

Johann Wentzel

HCI Researcher - Virtual and Augmented Reality

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Education

University of Waterloo

Doctor of Philosophy (PhD) - Computer Science

Advisor: Daniel Vogel

Waterloo, ON

May 2020 - Present

University of Waterloo

Master of Mathematics - Computer Science, GPA: 96%

Advisor: Daniel Vogel

Waterloo, ON

Sept 2018 - Apr 2020

University of Calgary

Bachelor of Science - Computer Science, GPA: 3.85/4.0

First Class Honours (published paper plus high GPA).

Calgary, AB

Sept 2011 - Jun 2017

University of Calgary

Bachelor of Commerce - Business Technology Management, GPA: 3.85/4.0

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

Calgary, AB

Sept 2011 - Jun 2017

Work Experience

University of Waterloo

Graduate Researcher and Teaching Assistant

- Research explores novel interaction techniques in virtual reality (VR) and augmented reality (AR).
- Lab instructor for several undergraduate programming classes.

Waterloo, ON

Sept 2018 - Present

Autodesk Research

Research Fellow

- Primary author and sole developer on a VR HCI research project.
- Submitted the results to a top-tier HCI conference.

Toronto, ON

Jan 2020 - May 2020

Future Reality Lab, New York University

Visiting Scholar

- Developed an augmented reality audio solution for a client, including multi-person AR connectivity.
- Solo developer for an iOS project using ARKit and MultipeerConnectivity for multiplayer.

New York, NY

Sept 2019 - Dec 2019

Deloitte

iOS/Web/AR Developer (Business Technology Analyst)

- Created an iOS app for navigation and SAP Cloud interaction, implementing OCR functions and a custom keyboard UI.
- Created an augmented reality eCommerce demo for industry clients using Unity, Vuforia, and Node.js.
- Created a loan application web-app for a client using Angular 4 and Salesforce.

Calgary, AB

Aug 2017 - Aug 2018

Critical Mass

User Experience Design Intern

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

Calgary, AB

May 2016 - Aug 2016

University of Calgary

Undergraduate Researcher

- Developed an augmented reality interface between Google Glass, Kinect, and a Baxter humanoid robot.
- Published pilot study findings in a scientific journal as first author, 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

Awards and Honors

2020	Best Paper Honourable Mention , CHI 2020 (Top 10% of papers) Ontario Graduate Scholarship, \$15,000 (provincial, based on research merit) David R. Cheriton Graduate Scholarship, \$20,000 (institutional, based on academic merit) President's Graduate Scholarship, \$5000 (institutional, based on academic merit)
2019	Alexander Graham Bell Graduate Scholarship (NSERC CGS-M) , \$17,500 (national) Ontario Graduate Scholarship, \$15,000 (provincial, based on research merit) President's Graduate Scholarship, \$5,000 (institutional, based on academic merit)
2018	David R. Cheriton Graduate Scholarship, \$20,000 (institutional, based on academic merit) Domestic Masters Entrance Award, \$5,000 (institutional) Declined to Accept: NSERC CGS-M , \$17,500 (from Saskatoon & Calgary)
2017	Haskayne School of Business Silver Medallion in Business Technology Management
2016	University of Calgary Undergraduate Merit Award, \$800 (institutional, academic)
2015	Program for Undergraduate Research Experience Award, \$6,000 (institutional)
2014	Alistair H. Ross Memorial Scholarship, \$3,750 (institutional)
2011	President's Admission Scholarship, \$2,500 (institutional)
2011-2017	Dean's List (GPA above 3.6 / 4.0 for the entire year)

Publications

1. **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)*. ACM, Honolulu, HI, USA. **Acceptance rate: 24%**
DOI: <https://doi.org/10.1145/3313831.3376687>
*** Best Paper Honourable Mention (Top 10%)**
2. **Johann Wentzel**, Daniel Rea, James Young, and Ehud Sharlin (2015). Shared Presence and Collaboration Using a Co-Located Humanoid Robot. In *Proceedings of the 3rd International Conference on Human-Agent Interaction (HAI '15)*. ACM, New York, NY, USA, 273-276.
DOI: <https://doi.org/10.1145/2814940.2814995>

Invited Talks

- *Robotics in Manufacturing / Working Alongside Baxter*. ACAMP Seminar Series - Unmanned Vehicles, Robotics, and Intelligent Systems Seminar. Calgary, AB, Canada.
- *Shared Presence and Collaboration with a Co-Located Humanoid Robot*. University of Calgary Undergraduate Research Symposium. Calgary, AB, Canada.

Selected Projects

VR HCI Research Project: 'Marimba'

- A drum-like virtual keyboard that allows users to type more quickly and comfortably in virtual reality.
- Early user testing showed this technique provided a similar typing speed and lower error rate than others.

VR/IoT Research Project: 'VR-Bounce'

- An Arduino-powered wireless movement accessory for virtual reality.
- Uses IMUs to detect the user bouncing their heels, which is then processed and turned to player movement.

Extra Credits Game Jam: 'MagnaGirl'

- A side-scrolling platformer game using magnetic attraction and repulsion as a core movement mechanic.
- Contributed to the game's level design, as well as programming magnet physics and player movement.

iOS & Android Apps: 'Coril150'

- As a solo freelance developer, created a news reader app for Coril Holdings Ltd.'s Canada 150 celebrations.
- Duties included UI design, prototyping, and native implementation on both Android and iOS.

Undergraduate HCI Project: 'Proxemic Bulletin Board'

- A depth-aware bulletin board that displays different information depending on the user's distance.
- Designed and developed the entire project, from initial sketches to a working prototype.

Skills

- **Programming Languages:** C#, Swift, Python, HTML, CSS, Javascript, Objective-C, C++
- **Dev tools:** Unity, Xcode, Android Studio, Bootstrap, React, Angular 4, d3.js, jQuery, Wordpress, NodeJS, Git.
- **Design tools:** Sketch, Framer.js, Principle, Balsamiq Mockups, Adobe Creative Cloud.
- **Hobbies:** 3D printing, custom Android ROMs, game development, VR/AR interfaces (Leap Motion, etc).

Volunteering

Calgary Community Theatre

Calgary, AB

Actor/Musician

June 2013 - June 2018

- Cast member, orchestra performer, and technical setup advisor for various musical theatre productions in Calgary.

University of Calgary Orientation

Calgary, AB

Orientation Leader

Sept 2013 - Sep 2015

- Led large groups of incoming students on tours of campus, including one-on-one advice for campus life.
- Facilitated several campus-wide volunteering events to build awareness of University of Calgary services.

Alberta Youth Choir

Calgary, AB

Vocalist

Oct 2013 - Oct 2015

- Performed as a vocal bass in a provincial honour choir, offering touring performances in various venues around Alberta.