

# JAY HENDERSON, PhD

HE/HIM | JAY [DOT] HENDERSON [AT] UWATERLOO.CA | JAYHENDERSON.CA | NATIONALITY: CANADIAN

## EDUCATION

### PhD in Computer Science, Human-Computer Interaction (HCI)

Sept 2016 – Sept 2021

*University of Waterloo*

*Waterloo, ON, Canada*

- Supervised by Professor Edward Lank.
- Awarded the *David R. Cheriton Graduate Scholarship*, based on academic merit; valued at \$10,000 annually.

### BSc Hons. in Computer Science, Minors in Mathematics and Psychology

Sept 2012 – May 2016

*Mount Allison University*

*Sackville, NB, Canada*

## EXPERIENCE

### Senior Research Scientist

Sept 2021 – Present

*Human Machine Interaction Lab – Huawei Technologies Canada*

*Markham, ON, Canada*

- Conducting research on interaction techniques (HCI).
- Responsibilities include: developing & implementing novel input techniques; executing on user research studies; coordinating with University collaborators; full-stack development using Android (Java), UWP (C#), Arduino (C++); and data analysis (R, Python).

### Graduate Research Assistant

Sept 2016 – Sept 2021

*Human-Computer Interaction Lab – University of Waterloo*

*Waterloo, ON, Canada*

- Led multiple HCI research projects, in domains including mobile computing, rehearsal-based interfaces, gesture learning, virtual/augmented reality (VR/AR), and cross-device interaction.
- Projects required mobile, VR/AR, and web development; as well as multi-device networking/communication, low-level event processing, and data analysis.
- Resulted in numerous publications at ACM's CHI and MobileHCI conferences.

### Research Intern

Dec 2019 – May 2020

*Chatham Labs (Meta Reality Labs)*

*Toronto, ON, Canada*

- Led research on explainability of recognition errors in virtual reality (VR).
- Development conducted in Unity (C#).
- Work is published at ACM's Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Journal, 2022.

### Research Intern

Sept 2018 – Jan 2019

*Noah's Ark Lab – Huawei Technologies Canada*

*Markham, ON, Canada*

- Led research on teaching mid-air gesture interaction through touch (surface) rehearsal.
- Development required signal processing via sensor fusion on an Android mobile device (Java).
- Work is published at ACM's MobileHCI Conference, 2019.

### Research Intern

May 2017 – Aug 2017

*Inria / University of Lille*

*Lille, France*

- Led research on how input accuracy can be communicated through vibrotactile haptic feedback on a smartwatch.
- Development conducted in Android (Java).
- Work is published at ACM's CHI Conference, 2019.

### Full-Stack Software Developer

May 2016 – Sept 2016

*MYSa Smart Thermostats*

*St. John's, NL, Canada*

- Responsibilities included: web development, user interface design, embedded system development, database implementation, and connecting front-end and back-end components.

## TECHNICAL SKILLS

### Languages:

Java, Python, C#, JavaScript, HTML/CSS, R

### Developer Tools & Platforms:

Git, Unity, Android Studio, IntelliJ, Eclipse, Jupyter Notebook, Visual Studio, UWP, Arduino, Node.js

### Other:

Experimental Design, User Studies, Statistical Analysis, SPSS, UI/UX, MS Office, Videography, Graphic Design, Cross-Device Networking, Computer Vision

## PEER REVIEWED PUBLICATIONS

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\*\*\* Note on conference papers: in Human-Computer Interaction, these are the preferred publication venues, being timelier and having the greatest impact. Top tier conferences require rigorous multi-stage review of manuscripts for archival proceedings.

- [P1] **Jay Henderson**, Tanya Jonker, Edward Lank, Daniel Wigdor, Ben Lafreniere. 2022. *Investigating Cross-Modal Approaches for Evaluating Error Acceptability of a Recognition-Based Input Technique*. In Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 6, 1 (March 2022), 22 pages. DOI: 10.1145/3517262. **(Average acceptance rate: 22.5%)**
- [P2] **Jay Henderson**, Jessy Ceha, and Edward Lank. 2020. *STAT: Subtle Typing Around the Thigh for Head-Mounted Displays*. In 22nd International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '20). Association for Computing Machinery, New York, NY, USA, Article 27, 1–11. DOI: 10.1145/3379503.3403549. **(Average acceptance rate: 23.1%)**
- [P3] **Jay Henderson**, Sylvain Malacria, Mathieu Nancel, and Edward Lank. 2020. *Investigating The Necessity Of Delay In Marking Menu Invocation*. In Proceedings of CHI Conference on Human Factors in Computing Systems (CHI '20), Apr 25–30, 2020, Honolulu, HI USA. Association for Computing Machinery, New York, NY, USA, 1–13. DOI: 10.1145/3313831.3376296. **(Acceptance rate: 24.3%)**
- [P4] **Jay Henderson**, Sachi Mizobuchi, Wei Li, and Edward Lank. 2019. *Exploring Cross-Modal Training via Touch to Learn a Mid-Air Marking Menu Gesture Set*. In Proceedings of the 21st International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '19). Association for Computing Machinery, New York, NY, USA, Article 8, 1–9. DOI: 10.1145/3338286.3340119. **(Average acceptance rate: 23.1%)**
- [P5] **Jay Henderson**, Jeff Avery, Laurent Grisoni, and Edward Lank. 2019. *Leveraging Distal Vibrotactile Feedback for Target Acquisition*. In Proceedings of CHI Conference on Human Factors in Computing Systems (CHI '19), May 4–9, 2019, Glasgow, Scotland UK. ACM, New York, NY, USA 11 Pages. DOI: 10.1145/3290605.3300715. **(Acceptance rate: 23.8%)**
- [P6] **J. Henderson**, Shaishav Siddhpuria, Keiko Katsuragawa, and Edward Lank. 2017. *Fostering large display engagement through playful interactions*. In Proceedings of the 6th ACM International Symposium on Pervasive Displays (PerDis '17). Association for Computing Machinery, New York, NY, USA, Article 20, 1–8. DOI: 10.1145/3078810.3078818. **(Acceptance rate: 55%)**

## OTHER PUBLISHED WORKS

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- [N1] **Jay Henderson**. 2021. Understanding Mode and Modality Transfer in Unistroke Gesture Input. (PhD Dissertation).
- [N2] Mohamed Khamis, **J. Henderson**, and Guiying Du. 2017. Title: PerDis 2017. IEEE Pervasive Computing 16, no. 4: 86–89. DOI: 10.1109/MPRV.2017.3971126
- [N3] **J. Henderson**. 2016. Evaluations of the Connect Course Registration System Across Mobile and Desktop Interfaces. (Bachelor's Honours Thesis).

## AWARDS

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<b>David R. Cheriton Graduate Scholarship</b> University of Waterloo	2017 – 2019 Waterloo, ON, Canada
• Awarded by the director of the Cheriton School of Computer Science and an appointed committee based on academic merit. Valued at \$10,000 annually (for two years).	
<b>Math Domestic Graduate Student Award</b> University of Waterloo	2016 – 2021 Waterloo, ON, Canada
• Valued at \$30,000 over a period of 5 years.	
<b>Graduate Student Organization Travel Award</b> University of Waterloo	2019 Waterloo, ON, Canada
• \$500 for travel to ACM's CHI conference.	

## TEACHING EXPERIENCE

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<b>CS 349 – Introduction to User Interfaces – TA/Instructional Apprentice</b> <i>University of Waterloo</i>	2018, 2019, 2020 <i>Waterloo, ON, Canada</i>
<b>CS 105 – Introduction to Computer Programming 1 – TA/Instructional Apprentice</b> <i>University of Waterloo</i>	2017, 2019 <i>Waterloo, ON, Canada</i>
<b>CS 449/649 – Human-Computer Interaction – TA</b> <i>University of Waterloo</i>	2019 <i>Waterloo, ON, Canada</i>
<b>CS 106 – Introduction to Computer Programming 2 – TA/Instructional Apprentice</b> <i>University of Waterloo</i>	2017, 2018 <i>Waterloo, ON, Canada</i>
<b>CS 135 – Designing Functional Programs – TA</b> <i>University of Waterloo</i>	2016 <i>Waterloo, ON, Canada</i>
<b>COMP 1731 – Programming Techniques and Algorithms – TA</b> <i>Mount Allison University</i>	2016 <i>Sackville, NB, Canada</i>
<b>COMP 2931 – Introduction to Systems Programming – TA</b> <i>Mount Allison University</i>	2015 <i>Sackville, NB, Canada</i>

## SERVICE

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<b>Associate Chair (AC)</b> <i>CHI Late Breaking Work, MobileHCI Late Breaking Work</i>	2021 – Present
<b>Peer Reviewer</b> <i>ACM SIGCHI Conferences (CHI, MobileHCI, AutoUI, and ETRA), IJHCI</i>	2017 – Present
<b>ACM Name Change Committee</b> <i>Association for Computing Machinery</i> <ul style="list-style-type: none"><li>As a transgender man, I was selected to serve on a committee that developed an overarching name change policy within all ACM publications. ( <a href="https://www.acm.org/publications/policies/author-name-changes">https://www.acm.org/publications/policies/author-name-changes</a> )</li></ul>	2019
<b>CHI Conference Allyship Program</b> <i>ACM SIGCHI</i> <ul style="list-style-type: none"><li>Served as a point of contact for attendees about equity. Selected for experience in equity-related activities, particularly, involvement in LGBTQ+ initiatives.</li></ul>	May 2019 <i>Glasgow, Scotland</i>
<b>CHI Conference Student Volunteer</b> <i>ACM SIGCHI</i>	May 2017 <i>Denver, CO, USA</i>
<b>S.M.I.L.E. Buddy</b> <i>Mount Allison University / Cumberland YMCA</i> <ul style="list-style-type: none"><li>An accessibility oriented buddy program offered to children with disabilities, who may otherwise not be able to participate in typical programs of the like, due to their unique developmental needs. Occurred each Saturday morning of the academic year.</li></ul>	Sept 2014 - May 2016 <i>Amherst, NS, Canada</i>