

Seung-Woo Nam

Curriculum Vitae

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Education

09/2019 – Present **Ph.D.** Electrical and Computer Engineering, Seoul National University
Seoul, Korea. *Advisor: Byoungcho Lee, Yoonchan Jeong*
03/2015 – 08/2019 **B.S.** Electrical and Computer Engineering, Seoul National University
Seoul, Korea
03/2012 – 02/2015 Gyeonggi Science High School for the Gifted

Work Experience

06/2023 – 12/2023 **Research Scientist Intern**, Meta Reality Labs, Washington, USA

Publications

First Author * Denotes equal contribution

- [7] S. Lee*, **S.-W. Nam***, K. Rio, R. Landig, H.-H. Cheng, L. Lu, and B. Silverstein, "Perceptual Evaluation of Steered Retinal Projection," ACM Transactions on Graphics (**SIGGRAPH 2024**)
- [6] D. Kim*, **S.-W. Nam***, S. Choi*, J.-M. Seo, G. Wetzstein, and Y. Jeong, "Holographic Parallax Improves 3D Perceptual Realism," ACM Transactions on Graphics (**SIGGRAPH 2024**)
- [5] **S.-W. Nam***, Y. Kim*, D. Kim, and Y. Jeong, "Depolarized Holography with Polarization-multiplexing Metasurface," ACM Transactions on Graphics (**SIGGRAPH ASIA 2023**).
- [4] D. Kim*, **S.-W. Nam***, B. Lee, J.-M. Seo, and B. Lee, "Accommodative holography: improving accommodation response for perceptually realistic holographic displays," ACM Transactions on Graphics (**SIGGRAPH 2022**)
- [3] **S.-W. Nam**, D. Kim, and B. Lee, "Accelerating a spatially varying aberration correction of holographic displays with low-rank approximation," Optics Letters, 2022 (**Editor's pick**)
- [2] D. Kim*, **S.-W. Nam***, K. Bang, B. Lee, S. Lee, Y. Jeong, J.-M. Seo, and B. Lee, "Vision-correcting holographic display: evaluation of aberration correcting hologram," Biomedical Optics Express, 2021
- [1] **S.-W. Nam**, S. Moon, B. Lee, D. Kim, S. Lee, C.-K. Lee, and B. Lee, "Aberration-corrected full-color holographic augmented reality near-eye display using a Pancharatnam-Berry phase lens," Optics Express, 2020.

Co – Author

- [8] S. Lee, **S.-W. Nam**, J. Lee, Y. Jeong, and B. Lee, "HoloSR: deep learning-based super-resolution for real-time high-resolution computer-generated holograms," Optics Express, 2024.
- [7] D. Lee, K. Bang, **S.-W. Nam**, B. Lee, D. Kim, and B. Lee, "Expanding energy envelope in holographic display via mutually coherent multi-directional illumination," Scientific Reports, 2022.

- [6] D. Yoo, **S.-W. Nam**, Y. Jo, S. Moon, C. -K. Lee, and B. Lee, "Learning-based compensation of spatially varying aberrations for holographic display [Invited]," Journal of the Optical Society of America A, 2022.
- [5] D. Yoo, Y. Jo, **S.-W. Nam**, C. Chen, and B. Lee, "Optimization of computer-generated holograms featuring phase randomness control," Optics Letters, 2021.
- [4] S. Lee*, D. Kim*, **S.-W. Nam**, B. Lee, J. Cho, and B. Lee, "Light source optimization for partially coherent holographic displays with consideration of speckle contrast, resolution, and depth of field," Scientific Reports, 2020.
- [3] S. Lee, D. Kim, **S.-W. Nam**, and B. Lee, "Speckle reduced holographic displays using tomographic synthesis," Optics Letters, 2020
- [2] S. Moon, **S.-W. Nam**, Y. Jeong, C.-K. Lee, H.-S. Lee, and B. Lee, "Compact augmented reality combiner using Pancharatnam-Berry phase lens," IEEE Photonics Technology Letters, 2020.
- [1] S. Moon, C.-K. Lee, **S.-W. Nam**, C. Jang, G.-Y. Lee, W. Seo, G. Sung, H.-S. Lee, and B. Lee, "Augmented reality near-eye display using Pancharatnam-Berry phase lenses," Scientific Reports, 2019.

Honors and Awards

2023	Silver prize, Samsung Display Industry-University Cooperation Paper Award 2023
2020	Special awards in OEQELAB
2020	Best Poster Paper Awards, The 20th International Meeting on Information Display (IMID 2020)
2020 – 2024	Korea Foundation for Advanced Studies (KFAS) Graduate Study Scholarship
2015 – 2018	National Science and Engineering Undergraduate Scholarship

Research Area

Computational holographic displays

- Optimization of computer-generated hologram (CGH)
- CGH algorithms for aberration and vision correction
- Speckle reduced holographic displays with partially coherent light source
- Acceleration of CGH algorithms using parallel computing and low-rank approximation
- Metasurface design through joint optimization with CGH
- Camera-in-the-loop optimization of holographic display incorporating metasurfaces

AR / VR near-eye displays

- Optical design of near-eye displays using holographic optical elements
- Optical design of near-eye displays using Pancharatnam-Berry phase lens

Visual perception

- User study for vision-correcting holographic displays
- Measurements of accommodation response of holographic displays

- Assessing 3D perceptual realism in light-field holographic displays
- Evaluation of perceptual hardware requirements of pupil steering displays

Metasurfaces

- Metasurface-integrated holographic displays
- Joint optimization of metasurface and holograms for metasurface design

Research Experience - Projects

03/2021 - Present	Development of real-time high-speed renderer technology for ultra-realistic hologram generation Researcher , Institute for Information & Technology Planning (IITP)
09/2019 - Present	Development of vision assistant HMD and contents for legally blind and low visions Researcher , Institute for Information & Technology Planning (IITP)
03/2020 – 02/2021	Development of compact near-eye display using holographic optical element Researcher , Imaging Device Lab, Samsung Advanced Institute of Technology, Samsung Electronics

Services

Reviewer	ACM Transactions on Graphics, IEEE ISMAR, Optics Letters, ETRI Journal
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Reference

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