

# 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

MAR 2019 – NOW

Yonsei University, Electronic and Electric Engineering

- 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** [✉](#)