Suyeon Choi

Curriculum Vitae

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Education

9/2020-Present **Ph.D. Student**, *Electrical Engineering*, Stanford University, Stanford, CA.
Advisor: Gordon Wetzstein

9/2019-6/2021 **M.Sc. Student**, *Electrical Engineering*, Stanford University, Stanford, CA.
Advisor: Gordon Wetzstein

3/2013-2/2019 **B.Sc. Student**, *Electrical Engineering*, Seoul National University, Seoul, Korea.
Advisor: Deog-kyoon Jeong, Soo-Mook Moon, and Byoungho Lee.
2-year absence to fulfill military duty (8/2015 – 5/2017)

3/2010-2/2013 Seoul Science High School, Seoul, Korea.

Internships

7/2022-9/2022 **Intern**, *Display Systems Research Team*, Reality Labs, Redmond, WA.

7/2020-9/2020 **Intern**, *New Experience Team*, NVIDIA, Santa Clara, CA.
Culminated in first-authorship on an Optica paper [J5].
Worked with Jonghyun Kim, Ward Lopes and David Luebke. Manager: Morgan McGuire

Publications

*denotes equal contribution.

Journals

[J8] **S. Choi***, M. Gopakumar*, Y. Peng, J. Kim, and G. Wetzstein, "Neural 3D Holography: Learning Accurate Wave Propagation Models for 3D Holographic Virtual and Augmented Reality Displays", *ACM Transactions on Graphics* (Proc. SIGGRAPH Asia 2021).

[J7] Y. Peng*, **S. Choi***, J. Kim, and G. Wetzstein, "Speckle-free Holography with Partially Coherent Light Sources and Camera-in-the-loop Calibration", *Science Advances*, 2021.

[J6] M. Gopakumar, J. Kim, **S. Choi**, Y. Peng, and G. Wetzstein, "Unfiltered Holography: Optimizing High Diffraction Orders without Optical Filtering for Compact Holographic Displays", *Optics Letters*, 2021

[J5] **S. Choi**, J. Kim, Y. Peng, and G. Wetzstein "Optimizing image quality for holographic near-eye displays with Michelson Holography", *Optica*, 2021.

[J4] Y. Peng, **S. Choi**, N. Padmanaban, and G. Wetzstein "Neural Holography with Camera-in-the-loop Training", *ACM Transactions on Graphics* (Proc. SIGGRAPH Asia 2020).

[J3] D. Yoo*, S. Lee*, Y. Jo, J. Cho, **S. Choi**, and B. Lee "Volumetric Head-Mounted Display with Locally Adaptive Focal Blocks", *IEEE Transactions on Visualization and Computer Graphics*, 2020.

[J2] Y. Jo*, S. Lee*, D. Yoo, **S. Choi**, D. Kim, and B. Lee, "Tomographic Projector: Large Scale Volumetric Display with Uniform Viewing Experiences", *ACM Transactions on Graphics* (Proc. SIGGRAPH Asia 2019).

[J1] **S. Choi**, S. Lee, Y. Jo, D. Yoo, D. Kim, and B. Lee, "Optimal Binary Representation via Non-convex Optimization on Tomographic Displays", Optics Express, 2019.

Conference Proceedings

[C4] **S. Choi***, M. Gopakumar*, Y. Peng, J. Kim, M. O'Toole, and G. Wetzstein, "Time-multiplexed Neural Holography: A Flexible Framework for Holographic Near-eye Displays with Fast Heavily-quantized Spatial Light Modulators", in *SIGGRAPH*, 2022.

[C3] J. Kim, M. Gopakumar, **S. Choi**, Y. Peng, W. Lopes, and G. Wetzstein, "Holographic glasses for Virtual Reality", in *SIGGRAPH*, 2022.

[C2] **S. Choi**, Y. Peng, J. Kim, and G. Wetzstein "High-quality holographic displays using double SLMs and camera-in-the-loop optimization", Proc. SPIE 11765, *Optical Architectures for Displays and Sensing in Augmented, Virtual, and Mixed Reality (AR, VR, MR) II*, 2021.

[C1] D. Yoo*, S. Lee*, Y. Jo, J. Cho, **S. Choi**, and B. Lee, "15 focal planes head-mounted display using LED array backlight", Proc. SPIE 11040, *SPIE Photonics West Student Optical Design Challenge*, 2019.

Honors and Awards

2022-2024 Meta Research PhD Fellowship

2022 NVIDIA Graduate Fellowship Finalist

2020-2021 School of Engineering Fellowship, Stanford University

2019-2024 Kwanjeong Scholarship

2019-2021 Korea Government Scholarship

2019 2nd Prize, SPIE Student Optical Design Challenge 2019 [C1]

2013-2018 Presidential Science Scholarship

2012 Silver Medal, the International Physics Olympiad **(IPhO)**

Public Demonstrations

2020 **Neural Holography**, Y. Peng, S. Choi, N. Padmanaban, J. Kim, G. Wetzstein, ACM SIGGRAPH 2020 Emerging Technologies.

Talks

2022 Partially-Coherent Neural Holography with Fast Spatial Light Modulators, *Optica 3D Image Acquisition and Display: Technology, Perception and Applications: Deep Learning and Machine Learning for 3D Imaging*, Vancouver, Canada.

2022 Enabling Augmented-Reality Near-Eye and Head-Up Displays with Neural Holography, *SID Display Week*, San Jose, CA.

2021 Neural Holography Pro: Computationally Enabling Compact, High-quality 3D Holographic Displays, *Graphics and Mixed Environment Seminar (GAMES)*, Virtual.

2021 Enabling Next-generation Holographic Displays with Artificial Intelligence, *Optica Frontiers in Optics LS AR/VR*, Virtual.

2021 High-quality holographic displays using double SLMs, *SPIE AR,VR,MR Technical Talks*, Virtual.

2020 Neural Holography: High-quality, Real-time Computer-generated Holographic Displays, *Graphics and Mixed Environment Seminar (GAMES)*, Virtual.

Teaching Experience

Teaching Assistant

Spring 21-22, Spring 2020-21 — EE267: Virtual Reality, Stanford University

Undergraduate Teaching Assistant

Fall 2018 — Digital Systems Design and Experiments, Seoul National University

Fall 2017 — Introduction to Electromagnetism, Seoul National University

Spring 2015 — Introduction to Circuit Theory and Laboratory, Seoul National University

Fall 2014 — Digital Logic Design and Lab, Seoul National University

Tutor

Spring/Fall 2018, Spr 2015, Fall 2014 — Basic Physics, Seoul National University

Professional Activities

Reviewer — Nature Communications, ACM SIGGRAPH (Asia), Optics Express, Applied Optics, IEEE ISMAR

Member — ACM SIGGRAPH, SPIE