

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

- › Creating 3D interactive applications for data analysis and presentation — for geospatial, medical, and cultural heritage data
- › Building XR applications for different display settings — HMD VR, CAVE VR, projection-based AR, cluster-driven wall 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

SKILLS & CERTIFICATIONS

Programming Languages	C#, C++, Python, Cg/HLSL, Processing
Development Tools	Unity, OpenGL, Git, CMake, MPI, Visual Studio, Visual Studio Code, Docker
3D Tracking Systems	OptiTrack, Microsoft Kinect, Leap Motion, Vuforia, OpenCV
Display Technologies	HMD VR, CAVE VR, Mobile VR, Projection-based AR, Cluster-driven Wall Displays, 3D Printing
Software & Tools	Photoshop, Illustrator, SolidWorks, Shotcut
Cloud Computing	AWS Certified Cloud Practitioner (exp. 09/2026)

RELEVANT EXPERIENCE

2022-Present (1 yr 3 mos)	Postdoctoral Researcher • Upgrade an open-source raytracing application to support VR features, e.g., providing an immersive view of a 3D virtual world and enabling gestures to move around the world. • Leverage recent advances in AI technology to implement voice-control capabilities in the application so that users can move around a 3D environment using spoken words. <div> C++ CMake MPI Docker Intel OSPRay Microsoft Kinect Cluster-driven Displays Python PyTorch Open3D </div> › J. W. Nam, G. D. Abram, F. Samsel, and P. A. Navrátil, “Immersive ospray: Enabling vr experiences with ospray,” in <i>2023 ACM conference on practice and experience in advanced research computing (PEARC)</i> , 2023, p. 226–230. doi: 10.1145/3569951.3597579	UNIVERSITY OF TEXAS – Austin, TX
2019-2021 (2 yrs 6 mos)	Research Engineer • Developed interactive installations for history museums by working with graphic designers and curators. • Implemented interaction techniques that allow museum visitors to explore archived data using gestures. <div> Unity C# Microsoft Kinect Large Format Displays </div> › “The Road of Hyecho.” Interactive installation at Gwangju Cultural Foundation, S. Korea, Dec. 2021.  News › “The Road of Ramayana.” Interactive installation at Asia Culture Center, S. Korea, December 2020.  YouTube  News  News › 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,” <i>ACM VRST Posters</i> , 2019. doi: 10.1145/3359996.3364711	GWANGJU INSTITUTE OF SCIENCE AND TECHNOLOGY – Gwangju, S. Korea

2014-2019
(4 yrs 9 mos)

Research Assistant

UNIVERSITY OF MINNESOTA – Minneapolis, MN

- Designed and developed 3D interactive tools to assist scientists with analyzing and presenting their data.
- Collaborated on three multi-disciplinary projects involving teams at the U.S. National Forest Services, the Center for Spirituality and Healing, and the Medical Device Center.

Unity C# OptiTrack MS Kinect HMD VR CAVE VR Mobile VR Projection-based AR Processing 3D Printing

- > **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](#)
- > **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](#)
- > **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](#)
- > 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
- > 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

Summer 2018
(3 mos)

Research Intern

INRIA – Saclay, France

- Developed frameworks for creating data stories and collaborating around exchanged stories in different device settings, e.g., browsers, phones, and desktop settings.

Unity C# PHP MySQL

- > **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](#)

2011-2014
(3 yrs 3 mos)

Programmer

UNIVERSITY OF MINNESOTA – Minneapolis, MN

- Developed a Photoshop-like JAVA application for pathologists to assemble scanned tissue images into a complete organ and annotate cancer boundaries for further data analysis.

Java Java3D

- > 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
- > 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