

Hyeok Kim

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Research Interests

- Human-computer interaction
 - Data visualization, narrative visualization, multi-context visualization design—when a visualization is produced for multiple user contexts
 - Automation and formalization for data visualization tools and systems
 - Interfaces for quantum computing
 - Design research for societal problems
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Employment

Postdoctoral Scholar, University of Washington (Sep. 2024–Current)

PI: Jeffrey Heer

Research Assistant, Northwestern University (Sep. 2019–June 2024)

PI: Jessica Hullman

Project: *Sonifying Distributional Information*

Project: *Responsive Visualization Authoring System*

Project: *Visualization Message Loss*

Research Intern, Tableau, a Salesforce company (May–Aug. 2022)

Mentor: Matthew Brehmer

Collaborator: Arjun Srinivasan

Manager: Vidya Setlur

Project: *Visualization retargeting* (broad description)

Research Intern, Adobe Research (June–Sep. 2021)

Mentor: Jane Hoffswell

Collaborators: Ryan Rossi, Fan Du, Shunan Guo

Manager: Eunyee Koh

Project: *A declarative grammar for responsive visualization and applications*

Research Assistant, Seoul National University (Dec. 2016–Aug. 2019)

PI: Joonhwan Lee

Education

Ph.D. in Computer Science (Sep. 2019–June 2024)

McCormick School of Engineering, Northwestern University, Evanston, IL, US

Advisor: Jessica Hullman

Committee: Jessica Hullman (chair), Matthew Kay, Michael Horn, and Jane Hoffswell.

Master of Arts in Communication (Sep. 2016–Feb. 2019)

College of Social Science, Seoul National University, Seoul, South Korea

Advisor: Joonhwan Lee

Bachelor of Arts in Linguistics, Cum Laude (Mar. 2010–Aug. 2016)

College of Humanities, Seoul National University, Seoul, South Korea

Student-Designed Minor in Computational and Statistical Linguistics

Honors and Awards

Postdoc Research Award

Paul G. Allen School of Computer Science & Engineering, University of Washington, Nov. 2024

Research grant (\$10,000)

PhD Student Research Award

Department of Computer Science, Northwestern University, May 2024

Annual award for the outstanding PhD student of the year

Grand Award, The 5th Human Rights Research Projects Contest

Seoul National University Human Rights Center, Oct. 2017

Research topic: Design Implications for Sexual Harassment Prevention System in Online Game

Honorable Mention, Undergraduate Independent Study Program

Faculty of Liberal Education, Seoul National University, Jan. 2017

Research topic: Evaluating Informativeness of Korean-Language Comments on Webtoon [Online Comics]

Thesis

Hyeok Kim. 2024. *Interactive Systems for Data Visualization on Multiple User Contexts*. PhD Thesis from Northwestern University. Committee: Jessica Hullman (chair), Matthew Kay, Michael Horn, and Jane Hoffswell.

Publications

Refereed Conference & Journal Papers

Hyeok Kim, & Jeffrey Heer, 2025. Data Augmentation for Visualization Design Knowledge Base. IEEE TVCG (VIS 2025). <https://10.1109/TVCG.2025.3634811>. [Preprint](#). Acceptance rate: 24.4%.

Hyeok Kim, Mingyoung Jeng, & Kaitlin N. Smith, 2025. Toward Human-Quantum Computer Interaction: Interface Techniques for Usable Quantum Computing. ACM CHI 2025. <https://doi.org/10.1145/3706598.3713370>. [Preprint](#). Acceptance rate: 25.1%

Hyeok Kim, Arjun Srinivasan, & Matthew Brehmer. 2024. Bringing Data into the Conversation: Adapting Content from Business Intelligence Dashboards for Threaded Collaboration Platforms. IEEE VIS 2024–Short paper. <https://10.1109/VIS55277.2024.00024>. [Preprint](#). Acceptance rate: 31.9%

Priyanka Nanayakkara, **Hyeok Kim,** Yifan Wu, Ali Sarvghard, Narges Mahyar, Gerome Miklau, & Jessica Hullman. 2023. *Measure-Observe-Remeasure: An Interactive Paradigm for Differentially-Private Exploratory Analysis*. IEEE S&P 2024. <https://doi.org/10.1109/SP54263.2024.00213>. [Preprint](#). Acceptance rate: 17.8%

Hyeok Kim, Yea-Seul Kim, Jessica Hullman. 2024. *Erie: A Declarative Grammar for Data Sonification*. ACM CHI 2024. <https://doi.org/10.1145/3613904.3642442>. [Preprint](#). [Interactive paper](#). Acceptance Rate: 26.3%

Taewook Kim, **Hyeok Kim,** Angela C. Roberts, Maia Jacobs, & Matthew Kay. 2024. *Design Opportunities in Mental Health Support for Informal Caregivers Suffering from Verbal Agitation of People with Dementia*. ACM CSCW 2024. <https://doi.org/10.1145/3637381>. [Preprint](#).

Hyeok Kim, Ryan Rossi, Jessica Hullman, & Jane Hoffswell. 2023. *Dupo: A Mixed-Initiative Authoring Tool for Responsive Visualization*. IEEE TVCG (VIS 2023). <https://doi.org/10.1109/TVCG.2023.3326583>. [Preprint](#). Acceptance Rate: 24.7%

Hyeok Kim, Ryan Rossi, Fan Du, Eunye Koh, Shunan Guo, Jessica Hullman, & Jane Hoffswell. 2022. *Cicero: A Declarative Grammar for Responsive Visualization*. ACM CHI 2022. <https://doi.org/10.1145/3491102.3517455>. [Preprint](#). Acceptance Rate: 24.7%

Hyeok Kim, Youjin Hwang, Jieun Lee, Youngjin Kwon, Yujin Park, & Joonhwan Lee. 2022. *Personalization Trade-offs in Designing a Dialogue-based Information System for Support-Seeking of Sexual Violence Survivors*. ACM CHI 2022. <https://doi.org/10.1145/3491102.3517484>. [Preprint](#). Acceptance Rate: 24.7%

Hyeok Kim, Ryan Rossi, Abhraneel Sarma, Dominik Moritz, & Jessica Hullman. 2021. *An Automated Approach to Reasoning About Task-Oriented Insights in Responsive Visualization*. IEEE TVCG (VIS 2021). <https://doi.org/10.1109/TVCG.2021.3114782>. [Preprint](#). Acceptance Rate: 25.8%

Hyeok Kim, Dominik Moritz, & Jessica Hullman. 2021. *Design patterns and trade-offs in responsive visualization for communication*. Computer Graphics Forum, 40 (3) (EUROVIS 2021). <https://doi.org/10.1111/cgf.14321>. [Preprint](#). Acceptance Rate: 26.0%

Sukyoung Choi, Dmitri Williams, & **Hyeok Kim**. 2020. *A snap of your true self: How self-presentation and temporal affordance influence self-concept on social media*. New Media & Society. <https://doi.org/10.1177/1461444820977199>. [Preprint](#).

Posters

Hyeok Kim. 2024. *Calling for Research on Reference Methods for Data Sonification*. AccessViz Workshop at IEEE VIS 2024. Position paper.

Hyeok Kim & Kaitlin N. Smith. 2024. *Interaction Techniques for User-friendly Interfaces for Gate-based Quantum Computing*. IEEE QCE 2024 Poster track. [Preprint](#).

Kiroong Choe, Seokhyeon Park, Seokweon Jung, **Hyeok Kim**, Jiwon Yang, Hwajung Hong, & Jinwook Seo. 2024. *Supporting Novice Researchers to Write Literature Review using Language Models*. ACM CHI 2024 Late-Breaking Work. <https://doi.org/10.1145/3613905.3650787>.

Hyeok Kim, Haesoo Kim, Youngjin Kwon, Hansol Jang, Soomin Lee, & Joonhwan Lee. 2019. *The Implementation of MiRO, a Media-as-Place Computer Game*. ACM DIS 2019 Work-in-Progress (pp. 219-223). <https://doi.org/10.1145/3301019.3323881>. [Preprint](#).

Wookjae Maeng, **Hyeok Kim**, Junhee Woo, Youngjin Huh, Seo-young Lee, Jeewon Choi, Sangwook Lee, Jinsu Eun, Kungjin Lee, & Joonhwan Lee. 2018. *Implications for the Design of Sexual Harassment Prevention System for Online Games*. In Proceedings of HCI Korea (HCIK) 2018. [Preprint](#) (Korean).

Software

Erie (2023). A declarative grammar for data sonification ([repo](#), [npm](#), [documentation](#), [editor](#))

Dupo (2023). A mixed-initiative authoring tool for responsive visualization ([tool](#))

Patoka (2025). Jupyter Notebook widgets for usable quantum computing with Qiskit ([package](#))

MiRO (2019). A media-in-place game ([game](#))

Patent

Issued

Hyeok Kim, Jane Hoffswell, Ryan Rossi, Fan Du, Eunye Koh, Shunan Guo. (2025). RECOMMENDER FOR RESPONSIVE VISUALIZATION TRANSFORMATIONS. (Issued. Publication Number: US 12,393,616 B2. [Link to the document](#)).

Granted

Hyeok Kim, Matthew Brehmer. (2024). RETARGETING DASHBOARD CONTENT AS INTERACTIVE DATA SNAPSHOTS FOR COLLABORATION PLATFORMS (Publication Number: US-2024/0078001-A1. Application Number: 18/240,322. [Link to the document](#)).

Hyeok Kim, Matthew Brehmer. (2024). INFRASTRUCTURE FOR RETARGETING DASHBOARD CONTENT AS INTERACTIVE DATA SNAPSHOTS (Publication Number: US-2024/0078728-A1. Application Number: 18/240,340. [Link to the document](#)).

Hyeok Kim, Matthew Brehmer. (2024). USER INTERFACE FOR MANAGING RETARGETING OF DASHBOARD CONTENT (Publication Number: US-2024/0077989-A1. Application Number: 18/240,342. [Link to the document](#)).

Invited Talks and Panels

Roles of Human-Computer Interaction for Quantum Computing
Purdue Quantum AI Conference, Oct. 2025

Interactive Systems for Reasoning and Discovery over Complex Decision Spaces

Computer Science, Yonsei University, Aug. 2025

Seamlessly Supporting Multi-context Data Visualization

Computer Science, Washington University, Mar. 2025

Computer Science, Seoul National University, Dec. 2024

School of Interactive Arts and Technology, Simon Fraser University, Nov. 2024

Adobe Research, Jan 2024

Showing Your Data with Sound Using Erie

Outlier conference, June 2024

Toward a Framework for Multi-context Data Visualization

Doctoral Colloquium at IEEE VIS 2023 (Melbourne, Australia)

Declarative Grammar for Data Sonification

Student Research Seminar Series

Northwestern University, Oct. 2023

Panels for First-year CS Ph.D. Students

Guest panels for 'Introduction to Graduate Studies in Computer Science' course (CS401)

Class Instructor: Prof. Jessica Hullman and Prof./Chair Smair Khuller

Northwestern University, Oct. 2022

Quantifying Visualization Message for Automated Responsive Visualization Recommendation

Talk at the Second Adobe Research and Northwestern Computer Science Collaborative Workshop

Northwestern University, Feb. 2021

Research Panel for Incoming CS Ph.D. Students, Department of Computer Science

Top Ph.D. students were invited as panelists by the department.

Northwestern University, Sep. 2020; Sep. 2022; Sep. 2023

How to Present Data Visualization Articles on Mobile Devices

Presentation at Annual Joint-Symposium of SNU-UT-NCCU, Nov. 2018

Venue: National Chengchi University, Taipei, Taiwan

Design Implications for an In-game Sexual Harassment Prevention System

Presentation at Annual Joint-Symposium of SNU-UT, Nov. 2018

Venue: University of Tokyo, Tokyo, Japan

Scholarships and Fellowships

DiviQ Travel Grant

Diversity in Quantum. Apr 2025.

Research Fellowship from Adobe

Fall 2020 and Spring 2021 (Appx. \$27,000)

Media Fellowship

Seoul National University, (Appx. \$2,600—stipend), Sep. 2018–Feb. 2019

Lecture & Research Scholarship

Seoul National University, (Appx. \$15,000—full tuition and stipend), Jan. 2017–Aug. 2018

Synyang Scholarship

Synyang Cultural Foundation, (Appx. \$4,400—full tuition for a year), 2014

Superior Academic Performance

Seoul National University, (Appx. \$500—20% of tuition for a semester), Mar. 2010

Service

- Program Committee, IEEE VIS Full Paper (2025)
- Reviewer, IEEE VIS (2021, 2023, 2024), ACM FAccT (2023), ACM CHI (2022*, 2023*, 2024, 2025), ACM CSCW (2024) IEEE TVCG, IEEE CG&A, IEEE PacificVis (2023), ACM DIS (2025)
- Session Chair, ACM CHI (2024)
- Ph.D. admissions review committee (2024-2025 cycle), Computer Science & Engineering, University of Washington

*3 Special Recognition for Outstanding Reviews from ACM CHI

Teaching Experience

Teaching Assistant

- *Introduction to Graduate Studies in Computer Science*, Northwestern University, Fall 2023
- *Interactive Information Visualization*, Northwestern University, Winter, 2021
- *Data Journalism*, Seoul National University, Fall, 2018

- *Journalism Field Practice*, Seoul National University, Fall, 2018
- *Media Field Practice*, Seoul National University, Fall, 2018
- *HCI Theory and Practice*, Seoul National University, Spring, 2018
- *Seminar in Communication Research Methods: Computational Communication Science*, Seoul National University, Spring, 2017

Mentoring

- Akshita Amarnath, Trina Dao, Lam Pham
(Undergraduate students at University of Washington, 2025-present)
- Taewook Kim (PhD student at Northwestern University, 2022–2023)
- Kiroong Choe, Seokweon Jung, Seokhyeon Park (PhD students at Seoul National University, 2022–2023)

Guest Lectures and Tutorials

Responsive Visualization

Course: Introduction to Visual Analytics (undergraduate-level)

Class Instructor: Prof. Alireza Karduni

Simon Fraser University, Nov. 2024

Ph.D. Research Overview and Creating Research Presentations

Course: Introduction to Graduate Studies in Computer Science (graduate-level)

Class Instructor: Prof. Jessica Hullman

Northwestern University, Sep., Oct. 2023

Trade-offs in Designing Responsive Visualization

Course: Data Analytics and Visualization (graduate-level)

Class Instructor: Prof. Hwajung Hong

Seoul National University, Nov. 2020

Mobile Data Visualization Paper-Prototyping

Workshop at HCI Korea 2019, Jan. 2019

A Paper-Prototyping Workshop for Responsive Visualization

Course: Design Thinking and Communication (undergraduate-level)

Class Instructor: Prof. Hwajung Hong

Seoul National University, Oct. 2018

Leadership and Volunteer Experiences

SNU Mentoring Supervisor

Seoul National University Institute for Global Social Responsibility, 2016–2019
Supervised online mentors for local secondary school students

SNU Mentoring Mentor

Seoul National University Institute for Global Social Responsibility, Sep. 2012–Dec. 2015
Consulted local secondary school students about life management and school activities via online.

Overseas Volunteering Program Student Supervisor

Seoul National University Institute for Global Social Responsibility, Oct. 2014–Jan. 2015, May–Aug. 2015

Location: Nam Din, Vietnam

Organized and supervised the general programs.
Conducted field research with local coordinators.

Overseas Volunteering Program

Seoul National University Institute for Global Social Responsibility, May–Aug. 2014

Location: Nam Din, Vietnam

Implemented entertainment and hygiene education programs for children.
Assisted medical services for older adults.

Media

"A Snapshot View of IEEE VIS 2021"

ACM SIGGRAPH Blog (by Theresa-Marie Rhyne and Georges Hattab), Nov 20, 2021.

Available on <https://blog.siggraph.org/2021/11/a-snapshot-view-of-ieee-vis-2021.html/>

"How can we tell when a responsive visualization retains the message of a source view?"

Multiple Views (blog post), Sep. 23, 2021.

Available on

<https://medium.com/multiple-views-visualization-research-explained/how-can-we-tell-when-a-responsive-visualization-retains-the-message-of-a-source-view-fc30e70449dd>.

"It Takes 44 Minutes in Korea, 33 Minutes in Japan, and 24 Minutes in Singapore to Buy a BigMac with Minimum Wage"

Dong-A Daily (National Newspaper), Mar. 11, 2015.

Describes "How Much is My Labor?" project.

Available on <http://news.donga.com/3/all/20150311/70055360/1>

Technical Skills

I am skilled at designing and implementing Web-based user interfaces with data visualizations.

- Programming languages: JavaScript (Node.js) and Python
 - Web spec preferences: Svelte, FastAPI
 - Developer tools: AWS (EC2, Route53, S3, EB), Git, and VS Code
 - Quantum computing: Qiskit
 - Database: DynamoDB and PostgreSQL
 - Visualization and statistics tools: D3.js, Tableau, Vega, and R
 - Creativity tools: Adobe Photoshop, Illustrator, InDesign, Audition, Premiere (Pro/Rush), and Figma
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Languages

- Native: Korean
- Fluent: English and Japanese

For a detailed CV, please contact via hyeokk@uw.edu