Seung-Woo Nam

Curriculum Vitae

+82-2-880-9570
711asd@snu.ac.kr
https://nseungwoo.github.io

Education

09/2019 – Present	**Ph.D.** Electrical and Computer Engineering, Seoul National University Seoul, Korea. *Advisor: Byoungho 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 ***SIGGRAPH 2024*** Conference Proceedings

[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

[9] C. Chen, **S-W. Nam**, D. Kim, J. Lee, Y. Jeong, and B. Lee, "Ultrahigh-fidelity full-color holographic display via color-aware optimization," PhotoniX, 2024

[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 usi.ng 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

Reference

Prof. Byoungho Lee

School of Electrical Engineering, Seoul National University
Tel) +82-2-880-7245 Email) byoungho@snu.ac.kr

Prof. Yoonchan Jeong

School of Electrical Engineering, Seoul National University
Tel) +82-2-880-1788 Email) yoonchan@snu.ac.kr