Haley Lee

Computational Imaging Researcher

607-227-0839 | Google Scholar | haleylee@cs.cornell.edu |

Education

Cornell University Aug. 2024 – Present
Ph.D. in Computer Science, *Advised by Kristina Monakhova* *Ithaca, NY*

Yonsei University Mar. 2019 – Jun. 2024
B.S. in Electrical and Electronic Engineering *Seoul, Korea*

Research Experiences

Smart Imaging Lab, University of Connecticut Jun 2023 – Aug 2023
Supervisor: Professor Guoan Zheng *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 Aug 2021 – Present
Supervisor: Professor Seung Ah Lee *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 a 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.
- Designed an on-chip lensless camera integrating UV-imprint lithography and computational deconvolution.
- Participated 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
- Programming | Python, Matlab, C/C++, PyTorch
- Hardware | FPGA, Arduino, Raspberry Pi
- Language | Korean (Native), English (Fluent)

Teaching and Services

- **Reviewer** | Biomedical Optics Express (2023), Applied Optics (2023)
- **Teaching Assistant** | Engineering Information Processing [Yonsei ENG1108]
  Introduction to Python [Cornell CS1110], Introduction to Machine Learning [Cornell CS4780]
- **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)