

# Johann Wentzel

HCI Researcher - Virtual and Augmented Reality - Accessibility

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## Education

### University of Waterloo

Waterloo, ON

*Doctor of Philosophy (PhD) - Computer Science (Human-Computer Interaction), GPA: 96%*

May 2020 - Present

- **Thesis:** *Bring-Your-Own Input: Context-Aware Multi-Modal Input for More Accessible VR*
- **Advisor:** Daniel Vogel [[website](#)]

*Master of Mathematics - Computer Science (Human-Computer Interaction), GPA: 96%*

Sept 2018 - Apr 2020

- Thesis-based program [[T1](#)], resulting in an award-winning publication [[C2](#)].

### University of Calgary

Calgary, AB

*Bachelor of Science - Computer Science, GPA: 96%*

Sept 2011 - Jun 2017

- Graduated with First Class Honours (published paper [[C1](#)] plus high GPA).

*Bachelor of Commerce - Business Technology Management (BTMA), GPA: 96%*

Sept 2011 - Jun 2017

- Winner: Haskayne School of Business Silver Medallion (highest graduating GPA in program).

## Work Experience

### Meta Reality Labs

New York, NY

*Research Scientist Intern, Input Explorations (mentors: Bruno de Araujo, Jota Costa)*

Sept 2022 - Jan 2023

- Developed Unity prototypes of multimodal AR/VR interfaces using eye tracking and EMG.
- Designed and facilitated experiments to evaluate AR/VR eye tracking input accuracy.
- Analyzed and presented experiment results and high-level conclusions to stakeholders.

### Microsoft Research

Redmond, WA (Remote)

*Research Intern, Ability Team (mentors: Martez Mott, Sasa Junuzovic, Edward Cutrell)*

Jun 2022 - Sept 2022

- Primary author and developer on a VR accessibility research experiment involving multimodal VR input and 3D input remapping.

*Research Intern, Ability Team (mentors: Martez Mott, Sasa Junuzovic, Edward Cutrell)*

May 2021 - Aug 2021

- Primary author of an accessibility research publication [[C3](#)] using qualitative methods to investigate the use of multi-device input configurations by people with mobility limitations.

### Autodesk Research

Toronto, ON

*Research Intern, UI Research Group (mentors: Fraser Anderson, Tovi Grossman)*

Jan 2020 - May 2020

- Primary author and sole Unity developer for a research paper on hybrid VR-desktop interfaces, resulting in a patent [[P1](#)] and conference publication [[C4](#)].
- Completed 4-month research project, including study data analysis and stakeholder presentation despite pandemic-related displacement and work-from-home transition.

### New York University

New York, NY

*Visiting Scholar, Future Reality Lab (mentor: Ken Perlin)*

Sept 2019 - Dec 2019

- Developed a simultaneous, multi-user augmented reality audio solution for an external client.
- Solo developer for a multiplayer iOS project using ARKit on iPhone and iPad.

### Deloitte

Calgary, AB

*iOS/Web/AR Developer (Business Technology Analyst)*

Aug 2017 - Aug 2018

- Created an iOS app for navigation and SAP Cloud interaction, implementing OCR functions and a custom keyboard UI.
- Created an AR eCommerce demo for industry clients using Unity, Vuforia, and Node.js.

### Critical Mass

Calgary, AB

*User Experience Design Intern*

May 2016 - Aug 2016

- Created interactive design prototypes for user testing, using code-based animation tools.
- Created and annotated user flows and wireframes for various websites and software.

## University of Calgary

### Undergraduate Researcher

- Developed an augmented reality interface between Google Glass, Kinect, and a Baxter humanoid robot.
- Published study findings as first author [C1], winning a Calgary Undergraduate Research Award.

Calgary, AB

Sept 2014 - Sept 2015

## SMART Technologies

### User Experience Design Intern

- Created automated data entry scripts to track and close user feature requests, reducing manual entry time by 50%.
- Created various full-process mockups for products, from concepts and sketches to videos and interactive prototypes.

Calgary, AB

May 2014 - Aug 2014

## Selected Publications

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### Peer-Reviewed Publications

- [C4] **Johann Wentzel**, Fraser Anderson, George Fitzmaurice, Tovi Grossman, Daniel Vogel. 2024. *SwitchSpace: Understanding Context-Aware Peeking Between VR and Desktop Interfaces*. To appear in Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24).
- [C3] **Johann Wentzel**, Sasa Junuzovic, James Devine, John Porter, Martez Mott. 2022. *Understanding How People with Limited Mobility Use Multi-Modal Input*. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '22). DOI: <https://doi.org/10.1145/3491102.3517458>
- [C2] **Johann Wentzel**, Greg d'Eon, and Daniel Vogel. 2020. *Improving Virtual Reality Ergonomics through Reach-Bounded Non-Linear Input Amplification*. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '20). DOI: <https://doi.org/10.1145/3313831.3376687>  
\* **Best Paper Honourable Mention (top 5% of submitted papers)**

### Patents

- [P1] **Johann Wentzel**, Fraser Anderson, Tovi Grossman, and George Fitzmaurice. *Transitions between states in a hybrid virtual reality desktop computing environment*. 2022. [Google Patents]

## Selected Awards

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2021-2024	<b>Alexander Graham Bell Graduate Scholarship (NSERC CGS-D)</b> (national) - \$105,000 over 3 years Awarded to top PhD students based on academic merit, research potential, and leadership.
2020	<b>Best Paper Honourable Mention (top 5% of submitted papers), CHI 2020</b> for [C2] "Improving Virtual Reality Ergonomics [...]" with Greg d'Eon and Daniel Vogel.
2019	<b>Alexander Graham Bell Graduate Scholarship (NSERC CGS-M)</b> (national) - \$17,500 National scholarship for top Master's students based on academics and research potential.
2019	<b>Ontario Graduate Scholarship, Master's</b> (provincial) - \$15,000 Provincial scholarship for top Master's students based on academic excellence and research potential.
2018	<b>Alexander Graham Bell Graduate Scholarship (NSERC CGS-M)</b> (national, declined) - \$17,500 Offered from University of Saskatchewan and Calgary, declined as I chose to attend Waterloo.
2017	<b>Haskayne School of Business Silver Medallion in Business Technology Management</b> Awarded to the Business Technology Management student with the highest graduating GPA.
2015	<b>Program for Undergraduate Research Experience Award</b> (institutional) - \$6,000 Merit-based research funding for undergraduate students in the UCalgary Honours program.
2011-2017	<b>Dean's List, University of Calgary</b> Maintained a GPA above 3.6/4.0 while enrolled full-time in undergraduate studies.

## Skills

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**Programming Languages:** C#, Swift, Python, R, HTML, CSS, Javascript, Objective-C, C++, SwiftUI  
**Dev tools:** Unity, Xcode, ARKit, RealityKit, Android Studio, Bootstrap, React, NumPy, jQuery, NodeJS, Git.  
**Design tools:** Figma, Sketch, Balsamiq, Adobe Illustrator, Final Cut Pro  
**Hobbies:** Home servers, game development for VR, AR, iOS. Classically trained in piano, clarinet, voice.