to CHI2023

09/2020-12/2020
CSC 2552 - Graduate Course on Computational Social Science (Dr. Ashton Anderson)
Explored vaccine opinions in Reddit users during the pandemic period. Conducted topic modelling and sentiment analysis on the top 5000 subreddits.

09/2018-02/2020 **Master Research Project in Human Computer Interaction**
Conducted research on understanding EMR documentation in Canadian primary health settings, specifically, on the potential and limitations of digital scribe technology in assisting physicians. Paper published in CHI'20.

01/2019-04/2019 **CSC 2541 - Graduate Course on Machine Learning for Health (Dr. Marzyeh Ghassemi)**
Explored visualization of deep models and sliding window techniques on unstructured nursing notes and physiological data to explain predictions on patient's mortality rates and ICU transfer at Toronto's St. Michael's Hospital. Work was accepted to AAAI 2020 Health Intelligence workshop and published in *Explainable AI in Healthcare and Medicine 2021.*

09/2018-12/2018 **CSC 2558 - Graduate Course on Designing Intelligent Self-Improving Systems Through Human Computation, Randomized A/B Experiments and Statistical Machine Learning (Dr. Joseph Williams)**
Conducted a study on Amazon Mechanical Turk to explore people's calorie predictions on common food groups and how that can be corrected through methods of reflection and reinforced learning. Work was published in CHI 2019 LBW.

2016 – 2017 **Directed Studies Student in Department of Zoology and Neuroscience (Dr. Michael Gordon)**
Developed scripts in MATLAB and R to capture and analyze feeding behaviours of drosophila flies to understand the neural circuitry that regulates feeding behaviour.

2015 **Research Assistant at Spin Lab at UBC with Dr. Karon MacLean**
Lead the team in developing a winning Android drawing application with tactile feedback at IEEE World Haptics Conference 2015. https://github.com/BrennaL/RoughSketch.
Conducted surveys with asthmatic individuals to understand their use of technology to monitor their health risks.

Community Involvement

2022 – Present	Prime Mentors of Canada – Mentoring students in TDSB on conducting research projects
2021 – Present	Graduate Application Assistance Program (GAAP) – Mentor
2021 – Present	Reviewer for IMUT, CHI, CSCW
2018 – Present	Computer Science Graduate Student Society at University of Toronto – Social Coordinator
2019 – 2021	HerCodeCamp – Intro to coding workshop for Highschool students – Director of Finance
2019 – 2021	University of Toronto DGP Lab – Social Events Coordinator
2019	CHI 2019 Conference Student Volunteer
2013 – 2017	UBC Korle-Bu Neuroscience Club - President
2014 – 2017	University of British Columbia Hospital – Volunteer

Personal Hobbies and Interests

I am a big foodie. You can often find me hopping around the city trying different cuisines. I also have a big, sweet tooth. Since last summer, I started making ice cream from scratch, and I now have recipes for matcha, chocolate, coffee, strawberry, and vanilla flavors.

I enjoy activities such as skiing and curling in the winter and biking and hiking in the summer. But I am also quite content staying indoors. On rainy days you can find me at home watching Kdramas and playing boardgames.

I am quite passionate about community outreach. I have been involved in several programs that provide opportunities for younger students to learn more about science and research.