Junhyeok Kim

PhD Candidate, **David R. Cheriton School of Computer Science**
University of Waterloo
Games Institute, Touch lab

Contact: +1-204-807-0703
junhyeok.kim@uwaterloo.ca
Citizenship: Permanent Resident of Canada
https://orcid.org/0000-0002-1384-032X

Education

PhD, Computer Science, University of Waterloo, *2019–Present(Expected Completion: February 2026)*
the Games Institute, Computer Science
Supervisor: Dr. Mark Hancock

M.Sc. Computer Science, University of Manitoba, *2016–2018*
Human-Computer Interaction Lab, Computer Science
Supervisor: Dr. Pourang Irani

B.C.Sc. (Honours), University of Manitoba, *2013–2015*
Computer Science

General Electives, International College of Manitoba, *2012–2013*
University Transfer Program

B.A., Korea University, *2010–2012*
English Language and Literature, Double Major in History
voluntarily withdrawn in second year of the degree program

Research Focus

My research in Human-Computer Interaction (HCI) and Spatial Computing bridges the gap between vast virtual environments and limited physical reach. I design embodied interaction techniques—such as the VR-Tangible-WiM framework—that leverage haptic feedback and scale-based metaphors. My goal is to enable users to manipulate complex, large-scale digital data with the precision and intuition of physical tools.

Areas of Expertise

- Mixed Reality (MR) Interaction: Core expertise in the VR-Tangible-WiM Paradigm (Virtual Reality, Tangible Interfaces, World-in-Miniature).
- Haptic Design: Implementation and evaluation of haptic retargeting and redirection techniques for enhanced realism and precision.
- Experimental Design: Expertise in designing and conducting rigorous user studies and quantitative evaluation of novel interaction techniques.

Research Appointments

Doctoral Researcher, University of Waterloo
2019–present
Supervisor: Dr. Mark Hancock

- Pioneered a novel research agenda at the intersection of Haptics, Virtual Reality, and World-in-Miniature Interfaces, resulting in a high-quality paper [C8]
- Contributed to high-impact research on Fostering Flow in Open Offices through Virtual Reality, published at CHI '20 [C7]

Graduate Research Assistant, University of Manitoba
2016–2018
Supervisor: Dr. Pourang Irani

- Led and executed a high-quality research project on wearable text-entry (e.g., ThumbText), published as corresponding author in [W2, W1, C3]
- Contributed in various research projects and Co-authored papers [C6, C5, C4]

Undergraduate Research Assistant, University of Manitoba
2014-2016
Supervisor: Dr. Pourang Irani, Khalad Hasan

- Investigated mid-air thumb reachable space above mobile devices and designed interactive prototypes using a marker-based tracking system. The research contribution led directly to co-authored papers [C2, C1] in high-value HCI venues (CHI, SUI)
- Conducted individual research course project: *flying display*

Publications

Total Citation : 199 | H-index : 5 | awards : 1 as of 2026-01-16 (Google Scholar)

Conference Proceedings(refereed)

[C8] **Junhyeok Kim** and Mark Hancock. "Investigating Digital, Tangible, and Paper-Based Room Design at a Small Scale". In: *Proceedings of the 51st Graphics Interface Conference*. GI '25. Okanagan, BC, Canada: Canadian Human-Computer Communications Society, 2025.

[C7] Anastasia Ruvimova, **Junhyeok Kim**, Thomas Fritz, Mark Hancock, and David Shepherd. ""Transport Me Away": Fostering Flow in Open Offices through Virtual Reality". In: *Proceedings of CHI Conference on Human Factors in Computing Systems Proceedings*. CHI 2020. Honolulu, Hawai'i, USA: ACM, 2020.

[C6] William Delamare, **Junhyeok Kim**, Pourang Irani, and Xiangshi Ren. "Interacting with Autostereograms". In: *Proceedings of International Conference on Human-Computer Interaction with Mobile Devices and Services*. MobileHCI'19. Taipei, Taiwan: ACM, 2019.

[C5] Teng Han, Jie Liu, Khalad Hasan, Mingming Fan, **Junhyeok Kim**, Jiannan Li, Xiangmin Fan, Feng Tian, Edward Lank, and Pourang Irani. "PinchList: Leveraging Pinch Gestures for Hierarchical List Navigation on Smartphones". In: *Proceedings of CHI Conference on Human Factors in Computing Systems Proceedings*. CHI 2019. Glasgow, UK: ACM, 2019.

[C4] Zuoyi Zhang, **Junhyeok Kim**, Yumiko Sakamoto, Teng Han, and Pourang Irani. "Applying a Pneumatic Interface to Intervene with Rapid Eating Behaviour". In: *International conference addressing Information Technology and Communications in Health (ITCH)*. ITCH 2019. Victoria, British Columbia, Canada, 2019.

[C3] **Junhyeok Kim**, William Delamare, and Pourang Irani. "ThumbText: Text-Entry for Wearable Devices using a Miniature Ring". In: *Proceedings of the 44th Graphics Interface Conference*. GI '18. Best Paper Award. Toronto, Ontario, Canada: Canadian Human-Computer Communications Society, 2018.

[C2] Khalad Hasan, David Ahlström, **Junhyeok Kim**, and Pourang Irani. "AirPanes: Two-Handed Around-Device Interaction for Pane Switching on Smartphones". In: *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. CHI '17. Denver, Colorado, USA: ACM, 2017, pp. 679–691.

[C1] Khalad Hasan, **Junhyeok Kim**, David Ahlström, and Pourang Irani. "Thumbs-Up: 3D Spatial Thumb-Reachable Space for One-Handed Thumb Interaction on Smartphones". In: *Proceedings of the 2016 Symposium on Spatial User Interaction*. SUI '16. Tokyo, Japan: ACM, 2016, pp. 103–106.

Workshops(refereed)

[W2] **Junhyeok Kim**, William Delamare, Yumiko Sakamoto, Tony Havelka, and Pourang Irani. *Challenges Identified During Early Prototyping of a Ubiquitous Text-Entry System*. Denver, Colorado, USA, 2017.

[W1] **Junhyeok Kim**, William Delamare, Yumiko Sakamoto, Tony Havelka, and Pourang Irani. *Toward a Pool of Text-Entry Input Techniques*. Denver, Colorado, USA, 2017.

Publications: Under Preparation

[U2] **Junhyeok Kim** and Mark Hancock. "Designing World-in-Miniature System in VR". Manuscript in preparation.

[U1] **Junhyeok Kim** and Mark Hancock. "Scale Perception in VR". Manuscript in preparation.

Teaching Experience

Course Instructor

Computing: Ideas and Innovation (COMP1500)
University of Manitoba, *2018 Summer*
~80 students. Responsible for lecture delivery, assignments, grading scheme, and all grading supervision, and course website and material maintenance.

Introductory Computer Science 2 (COMP1020)
University of Manitoba, *2017 Summer*
~85 students. Responsible for lecture delivery, assignments, grading scheme, and all grading supervision, and course website and material maintenance.

Introduction to Computer Usage 1 (COMP1260)
University of Manitoba, *2017 Winter*
~130 students. Responsible for lecture delivery, assignments, grading scheme, and all grading supervision, and course website and material maintenance.

Lab Instructor

Elementary Algorithm Design and Data Abstraction (CS136)
University of Waterloo, *2020 Winter*
weekly lab sessions for ~25 students. Responsible for lab material delivery, small quizzes, and assistance to the course head for grading.

Introduction to Computer Science 1 (COMP1010)
University of Manitoba, *2018 Winter, 2017 Winter*
weekly lab sessions for ~30 students. Responsible for lab material delivery, code submission grading, and assistance to the course instructor.

Teaching Assistant

I have held various teaching assistant duties throughout my educational journey, including reviewing syllabi, developing course materials, grading/proctoring assignments and exams, and directing and leading other teaching assistants.

Awards, Honours

NSERC PGS-D Institutional Nomination
Postgraduate Scholarships - PGS D, NSERC (*2020*)
Proposal for AR/VR Research on Novice Empowerment (Title: *Empowering Novice with Augmented and Virtual Reality*) selected as one of the top submissions and nominated for the national competition.

Best Paper Award (Lead Author)
Graphics Interface '18 (*2018*)
Awarded for: *ThumbText: Text-Entry for Wearable Devices using a Miniature Ring* [C3]

Conference Travel Grant
University of Manitoba (*2018*)

Conference Travel Grant
University of Manitoba (*2017*)

International Graduate Student Scholarship
University of Manitoba (*2017*)

International Graduate Student Entrance Scholarship
University of Manitoba (*2016*)

Talks

Investigating Digital, Tangible, and Paper-Based Room Design at a Small Scale [C8],
GI '25, Kelowna, British Columbia, Canada

ThumbText: Text Entry for Wearable Devices Using a Miniature Ring [C3],
GI '18, Toronto, Ontario, Canada

Challenges Identified During Early Prototyping of a Ubiquitous Text-Entry System [W2], *Ubiquitous Text-Entry workshop*
CHI '17, Denver, Colorado, USA