Jung Who **Nam** — Ph.D. in Computer Science

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Computer graphics 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 *Unity C#* 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, museum curators, and artists

Education

2014-2022 | **Ph.D., Computer Science** — University of Minnesota – Minneapolis, MN
- Advisor: Daniel F. Keefe
- Dissertation title: *Everyday Scientific Visualization: Making 3D Visualization Techniques Accessible for Day-To-Day Team-Science for Collaboration and Analysis*
- Specializations: Data visualization, virtual reality, data storytelling

2012-2014 | **M.S., Computer Science** — University of Minnesota – Minneapolis, MN
- Specializations: Computer graphics, virtual reality

2008-2012 | **B.S., Computer Science** — University of Minnesota – Minneapolis, MN
- Specializations: Computer graphics, user interfaces

Skills

Programming Languages	**C#**, C++, Java, **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, **Large Tiled Displays**, 3D Printing
Software & Tools	**Photoshop**, Illustrator, **Shotcut**

Relevant Experience

2022-Present | **Postdoctoral Fellow** — University of Texas – Austin, TX
- 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

2019-2021 (Alternative Military Service) | **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** — University of Minnesota – Minneapolis, MN
- 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

Summer 2018 | **Research Intern** — INRIA – Saclay, France

- 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

2011-2014 | **Programmer** — University of Minnesota – Minneapolis, MN

- 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

Java | Java3D

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

Selected Publications

VR/AR

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

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

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

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

3D UI

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

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

Medical VIS

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