

## **Bridger Herman, Ph.D.**

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Hobart and William Smith Colleges  
Dept. of Mathematics and Computer Science  
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Geneva, NY 14456

## Education

<b>Ph.D., Computer Science</b> , Jan 2024 Advised by Dr. Daniel F. Keefe Thesis Title: <i>Physical Rendering Processes for More Graspable Extended Reality Data Visualizations</i>	University of Minnesota – Twin Cities Minneapolis, MN
<b>M.S., Computer Science</b> , May 2020	University of Minnesota – Twin Cities Minneapolis, MN
<b>B.S., Computer Science</b> , May 2018	University of Minnesota – Twin Cities Minneapolis, MN
<b>Study Abroad</b> , Mar – Jul 2017	University of Auckland Auckland, NZ

## Positions and Employment

<b>Visiting Assistant Professor</b> Sep 2025 – Present	Hobart and William Smith Colleges Geneva, NY
<b>Visiting Assistant Professor</b> Sep 2024 – Aug 2025	Carleton College Northfield, MN
<b>Visualization Scientist</b> May 2024 – Aug 2024	University of Minnesota – Twin Cities Minneapolis, MN
<b>Assistant Director for Systems and Software</b> May 2021 – Jan 2024	Interactive Visualization Lab University of Minnesota – Twin Cities Minneapolis, MN
<b>R&amp;D Engineer – Human Factors</b> May 2022 – Aug 2022	Abbott Laboratories, Inc., Cardiac Division Saint Paul, MN
<b>Software Development Intern</b> May 2018 – Aug 2018	Bitwise IO, Inc. Minneapolis, MN

## Honors and Awards

- 2024 IEEE VIS Best Paper Honorable Mention Award (Top 3% of Submissions)
- 2022 Finalist at SuperComputing '22 Scientific Visualization & Data Analytics Showcase
- 2020 IEEE VIS Best SciVis Poster Award

## Research Themes

- Data Physicalization
- Augmented, Mixed, and Virtual Reality User Interfaces
- Tangible and Embodied Interactions
- Scientific Visualization

## Publications

My role in each publication is described as follows:

- **[lead]** – leading author, in terms of technical, intellectual, and writing contributions
- **[mentor]** – mentored student(s) in technical, intellectual, and writing contributions
- **[collab]** – worked with lead author(s) and added significant technical, intellectual, and/or writing contributions

### Peer Reviewed Publications

- 2024 **B. Herman**, C. D. Jackson, and D. F. Keefe, "Touching the Ground: Evaluating the Effectiveness of Data Physicalizations for Spatial Data Analysis Tasks," *IEEE Transactions on Visualization and Computer Graphics*, pp. 1–11, 2024, doi: [10.1109/TVCG.2024.3456377](https://doi.org/10.1109/TVCG.2024.3456377).  
**\*\*Best Paper Honorable Mention**
- 2021 **B. Herman**, M. Omdal, S. Zeller, C. A. Richter, F. Samsel, G. Abram, and D. F. Keefe, "Multi-Touch Querying on Data Physicalizations in Immersive AR," *Proc. ACM Hum.-Comput. Interact.*, vol. 5, no. ISS, pp. 1–20, Nov. 2021, doi: [10.1145/3488542](https://doi.org/10.1145/3488542). **[lead]**
- 2020 **B. Herman**, F. Samsel, A. Bares, S. Johnson, G. Abram, and D. F. Keefe, "Printmaking, Puzzles, and Studio Closets: Using Artistic Metaphors to Reimagine the User Interface for Designing Immersive Visualizations," in *2020 IEEE VIS Arts Program (VISAP)*, Oct. 2020, pp. 19–28. doi: [10.1109/VISAP51628.2020.00009](https://doi.org/10.1109/VISAP51628.2020.00009). **[lead]**
- 2019 S. Johnson, F. Samsel, G. Abram, D. Olson, A. J. Solis, **B. Herman**, P. J. Wolfram, C. Lenglet, and D. F. Keefe, "Artifact-Based Rendering: Harnessing Natural and Traditional Visual Media for More Expressive and Engaging 3D Visualizations," *IEEE Trans. Visual. Comput. Graphics*, pp. 1–1, 2019, doi: [10.1109/TVCG.2019.2934260](https://doi.org/10.1109/TVCG.2019.2934260). **[collab]**

## Book Chapters

- 2022 D. F. Keefe, **B. Herman**, J. W. Nam, S. Johnson, and D. Orban, "Hybrid Data Constructs: Interacting with Biomedical Data in Augmented Spaces," in *Making Data: Materializing Digital Information*, 1st ed., Bloomsbury Publishing Plc, 2022, pp. 169–182. Accessed: Mar. 28, 2023. [Online]. Available: <http://dx.doi.org/10.5040/9781350133266.ch-011> **[collab]**

## Posters, Exhibitions, and Workshops

- 2025 (Poster) A. Bothra, S. Dorr, **B. Hermans** S. Weaver, J. Rock, D. F. Keefe, "Designing CanoeView: A Canoe-Based Interactive Learning Experience for Planetarium Classrooms" **[collab]**
- 2024 (Workshop Paper) **B. Herman**, J. Rossi-Mastracci, H. Willy, M. Reichert, and D. Keefe, "Rain Gauge: Exploring the Design and Sustainability of 3D Printed Clay Physicalizations," Aug. 30, 2024. Preprint Available: [10.31219/osf.io/3nyrq](https://osf.io/3nyrq). **[lead]**
- 2022 (Poster) M. L. Turner, **B. Herman**, M. Broske, and D. F. Keefe, "Linked Spatial and Temporal Normalization for Analysis of Cyclical 4D Skeletal Motion Data," 2022, [Online]. Available: [https://ieevis.b-cdn.net/vis\\_2022/posters/v-vis-posters-1046-summary.pdf](https://ieevis.b-cdn.net/vis_2022/posters/v-vis-posters-1046-summary.pdf) **[collab]**
- 2022 (Video Exhibition) F. Samsel, G. Abram, S. Zeller, Z. Cao, P. Wolfram, **B. Herman**, and D. F. Keefe, "Cultivating Macroalgae for Biofuels: Visualizing the Chemistry," *International Conference for High Performance Computing Networking Storage and Analysis*, Nov. 2022, Accessed: Apr. 24, 2024. [Online]. <https://par.nsf.gov/biblio/10378947-cultivating-macroalgae-biofuels-visualizing-chemistry> **[collab]**  
**\*\*Finalist at SuperComputing '22 Scientific Visualization & Data Analytics Showcase**
- 2020 (Poster) C. Weissman, **B. Herman**, S. Zeller, F. Samsel, and D. F. Keefe, "Automatic Generation of Data Legends for Multi-Variate Artist Driven Visualizations." 2020. **[mentor]**  
**\*\*Best SciVis Poster**
- 2020 F. Samsel, D. F. Keefe, **B. Herman**, and G. Abram, "Human fingerprints and artistic vocabulary; rendering data, creating engagement, connection and context to earth system models." 2020.
- 2018 (Workshop Paper) **B. Herman** and D. F. Keefe, "Boxcars on Potatoes: Exploring the Design Language for Tangible Visualizations of Scalar Data Fields on 3D Surfaces," presented at the IEEE VIS Workshop: Toward a Design Language for Data Physicalization, Berlin, Germany, 2018. **[lead]**

## Presentations

### Conference Presentations

- Oct 2024 IEEE VIS Full Paper Talk "Touching the Ground: Evaluating the Effectiveness of Data Physicalizations for Spatial Data Analysis Tasks." St. Pete Beach, Florida, USA. Virtual.
- Oct 2024 IEEE VIS Workshop Talk "Rain Gauge: Exploring the Design and Sustainability of 3D Printed Clay Physicalizations." St. Pete Beach, Florida, USA. Virtual.
- Nov 2021 ACM Interactive Surfaces and Space: "Multi-Touch Querying on Data Physicalizations in Immersive AR." Łódź, Poland, virtual.
- Oct 2020 IEEE VIS Arts Program: "Printmaking, Puzzles, and Studio Closets: Using artistic metaphors to reimagine the user interface for designing immersive visualizations." Salt Lake City, Utah, USA, virtual.
- Oct 2019 IEEE VIS Poster: "Linked View Visualization Using Clipboard-Style Mobile VR: Application to Communicating Forestry Data." Vancouver, British Columbia, Canada.
- Oct 2018 IEEE VIS Workshop Lightning Talk: "Boxcars on potatoes: Exploring the design language for tangible visualizations of scalar data fields on 3D surfaces." Berlin, Germany.

### Workshops and Tutorials

- July 2021 (*Workshop Organized*) D. F. Keefe, F. Samsel, and **B. Herman**, "Sculpting Vis: A Puzzle-piece approach to teaching scientific visualization." WeTeach\_CS Summit Tutorial. Austin, Texas, USA, virtual.
- Oct 2020 (*Tutorial Organized*) D. F. Keefe, F. Samsel, and **B. Herman**, "Artifact-Based Rendering: VR Visualization by Hand," IEEE VIS Tutorial. virtual.

## Teaching Experience

### Courses Taught at Carleton College (2024 – Present)

2024 – 2025

CS 111: Introduction to Computer Science  
 CS 208: Introduction to Computer Systems  
 CS 314: Data Visualization  
 CS 251: Programming Languages

### University of Minnesota – Twin Cities (2015 – 2023)

**Teaching Assistant**  
 2018 – 2023

CSCI 4611: Programming Interactive Computer Graphics and Games

CSCI 5619: Virtual Reality and 3D Interaction

**Assistant Instructor**

Jan 2022 – May 2022

CSCI 5609: Visualization

*Co-taught with Daniel F. Keefe,  
Distinguished Teaching Professor*

**Instructor**

Sep 2020 – Dec 2020

CSCI 1133: Introduction to Computing and  
Programming Principles

**Undergraduate Teaching Assistant**

Sep 2015 – May 2018

CSCI 1133: Introduction to Computing and  
Programming Principles

## Affiliations and Academic Service

### Reviewing

2025 IEEE International Symposium on Mixed and Augmented Reality  
(ISMAR)

2024 ACM Conference on Human Factors in Computing Systems (CHI)

2020 – Present IEEE Transactions on Visualization and Computer Graphics

2022 IEEE Conference on Virtual Reality and 3D User Interfaces

### Professional Organizations

2021 – Present Association for Computing Machinery

## Research Mentorship and Advising

2023 – Wanbo Geng (B.S.)

2020-2021 – Maxwell J. Omdal (M.S.)

2020 – Claire Weissman (B.S.)

2019 – Clara Richter (B.S.)

2018 – Irwin Sowah (B.S.)

University of Minnesota – Twin Cities

Minneapolis, MN