

Taeyoung Kim

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RESEARCH EXPERIENCE

Computational Imaging Lab | VISITING STUDENT
UC Berkeley, EECS

MAR 2025 – Now

- Working with **Prof. Laura Waller** [✉](#), building and designing a lensless compact spectrometer using multiple gratings and a phase mask integrated with deep learning frameworks.
- **Ongoing Research:** Compact Lensless Spectrometer, Multi-wave ODT

Optical Imaging System Lab | PH.D CANDIDATE
Yonsei University, Electronic and Electric Engineering

MAR 2019 – Now

- Conducted research under the supervision of **Prof. Seung Ah Lee** [✉](#) in the Optical Imaging System Lab(now Imaging Intelligence Lab), focusing on lensless imaging techniques and computational imaging methods.
- **Ongoing Research:** 3D Depth imaging, Task-Optimized PSF Design

RESEARCH PROJECTS

Lensless 3D Depth Imaging | 2023 - Now

- Keywords: Depth Imaging, PSF Engineering, Wave optics, SLM

- Design a lensless camera for 3D imaging, enriching depth resolution with optimized phase masks forming multiple depth-dependent point spread functions using a spatial light modulator.

Lensless Snapshot Hyperspectral Imaging | 2021 - 2023

- Keywords: Hyperspectral Imaging, Linear variable filter, Calibration

- Build a snapshot lensless imaging system that utilizes a linear variable filter and a phase mask to encode spectral information, enabling recovery of hyperspectral image stacks from a single measurement.

Lensless High Speed Eye Tracking | 2019 - 2021

- Keywords: Eye tracking, Wearable device, Rolling-shutter

- Design and construction of a goggle-type eye tracker using a low-cost and high-speed lensless camera with rolling shutter image sensor for monitoring eye movements in neurodegenerative diseases.

PUBLICATIONS

JOURNAL

- Kim, T., Lee, K. C., Baek, N., Chae, H., & Lee, S. A. (2023). **Aperture-encoded snapshot hyperspectral imaging with a lensless camera** [✉](#). *APL Photonics*, 8(6).
- Baek, N., Lee, Y., Kim, T., Jung, J., & Lee, S. A. (2022). **Lensless polarization camera for single-shot full-Stokes imaging** [✉](#). *APL Photonics*, 7(11).
- Lee, Y., Chae, H., Lee, K. C., Baek, N., Kim, T., Jung, J., & Lee, S. A. (2022). **Fabrication of integrated lensless cameras via UV-imprint lithography** [✉](#). *IEEE Photonics Journal*, 14(2), 1-8.

PROCEEDING

- Kim, T., Lee, Y., Jung, J., Lee, K. C., & Lee, S. A. (2024, August). **3D Lensless Camera for extended depth range with multiple point spread functions** [✉](#). In Conference on Lasers and Electro-Optics/Pacific Rim (p. We3G_3). Optica Publishing Group.
- Kim, T., Lee, K. C., Lee, K., Baek, N., Jung, J., Kim, E., ..., & Lee, S. A. (2024, February). **High-speed lensless eye tracker for microsaccade measurement** [✉](#). In SPIE Advanced Biophotonics Conference (SPIE ABC 2023) (Vol. 13076, pp. 38-44). SPIE.

RECENT CONFERENCE ACTIVITY

- **Privacy-Preserving Imaging With Lensless Cameras Using Shift-Variant Point Spread Functions (Oral)** (COSI 2025)
- **Task-Optimized Lensless Imaging With Trainable Phase Masks for Compact Spatial Encoding (Oral)** (COSI 2025)
- **Quantitative Fluorescence Imaging for Detection of Dental Plaque with Lensless Camera (Poster)** (ABC 2024)
- **3D Lensless Camera for Extended Depth Range with Multiple Point Spread Functions (Oral)** (CLEO-PR 2024)

EDUCATION

YONSEI UNIVERSITY

MS & Ph.D OF ENGINEERING IN SCHOOL OF ELECTRONIC AND ELECTRICAL ENGINEERING
Expected Sep 2026 | Republic of Korea, Seoul

YONSEI UNIVERSITY

BACHELOR OF ENGINEERING IN SCHOOL OF ELECTRONIC AND ELECTRICAL ENGINEERING
Feb 2021 | Republic of Korea, Seoul

HONORS

AWARDS

2024 ABC Best Poster Award, Optical Society of Korea (2024)

2023 SPIE-ABC Young Investigator Award, Optical Society of Korea (2023)

Outstanding Presentation Award, Capstone Design Project, (2019)

PRESS

AIP Scilight [✉](#), “Improving hyperspectral imaging using a lensless camera”, 2023

GRANTS

Selected Participant, BK21(Brain Korea 21) International Joint Training Program, National Research Foundation of Korea (NRF), 2025

Undergraduate Research Fellow, Undergraduate Research Program, Korea Science and Creativity Foundation (KOSAC), 2019

SOCIETY

Regular Member, Yonsei EEHS(Honor Society)

PATENTS

Apparatus and method for measuring eye movement [✉](#) - Lee, S. A., Kim, T. Y., Lee, K. W., Baek, N. K., & Jung, J. W. (2024). U.S. Patent Application No. 18/052,192.

Methods for manufacturing phase masks and lens-less camera module [✉](#) - Lee, S. A., Chae, H. S., Lee, Y. J., Lee, K. C., Baek, N. K., Kim, T. Y., & Jung, J. W. (2023). U.S. Patent Application No. 18/168,887.

SKILLS

TECHNICAL

Python(Pytorch, OpenCV) • MATLAB • Fusion 360

LANGUAGES

Korean (Native) • English (Intermediate, OPIc IM)

ADDITIONAL INFO

For Other Projects / Publications / Patents / Conference Activities [✉](#)