

Haley Lee

Computational Imaging Researcher

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Education

Cornell University

Ph.D. in Computer Science, *Advised by Kristina Monakhova*

Aug. 2024 – Present

Ithaca, NY

Yonsei University

B.S. in Electrical and Electronic Engineering | GPA: 3.6 / 4.0

Mar. 2019 – Present

Seoul, Korea

Research Experiences

Smart Imaging Lab, University of Connecticut

Supervisor: Professor Guoan Zheng

Jun 2023 – Aug 2023

CT, USA

- Simulated coded Fourier Ptychography with the diffuser placed on the sensor to reconstruct low spatial frequencies.
- Developed a method to accurately track the positions of a moving object in synthetic-aperture lensless ptychography in the presence of a stationary diffuser.

Optical Imaging Systems Lab, Yonsei University

Supervisor: Professor Seung Ah Lee

Aug 2021 – Present

Seoul, South Korea

- Developed a method to enhance depth-of-field by optimizing a phase mask using multiple PSF patterns with varying working distances.
- Developed a rolling-shutter speckle plethysmography to extract blood flow dynamic waveforms by applying single-shot temporal speckle correlation.
- Implemented CycleGAN model to generate virtually stained histology images from phase-only QPI microscopy datasets.
- Performed ADMM-based reconstruction of polarization intensity images using a lensless computational camera with a polarization-encoded aperture.
- Engineered an on-chip lensless camera with UV-imprint lithography and computational deconvolution.
- Engaged in Advanced Study Sessions:

Deep Learning Study (10-week Computer Vision paper review and implementation),

Computational Optics Study (4-week Fourier Ptychography reconstruction and regularized reconstruction implementation)

Skills

- Software | Fusion 360, Keyshot, Adobe Illustrator
- Hardware | FPGA, Arduino, Raspberry Pi
- Programming | Python, Matlab, C/C++, PyTorch
- Language | Korean (Native), English (Fluent)

Teaching and Services

- **Reviewer** | Biomedical Optics Express (2023), Applied Optics (2023)
- **Teaching Assistant** | Yonsei University Electrical Engineering Department
Engineering Information Processing [ENG1108] (2023)
- **Peer Tutor** | Yonsei Computer Club, Electrical Engineering Honor Society
Data Structure (2021), Deep Learning CNN (2022), Basic Circuit Theory (2022)
- **EE-Festival Coding Judge** | Yonsei University Electrical Engineering Department
Judged coding competition on Hungarian Algorithm implementation at EE-Festival (2022)
- **Interpreter** | Ministry of the Interior and Safety, South Korea
Interpreted for ambassadors during National Independence Day and Foundation Day ceremonies (2023)