Johann Wentzel

HCI Researcher - Virtual and Augmented Reality

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Education

University of Waterloo **Waterloo, ON**
Doctor of Philosophy (PhD) - Computer Science, GPA: 97% *May 2020 - Present*
Thesis (in progress): *Improving VR for Accessibility - Communities, Techniques, and Integration*
Advisor: Daniel Vogel

University of Waterloo **Waterloo, ON**
Master of Mathematics - Computer Science, GPA: 96% *Sept 2018 - Apr 2020*
Thesis-based program **[T1]**, resulting in an award-winning publication **[C2]**.
Advisor: Daniel Vogel

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).

University of Calgary **Calgary, AB**
Bachelor of Commerce - Business Technology Management (BTMA), GPA: 96% *Sept 2011 - Jun 2017*
Winner of Haskayne School of Business Silver Medallion (highest graduating GPA in BTMA program).

Work Experience

University of Waterloo **Waterloo, ON**
Graduate Researcher and Teaching Assistant *Sept 2018 - Present*
- Research explores novel interaction techniques in virtual reality (VR) and augmented reality (AR).
- Lab instructor for several undergraduate programming classes.

Autodesk Research **Toronto, ON**
Research Fellow, User Interface Research Group *Jan 2020 - May 2020*
- Primary author and sole developer on a VR HCI research project.
- Submitted the results to a top-tier HCI conference.

New York University **New York, NY**
Visiting Scholar, Future Reality Lab *Sept 2019 - Dec 2019*
- Developed a simultaneous, multi-user augmented reality audio solution for an external client.
- Solo developer for an iOS project using ARKit and MultipeerConnectivity for multiplayer.

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 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.

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 **Calgary, AB**
Undergraduate Researcher *Sept 2014 - Sept 2015*
- 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.

SMART Technologies **Calgary, AB**
User Experience Design Intern *May 2014 - Aug 2014*
- 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.

Awards and Scholarships

2020 **Best Paper Honourable Mention (top 5% of submitted papers), CHI 2020**
for [C2] "Improving Virtual Reality Ergonomics [...]" with Greg d'Eon and Daniel Vogel.

2020 **Ontario Graduate Scholarship, PhD (provincial) - $15,000**
Provincial scholarship for top PhD students based on academic excellence and research potential.

2020 **President's Graduate Scholarship (institutional) - $5,000**
Awarded to top PhD students based on academic excellence and research potential.

2019 **NSERC CGS-M (Alexander Graham Bell Graduate Scholarship) (national) - $17,500**
National scholarship for top Master's students based on academics and research potential.

2019 **Ontario Graduate Scholarship, Master's (provincial) - $15,000**
Provincial scholarship for top Master's students based on academic excellence and research potential.

2019 **David Johnston International Experience Award (institutional) - $2,500**
Awarded to graduate students to support international work and study opportunities.

2018 - 2022 **David R. Cheriton Graduate Scholarship (institutional) - $10,000 per year for 2 years, won twice**
Awarded to top graduate students based on academic excellence and research potential.

2018 **President's Graduate Scholarship (institutional) - $5,000**
Awarded to top Master's students based on academic excellence and research potential.

2018 **Domestic Masters Entrance Award (institutional) - $5,000**
Awarded to top incoming Master's students based on academic excellence.

2018 **Declined: NSERC CGS-M (national) - $17,500**
Offered from University of Saskatchewan and Calgary, declined as I chose to attend Waterloo.

2017 **Haskayne School of Business Silver Medallion in Business Technology Management**
Awarded to the Business Technology Management student with the highest graduating GPA.

2016 **University of Calgary Undergraduate Merit Award (institutional) - $800**
Awarded to top continuing undergraduate students.

2015 **Program for Undergraduate Research Experience Award (institutional) - $6,000**
Merit-based research funding for undergraduate students in the UCalgary Honours program.

2014 **Alistair H. Ross Memorial Scholarship (institutional) - $3,750**
Awarded to top continuing undergraduate students based on GPA.

2011 **President's Admission Scholarship (institutional) - $2,500**
Awarded to top incoming undergraduate students based on academic excellence.

2011-2017 **Dean's List, University of Calgary**
Maintained a GPA above 3.6/4.0 while enrolled full-time in undergraduate studies.

Publications

Note about conference papers: In Human-Computer Interaction, conference proceedings are the preferred publication venue since they are timelier and typically have the greatest impact. Top-tier conferences are very selective with rigorous multi-stage reviews of full manuscripts creating high quality fully archival proceedings.

Note about venues: CHI (ACM Conference on Human Factors in Computing Systems) is recognized as a very top tier HCI conference (ranked #1 on Google Scholar). The average acceptance rate for CHI is 23%.

Conference Papers

[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)**

[C1] **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). DOI: https://doi.org/10.1145/2814940.2814995

Theses and Dissertations

[T1] **Johann Wentzel**. 2020. Reach-Bounded, Non-Linear Input Amplification for More Comfortable Virtual Reality. Master's thesis, UWSpace.

Invited Talks

- **Conference Presentations:** CHI 2020 (virtual), Waterloo CHI 2020 (virtual)
- *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.

Volunteering and Service

Academic Service **Waterloo, ON**
- **Session Chair:** Waterloo CHI 2020 (online CHI event in response to COVID-19) *Ongoing*
- **Student Volunteer:** UIST 2019
- **Peer Reviewer:** CHI 2020, UIST 2020, ISS 2019, CHI 2019 Late-Breaking Work

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 - Sept 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.

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).