

Data visualization and virtual reality researcher with 8 years of experience with

- › Creating 3D user interaction techniques for data analysis and presentation — for geospatial, medical, and cultural heritage data
- › Developing interactive applications in various levels of fidelity — from experimental research prototype to interactive installations
- › Making interactive 3D prototypes on multiple surfaces — HMD VR, CAVE VR, mobile VR, projection-based AR, large tiled displays
- › Formulating requirements on multi-disciplinary collaboration projects — working with scientists, artists, and industry partners

EDUCATION

2014-2022	Ph.D., Computer Science › Advisor: Daniel F. Keefe › Dissertation title: <i>Everyday Scientific Visualization: Making 3D Visualization Techniques Accessible for Day-To-Day Team-Science for Collaboration and Analysis</i> › Specializations: Data visualization, virtual reality, data storytelling	UNIVERSITY OF MINNESOTA – Minneapolis, MN
2012-2014	M.S., Computer Science › Specializations: Computer graphics, virtual reality	UNIVERSITY OF MINNESOTA – Minneapolis, MN
2008-2012	B.S., Computer Science › Specializations: Computer graphics, user interfaces	UNIVERSITY OF MINNESOTA – Minneapolis, MN

RESEARCH EXPERIENCE







2022-Present	Postdoctoral Researcher › Upgrade Intel's raytracing application to facilitate immersive virtual reality experiences › Extend its core rendering engine to display a single coherent virtual environment on tiled display walls › Develop interaction techniques for gesture-based scene navigation and object manipulation › Lead a monthly meeting with software engineers at Intel to communicate prototyping decisions and discuss strategies for integrating new changes into their codebase › Collaborate with research scientists in high-performance computing to make the application run on tiled display walls driven by a cluster of nineteen Linux PCs C++ CMake MPI TCP/IP Docker Intel OSPRay Studio Microsoft Kinect Large Tiled Displays	UNIVERSITY OF TEXAS – Austin, TX
2019-2021	Technical Research Personnel GWANGJU INSTITUTE OF SCIENCE AND TECHNOLOGY – Gwangju, S. Korea › Participated in cross-institutional collaboration projects that require public exhibitions every year › Collaborate with external teams to design interactive installations for history museums › Led internal meetings with designers, developers, and curators to formulate realistic plans and tasks › Developed visualization and interaction techniques for use by museum visitors to explore museums' archived data using gesture-based interaction › Facilitated regular lab tours for visiting outside collaborators and stakeholders Unity C# Microsoft Kinect Large Format Displays	
2014-2019	Research Assistant › Created 3D interactive systems to assist scientists with analyzing and presenting their data › Collaborated on 3 multi-disciplinary projects involving teams at the U.S. National Forest Services, the Center for Spirituality and Healing, and the Medical Device Center › Developed interactive AR/VR prototypes for both expert-driven and public-facing use cases › Facilitated regular virtual reality lab tours for visiting faculty and school groups Unity C# Processing R OptiTrack MS Kinect HMD VR CAVE VR Mobile VR Projection-based AR 3D Printing	UNIVERSITY OF MINNESOTA – Minneapolis, MN
Summer 2018	Research Intern › Investigated ways of leveraging storytelling and lightweight communication for science collaboration › Developed frameworks for creating data stories and collaborating around exchanged stories in different device settings, e.g., in browsers, phones, and desktop settings Unity C# PHP MySQL JavaScript CSS HTML	INRIA – Saclay, France

2011-2014	Programmer > Worked with pathologists to develop a Photoshop-like JAVA application for assembling scanned tissue images into a complete organ and annotating cancer boundaries for further data analysis > Integrated Java3D to view and interact with drawn cancer boundaries in 3D and implemented corresponding interaction functionalities <div>Java</div> <div>Java3D</div>	UNIVERSITY OF MINNESOTA – Minneapolis, MN
-----------	--	---

TEACHING EXPERIENCE

Spring 2018	Teaching Assistant Course: CSCI 4611 – Programming Interactive Computer Graphics and Games > Provided feedback and guidance to students on their in-class projects > Graded written and programming assignments	UNIVERSITY OF MINNESOTA – Minneapolis, MN
Spring 2015	Teaching Assistant Course: CSCI 5609 Visualization > Developed new student projects for junior-level visualization class > Provided feedback and guidance to students on their in-class projects > Graded written and programming assignments	UNIVERSITY OF MINNESOTA – Minneapolis, MN

PUBLICATIONS

- 2023 **J. W. Nam**, G. D. Abram, F. Samsel, and P. A. Navrátil, “Immersive ospray: Enabling vr experiences with ospray,” in *2023 ACM conference on practice and experience in advanced research computing (PEARC)*, 2023, (to appear)
- 2022 **J. W. Nam**, T. Isenberg, and D. F. Keefe, “V-mail: 3d-enabled correspondence about spatial data on (almost) all your devices,” *IEEE Transactions on Visualization and Computer Graphics*, 2022, (in publication). doi: 10.1109/TVCG.2022.3229017
 [YouTube](#)
- D. F. Keefe, B. Herman, **J. W. Nam**, D. T. Orban, and S. Johnson, “Hybrid data constructs: Interacting with biomedical data in augmented spaces,” in *Making Data: The Creative Practice of Materialising Digital Information*. London: Bloomsbury, 2022, ch. 11, pp. 169–182. doi: 10.5040/9781350133266.ch-011
- 2019 **J. W. Nam**, K. McCullough, J. Tveite, M. M. Espinosa, C. H. Perry, B. T. Wilson, and D. F. Keefe, “Worlds-in-wedges: Combining worlds-in-miniature and portals to support comparative immersive visualization of forestry data,” in *2019 IEEE conference on virtual reality and 3D user interfaces (VR)*, 2019, pp. 747–755. doi: 10.1109/VR.2019.8797871
 [YouTube](#)  [Presentation IEEE VR](#)
- E. Leng, J. C. Henriksen, A. E. Rizzardi, J. Jin, **J. W. Nam**, B. M. Brassuer, A. D. Johnson, N. P. Reder, J. S. Koopmeiners, S. C. Schmechel *et al.*, “Signature maps for automatic identification of prostate cancer from colorimetric analysis of h&e-and ihc-stained histopathological specimens,” *Nature Scientific Reports*, vol. 9, no. 6992, 2019. doi: 10.1038/s41598-019-43486-y
- Poster - **J. W. Nam**, C. H. Perry, B. T. Wilson, and D. F. Keefe, “Linked view visualization using clipboard-style mobile vr: Application to communicating forestry data,” *IEEE VIS Posters*, 2019
 [YouTube](#)  [SciVis Best Poster Award](#)
- Poster - N. Park, Y. Hong, H. Park, **J. W. Nam**, K. Kim, J. Pyo, K. Gil, and K. Lee, “Effects of age and motivation for visiting on ar museum experiences,” *ACM VRST Posters*, 2019. doi: 10.1145/3359996.3364711
- 2017 **J. W. Nam** and D. F. Keefe, “Spatial correlation: An interactive display of virtual gesture sculpture,” *Leonardo*, vol. 50, no. 1, pp. 94–95, 2017. doi: 10.1162/LEON_a_01226
 [YouTube](#)

- 2016 H. Farooq, J. Xu, **J. W. Nam**, D. F. Keefe, E. Yacoub, T. Georgiou, and C. Lenglet, “Microstructure imaging of crossing (mix) white matter fibers from diffusion mri,” *Nature Scientific Reports*, vol. 6, no. 38927, 2016. doi: 10.1038/srep38927
- G. J. Metzger, C. Kalavagunta, B. Spilseth, P. J. Bolan, X. Li, D. Hutter, **J. W. Nam**, A. D. Johnson, J. C. Henriksen, L. Moench *et al.*, “Detection of prostate cancer: quantitative multiparametric mr imaging models developed using registered correlative histopathology,” *Radiology*, vol. 279, no. 3, pp. 805–816, 2016. doi: 10.1148/radiol.2015151089

PUBLIC EXHIBITIONS

- December 2021** Developer, “The Road of Hyecho.” Interactive installation at Gwangju Cultural Foundation. S. Korea.
[🔗 News](#)
[Unity](#) [C#](#) [Microsoft Kinect](#) [Projection Wall](#)
- December 2020** Developer, “The Road of Ramayana.” Interactive installation at Asia Culture Center. Gwangju, S. Korea.
[📺 YouTube](#) [🔗 News](#) [🔗 News](#)
[Unity](#) [C#](#) [Microsoft Kinect](#) [Large Format Display](#)
- November 2014** Developer, “Spatial Correlation: An Interactive Display of Virtual Gesture Sculpture.” Interactive installation at IEEE VIS 2014 Arts Program. Paris, France.
[📺 YouTube](#) [🔗 Publication](#)
[Processing](#) [Java](#) [GLSL](#) [Microsoft Kinect V1](#)

CONFERENCE PRESENTATIONS

- July 2023** Presenting author, “Immersive OSPRay: Enabling VR experiences with OSPRay.” Paper talk at ACM PEARC. Portland, Oregon, USA.
- March 2019** Presenting author, “Worlds-in-Wedges: Combining Worlds-in-Miniature and Portals to Support Comparative Immersive Visualization of Forestry Data.” Paper talk at IEEE VR. Osaka, Japan.

ACADEMIC SERVICES

- Reviewer** TVCG (2023), VR (2022), DESRIST (2018), Leonardo (2016)

AWARDS

- October 2019** SciVis Best Poster Award, “Linked View Visualization Using Clipboard-Style Mobile VR: Application to Communicating Forestry Data.”, Poster track at IEEE VIS 2019. Vancouver, British Columbia, Canada.