UNIVERSITY OF WATERLOO | DAVID R. CHERITON SCHOOL OF COMPUTER SCIENCE

Zachary McKendrick, Ph.D., MFA

Provost's Interdisciplinary Postdoctoral Researcher
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University of Waterloo
David R. Cheriton School of Computer Science | Department of Communication Arts: Theatre and Performance
200 University Avenue West
Waterloo, ON N2L 3G1
Canada

Education

PhD Computational Media Design 14/05/2024
Faculty of Science, University of Calgary
Dissertation: Virtual Rehearsal Suite: Drama and Performance Approaches for Virtual Reality and Human-Computer Interaction
Supervisors: Prof. Patrick Finn & Prof. Ehud Sharlin

MFA Directing 25/06/2019
School of Creative and Performing Arts (SCPA), University of Calgary
Thesis: Life Machine: 21st Century Approaches to Sophie Treadwell's MACHINAL
Pre-Thesis: Trafford Tanzi: Feminist Fight Play and Punk Rock Pantomime
Supervisor: Prof. Christine Brubaker

BA Arts and Culture Specialist: Theatre and Performance Studies 16/04/2016
Department of Arts, Culture, and Media (ACM), University of Toronto: Scarborough Campus
Thesis: Professional Wrestling and the Pop-culture Zeitgeist

Academic Appointments

Provost's Interdisciplinary Postdoctoral Researcher 01/07/2024 – Present
David R. Cheriton School of Computer Science | Communication Arts: Theatre and Performance
Exii Research Group, HCI Lab
University of Waterloo
Supervisors: Prof. Dan Vogel, Prof. Craig S. Kaplan & Prof. Andrew Huston

Publications

Conference Papers (Full Peer-Reviewed)

Philippa Madill, Mathew Newton, Huan Jun, Yichen Lian, **Zachary McKendrick**, Ehud Sharlin, Aditya Shekhar Nittala, Patrick Finn. Playing with Robots: Performing Arts Techniques for Designing and Understanding Robot Group Movement. 2025. The Association of Computer Machinery Conference on Human Factors in Computing Systems (ACM CHI).

Marcus Friedel, **Zachary McKendrick**, Ryo Suzuki, Ehud Sharlin. PantographHaptics: A Technique for Large-Surface Passive Haptic Interactions using Pantograph Mechanisms. 2025 IEEE Conference on Virtual Reality and 3D User Interfaces (VR).

Zachary McKendrick, Lior Somin, Patrick Finn, and Ehud Sharlin. 2023. Virtual Rehearsal Suite: An Environment and Framework for Virtual Performance Practice. In Proceedings of the 2023 ACM International Conference on Interactive Media Experiences (IMX '23). Association for Computing Machinery, New York, NY, USA, 27–39.
Zachary McKendrick, Ori Fartook, Patrick Finn, Ehud Sharlin, Jessica Cauchard. 2023. Waiting in the Wings: Drones in Live Performance. Graphics Interface (G.I.) Conference on Graphics, Visualization & HCI. Victoria, BC, Canada.

Lior Somin, **Zachary McKendrick**, Patrick Finn, and Ehud Sharlin. 2021. BreachMob: Detecting Vulnerabilities in Physical Environments Using Virtual Reality. In Proceedings of the 27th ACM Symposium on Virtual Reality Software and Technology (VRST' 21). Association for Computing Machinery, New York, NY, USA, Article 18, 1–6.

Noor Hammad, Owen Brierley, **Zachary McKendrick**, Sowmya Somanath, Patrick Finn, Jessica Hammer, and Ehud Sharlin. 2021. Homecoming: Exploring Returns to Long-Term Single Player Games. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI' 21). Association for Computing Machinery, New York, NY, USA, Article 116, 1–13.

Journals

Ori Fartook, **Zachary McKendrick**, Tal Oron-Gilad, and Jessica Cauchard. It is Up to You: A Personal Robot's Expression of Emotional Support and Regulation Based on Their User's Emotions. Available at SSRN.

Conference Workshops

Owen Brierley, **Zachary McKendrick**, Loic Cremer, Ehud Sharlin, and Patrick Finn. A Protocol for Improving X.R. and Game Performance. 2022. In Adjunct Publication of the 24th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI' 22). Association for Computing Machinery, New York, NY, USA, Article 10, 1–3.

Conference Demos

Zachary McKendrick, Lior Somin, Patrick Finn, and Ehud Sharlin. Inside BreachMob: Detecting Vulnerabilities in Physical Environments Using Virtual Reality. June 2022. The Israeli Human-Computer Interaction Conference (IsraHCI). University of Haifa, Haifa, Israel.

Project Consultation

Frederike Jung, Jonah-Noël Kaiser, Kai Von Holdt, Wilko Heuten, and Jochen Meyer. 2023. The Art of Privacy – A Theatrical Privacy Installation in Virtual Reality. In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA' 23). Association for Computing Machinery, New York, NY, USA, Article 473, 1–5.

Invited Talks

2025

06/09 Carleton University, Ottawa, Canada
Drama and Performance Approaches to Human-Computer Interaction Research.

06/06 Festival of Live Digital Art (FoLDA)
The Virtual Rehearsal Suite: Using V.R. to Support Live Performance Practice

27/03 Kingston University London, England
Interdisciplinary Academics: Creative Practice and Art as Research in Computer Science.

23/03 University of Staffordshire, Stoke-on-Trent, England
Drama and Performance Approaches to Human-Computer Interaction Research.

21/03 University of Edinburgh, Scotland
Drama and Performance Approaches to Human-Computer Interaction Research.

19/03 University of York, England
Drama and Performance Approaches to Human-Computer Interaction Research.

13/03 Le centre Inria de l'Université de Lille, France
Drama and Performance Approaches to Human-Computer Interaction Research.

2024

15/06 University of Victoria, Victoria, BC, Canada
Drama and Performance Approaches to Human-Computer Interaction Research.

2023

18/06 Ecole Nationale de l'Aviation Civile (ENAC), Toulouse, France
Drama and Performance Approaches to Human-Computer Interaction Research

18/06 Institut de Recherche en Informatique de Toulouse (IRIT), Toulouse, France
Drama and Performance Approaches to Human-Computer Interaction Research

16/06 LAAS-CNRS, Toulouse, France
Drama and Performance Approaches to Human-Computer Interaction Research

14/06 Saarland University, Saarbrücken, Germany

Drama and Performance Approaches to Human-Computer Interaction Research

2022

29/08 University of Oldenburg, Oldenburg, Germany
The Virtual Rehearsal Suite: Using V.R. to Support Live Performance Practice

22/08 University of Primorska, Koper, Slovenia
The Virtual Rehearsal Suite: Using V.R. to Support Live Performance Practice

Research Experience and Affiliations

Prof. Ryo Suzuki November 2022 - Present
Programmable Reality Lab - University of Colorado, ATLAS Institute, Department of Computer Science, Boulder, CO, USA

Prof. Jessica Cauchard March 2022 - Present
TU Wien Informatics - Vienna, Austria
MagicLab - Ben Gurion University of the Negev, Department of Industrial Engineering and Management, Be'er Sheva, Israel
Mitacs Globalink Intern

Dr. Jack Jamieson March 2022 – Present
NTT, Keihanna, Japan

Co-interim supervisor for Digital Safe Spaces master's student research project
Prof. Helen Ai He November 2021 – Present
C3 Lab - University of Calgary, Department of Computer Science
Mentor: Master's Student research project

Interactions Lab (iLab) January 2020 - Present
University of Calgary, AB, Canada
Research Associate

Prof. April Vizcko September 2017 - Present
Department Chair – Department of Drama, University of Alberta, Edmonton, AB, Canada

Prof. Christine Brubaker September 2017 - Present
School of Creative and Performing Arts, University of Calgary, AB, Canada

Honours and Awards

Computational Media Design Graduate Assistant Teaching Award 2022/2023
University of Calgary, DATA 201 – Thinking with Data
Recognition of outstanding achievement as a Teaching Assistant within both the Department of Computational Media Design and the School of Creative and Performing Arts
Teaching Assistant for an introductory data visualization course for non-majors. I was responsible for teaching and grading assignments for four classes weekly, each containing approximately 40 students.

Alberta Graduate Excellence Scholarship ($ 10, 000) 2022/2023
Supported Virtual Rehearsal Suite research and development collaborations between Canadian performance artists and HCI researchers.

Mitacs Globalink Research Award ($ 6 000) 2022/2023
International Research Associate w/ prof. Jessica Cauchard (Magiclab)
The Mitacs Globalink Research Award (GRA) research collaboration between the University of Calgary (Calgary, AB) and Ben Gurion University of the Negev (Be'er Sheva, Israel). Six months of investigating the deployment and potential use

cases of drones and UAVs in live performance scenarios.

Computational Media Design Teaching Assistantship Award 2021/2022
University of Calgary, DRAM 215 – Introduction to Story
Recognition of outstanding achievement as a Teaching Assistant within both the Department of Computational Media Design and the School of Creative and Performing Arts
Teaching Assistant for an introductory story and narrative course for non-majors. I was responsible for course dissemination on D2L, grading assignments, and designing two lectures on Digital/New Media Literacy and The narrative art of Professional Wrestling for approx. 40 students.

Alberta Graduate Excellence Scholarship ($ 15 000) 2021/2022
Recognized for outstanding academic achievement in the first year of my Ph.D.

Transformative Talent Internship ($ 6, 000) Spring 2018
The Shaw Theatre Festival, Niagara on the Lake, ON
Four-month professional development internship as Assistant Director on a live theatre production of Lewis Carroll's A Horse and His Boy with director Christine Brubaker.

Leigh Lee Browne Theatre Outstanding Achievement in Drama 2013/2014
University of Toronto Scarborough Campus

ACT-CO Best Leading Male: Drama 2012/2013

Student Supervision

Master's Students Co-Advised

Huann Jun May 2024 - Present
"Social Robot Group Performance and Behaviour"
Prof. Aditya Shekhar Nittala (UCalgary)
Prof. Ehud Sharlin (UCalgary)

Yichen Yen May 2024 - Present
"Social Robot Group Performance and Behaviour"
Prof. Aditya Shekhar Nittala (UCalgary)
Prof. Ehud Sharlin (UCalgary)

Matthew Newton August 2024 – Current
"Social Robot Group Performance and Behaviour"
Prof. Aditya Shekhar Nittala (UCalgary)
Prof. Ehud Sharlin (UCalgary)

Mathilda Collins January 2022 – January 2024
"Controllable Qualities of Digital Safe Spaces"
Prof. Helen Ai He (UCalgary)

Undergraduate Students Co-Advised

Phillipa Madill May 2024 – Current
"Social Robot Group Performance and Behaviour"
Co-Advised with Drs. Aditya Shekhar Nittala (UCalgary) and Ehud Sharlin (UCalgary)

Matthew Newton May 2024 – August 2024
"Social Robot Group Performance and Behaviour"

Co-Advised with Drs. Aditya Shekhar Nittala (UCalgary) and Ehud Sharlin (UCalgary)

Lior Somin January 2020 – December 2021
"BreachMob: Detecting Vulnerabilities in Physical Environments Using Virtual Reality"
Co-Advised with Drs. Ehud Sharlin (UCalgary) and Patrick Finn (UCalgary)

Noor Hammad April 2020 – August 2020
"Homecoming: Exploring Returns to Long-Term Single Player Games"
Co-Advised with Drs. Ehud Sharlin (UCalgary), PatrickFinn (UCalgary), and Sowmya Somanath (University of Victoria)

Teaching Experience – Lecturer

CS 449/649: Human Computer Interaction September 2025 – December 2025
David R. Cheriton School of Computer Science, University of Waterloo, ON, Canada
An introduction to the fundamental theories, methods, and research in the design and evaluation of novel computational artefacts designed to meet real-world human needs. The end result of the project is a high fidelity interactive prototype of an application, targeted at solving a particular real-world problem.
Specifically, students will learn to:

- Identify the primary luminaries relevant to Interactive Design and HCI
- Identify your target users, design studies to understand your users and their needs within a sociocultural context
- Create user data driven designs and prototypes of different levels of fidelity
- Design studies to evaluate design during different stages of development
- Properly gather and analyze qualitative and quantitative data from exploratory user studies including data from: in-situ observations, semi-structured interviews, paper prototype evaluation, heuristic evaluations and cognitive walkthrough.
- Discover the range of HCI research methodologies
- Add a high quality design of an interesting product to your portfolio

DRAM 209: Introduction to Acting I June 2018 - December 2018
School of Creative and Performing Art: Drama, University of Calgary, AB, Canada
Taught Introduction to Acting for two semesters, an undergraduate course averaging 30 major and non-major students per semester.
Covered the following topics: stage positioning, script analysis and development, Liz Lerman's Critical Response Process, introductory overview of contemporary acting techniques, including Stanislavski, Chekhov, Hagen, Meisner and Adler
Developed weekly studio-based explorations of contemporary acting techniques
Revised the syllabus to meet accreditation standards

Teaching Experience – TA

Department of Computer Science, University of Calgary, Calgary, AB
DATA 201: Thinking with Data 2022 - 2022
Led tutorials for 80 non-major Data Science and Computer Science students
Facilitated questions and assignments
Graded Assignments

School of Creative and Performing Arts, University of Calgary, Calgary AB 2017 - 2022
DRAM 205: Story (Lecture)
Lecture Taught: Professional Wrestling and Modern Mythology
DRAM 223A: Introduction to Technical Theatre (Studio)
DRAM 212: Introduction to Directing II (Studio)
Lecture Taught: Approaches to Genre
Lecture Taught: The Director's Vision, communicating with creative collaborators
DRAM 211: Introduction to Directing (Studio)

Lecture Taught: Developing a concept and pitching a play
DRAM 242: Introduction to Theatre (Lecture)
Lecture Taught: Angels in America to The Laramie Project Social Justice Theatre of the late 20th Century
Lecture Taught: Quem quaeritis?: Everyman and Medieval Morality Plays.

Academic Service

Peer-Reviewed Articles for:

The Association for Computing Machinery (ACM) Conference on Human Factors in Computing Systems (CHI)	2024
The ACM International Conference on Interactive Media Experiences (IMX)	2024
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)	2024
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)	2023
The ACM Conference on Human Factors in Computing Systems (ACM CHI) – Late Breaking Work	2023
The ACM Conference on Human Factors in Computing Systems (ALT.CHI)	2023
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)	2022

The University of Calgary RUN CMD 2023 Event Coordinator
Kananaskis, Alberta, Canada April 2023
Planned, scheduled and coordinated guest speakers for an academic and professional development retreat for graduate students of the University of Calgary's Computational Media Design program. The event included eight guest speakers over three days and student-driven developmental workshops designed to support students academically and socially within the department and their given degree program.
The Art of Privacy (Interaction Design and Performance Consultant)

OFFIS Institute, Oldenburg, Germany September 2022 - March 2023
Primary Researcher: Frederike Jung

Senior Project Adjudicator January 2023, June 2022
Ben Gurion University of the Negev, Israel and The University of Primorska
Acted as an adjudicator, giving feedback on undergraduate thesis projects presented by students collaborating internationally.

Professional Training

Intimacy Direction for Film and Stage November 2018
Intimacy Directors International, Banff Centre for the Arts, AB
Actor Combatant Summer 2018
Knight Fights/Fight Directors Canada,
Lucha Libre (Mexican Wrestling Training) Spring 2014
Playa Del Carmen, México
Professional Wrestling Training 2008 -2009
Figure 4 University, Bradford, ON

Community Engagement

King City Library Fall 2021
Virtual Reality Technology Consultant, King City, ON
Worked with King City Library employees to develop an infrastructure to support and integrate V.R. technology into the existing maker space. Consulted on purchasing V.R. headsets, applications and potential programming for widespread public use and accessibility.

William D. Pratt Middle School Fall 2018
Performance Coach, Calgary, AB

Collaborated with drama teachers and Indigenous community members to provide performance coaching to middle school students for the performance of Ksitstsikoom.

Derailed: Beyond 3:30 October 2014 - June 2015
Drama Instructor/Performance Coordinator, Toronto District School Board
Provided basic drama training, performance experience and a safe place for students to learn after regular school hours. Created lesson plans, coordinated with instructors running consecutive programs and taught groups of five to fifteen kids per lesson. The program culminated with a student-created performance at Theatre Passe-Muraille (Toronto, ON).

Directing Credits

Director

2019	Machinal	The University of Calgary	Calgary, AB
2018	#UNI	The University of Calgary	Calgary, AB
2018	Paul is Not a Penguin	WagonStage	Calgary, AB
2018	Trafford Tanzi	SCPA Alchemy Festival	Calgary, AB
2016	#TheDonnelyProject2016	Tarragon Theatre/ Scarborough Arts/TDSB	Toronto, ON
2016	Sucker	Leigh Lee Browne Theatre	Toronto, ON
2014	She Kills Monsters	Red Sandcastle	Toronto, ON
2013	Kiss Me Outside The Box	Leigh Lee Browne Theatre	Toronto, ON
2012	Closer	Leigh Lee Browne Theatre	Toronto, ON
2009	Seven Stories	Flato Markham Theatre	Markham, ON

Assistant Director

2019	The Horse and His Boy	SHAW Theatre Festival	Dir Christine Brubaker
2018	antigone lives!*	University of Calgary	Dir Christine Brubaker
2018	Eugene Onegin	Calgary Opera Company	Dir Tom Diamond
2016	Perfect Wedding	Stephenville Theatre Fest	Dir Thom Curry
2016	Dirty Rotten Scoundrels	Stephenville Theatre Fest	Dir Thom Curry
2014	The Crucible	Leigh Lee Browne Theatre	Dir Paula Sperdakos
2013	The Women of Troy	Leigh Lee Browne Theatre	Dir Paula Sperdakos

Performance Credits

Virtual Reality

2020	Secretary	PARA: Immersive	TenderClaws

VR Experience

Theatre

2018	Polynices	antigone lives!*	Dir Christine Brubaker
2017	Lamberto Laudisi	Absolutely! Perhaps?	Dir Paula Sperdakos
2017	E.D.	Inked Heart	Alumnae Theatre
2016	Clark/Prosecutor	The Resistible Rise Of Arturo UI	Dir Barry Freeman
2015	John Proctor	The Crucible	Dir Paula Sperdakos

Film & Television Credits

2020	Ghost (Biker) Joe	Haunted Hospitals	Ep. 304	Robin Bicknell
2020	Sam Laskowski	Unexpected Killer	Ep. 206	OHM Productions Inc.
2016	Dr. Dee	Sandman: 24 Hour Diner (Film)		Dog Catching Frisbee Films