HAEJOON LEE

Email: haejoonl@andrew.cmu.edu Website: https://haejoonlee.com

RESEARCH INTERESTS

COMPUTER VISION and COMPUTATIONAL PHOTOGRAPHY / IMAGING GENERATIVE MODELS for IMAGE RESTORATION

EDUCATION

- Carnegie Mellon University Pittsburgh, PA 2023–present
 PhD in Electrical and Computer Engineering
 Advisors: Aswin C. Sankaranarayanan and Vijayakumar Bhagavatula
- Carnegie Mellon University Pittsburgh, PA 2022–2023
 MS in Electrical and Computer Engineering
- Yonsei University Seoul, Korea 2015–2021
 BSE in Electrical and Electronic Engineering

WORK EXPERIENCE

- Carnegie Mellon University Pittsburgh, PA 2022–Present
 Graduate Student Researcher in Image Science Lab
 Current Project: Diffusion models for well-lit image restoration under photon-starved conditions.
- Yonsei University Seoul, Korea 2021–2022
 Undergraduate Student Researcher in Medical Imaging Lab
 Project: Deep learning technique for detecting cerebral microbleeds in MRI data.
- Bukhan Mountain Rescue Police Team Goyang, Korea 2017–2018
 Served military duty as a mountain rescuer

PUBLICATIONS

FULL-LENGTH ARTICLES

- 6. **Hi-SPAD: Video-Rate Hyperspectral Imaging and Inference with Single-Photon Cameras Haejoon Lee**, Mohit Gupta, Vijayakumar Bhagavatula, and Aswin C. Sankaranarayanan
 Submitted to *ACM Transactions on Graphics* (TOG) 2025 (Under Review)
- 5. PhotonSplat: 3D Scene Reconstruction and Colorization from SPAD Sensors Sai Sri Teja, Sreevidya Chintalapati, Vinayak Gupta, T Mukund Varma, Haejoon Lee, Aswin Sankaranarayanan, and Kaushik Mitra 2025 IEEE International Conference on Computational Photography (ICCP) • 2025

4. Computational Imaging for Long-Term Prediction of Solar Irradiance

Leron K. Julian, **Haejoon Lee**, Soummya Kar, and Aswin C. Sankaranarayanan *IEEE Transactions on Pattern Analysis & Machine Intelligence* (TPAMI) • 2025

3. Spectral Subsurface Scattering for Material Classification

Haejoon Lee and Aswin C. Sankaranarayanan *European Conference on Computer Vision* (ECCV) • 2024

2. Detection of cerebral microbleeds in MR images using a single-stage triplanar ensemble detection network (TPE-Det)

Haejoon Lee, Jun-Ho Kim, Seul Lee, Kyu-Jin Jung, Woo-Ram Kim, Young Noh, Eung Yeop Kim, Koung Mi Kang, Chul-Ho Sohn, Dong Young Lee, and others *Journal of Magnetic Resonance Imaging* (JMRI) • 2023

1. Toward Automated Detection of Microbleeds with Anatomical Scale Localization Using Deep Learning

Jun-Ho Kim, Young Noh, **Haejoon Lee**, Seul Lee, Woo-Ram Kim, Koung Mi Kang, Eung Yeop Kim, Mohammed A. Al-masni, and Dong-Hyun Kim *Medical Image Analysis* • 2024

PEER-REVIEWED ABSTRACTS

5. Triplanar Ensemble Detection Network (TPE-Det): A Single End-to-End Model for Efficient Detection of Cerebral Microbleeds in MR Images

Haejoon Lee, Mohammed A. Al-masni, Jun-Ho Kim, Seul Lee, Kyu-Jin Jung, Woo-Ram Kim, Young Noh, and Dong-Hyun Kim

2022 Joint Annual Meeting ISMRM-ESMRMB & SMRT 31st Annual Meeting • 2022 (ORAL PRESENTATION)

4. **Automated Detection of Cerebral Microbleeds in MR Images: 3-plane Multiview Detection Haejoon Lee**, Mohammed A. Al-masni, Seul Lee, Kyu-Jin Jung, Woo-Ram Kim, Young Noh, and Dong-Hyun Kim

The 9th International Congress on Magnetic Resonance Imaging & 26th Annual Scientific Meeting of KSMRM (ICMRI) $\, \cdot \, 2021$ (AWARDED 1ST PRIZE AMONG ORAL PRESENTATIONS)

3. Cerebral Microbleeds Detection Using a 3D Feature Fused Region Proposal Network with Hard Sample Prototype Learning

Jun-Ho Kim, **Haejoon Lee**, Kyu-Jin Jung, Mohammed A. Al-masni, and Dong-Hyun Kim 25th International Conference on Medical Image Computing and Computer Assisted Intervention (MIC-CAI) • 2022

2. A Single-stage Detector of Cerebral Microbleeds Using 3D Feature Fused Region Proposal Network (FFRP-Net)

Jun-Ho Kim, Mohammed A. Al-masni, **Haejoon Lee**, Kyu-Jin Jung, and Dong-Hyun Kim *International Conference on Artificial Intelligence Circuits and Systems* (AICAS) • 2022

1. 3D Multi-echo GRE Motion Detection by k-space Anomaly Detection

Sanghyeok Choi, Seul Lee, **Haejoon Lee**, Kyu-Jin Jung, and Dong-Hyun Kim

The 9th International Congress on Magnetic Resonance Imaging & 26th Annual Scientific Meeting of

KSMRM (ICMRI) * 2021

AWARDS AND HONORS

- PRESIDENTIAL FELLOWSHIP FUNDED BY A TATA CONSULTING SERVICES (TCS) GIFT 2024
 Covers tuition and stipend for the 2024-2025 academic year at Carnegie Mellon University.
- THE KOREAN GOVERNMENT SCHOLARSHIP PROGRAM FOR STUDY OVERSEAS 2023
 Selected as one of the five Korean students in the digital field.
- BEST SCIENTIFIC AWARDS [1ST PRIZE] ORAL PRESENTATION 2021 Awarded 1st prize among oral presentation in ICMRI 2021.
- ACADEMIC EXCELLENCE SCHOLARSHIP 2021
 Yonsei University, Seoul, Korea
- HIGH HONORS 2020
 Ranked in the top 3% of undergraduate students in the EEE departmen at Yonsei University.

SERVICES

- Reviewer: CVPR, ICCV, Transactions on Computers
- Teaching: Recitation lecture TA for 18290 Signals and Systems Carnegie Mellon University
 2025

Graduate Thesis TA • Yonsei University • 2021

GRADUATE COURSEWORK

16825 Learning for 3D Vision • Fall 2025

18792 Advanced Digital Signal Processing • Fall 2024

10725 Convex Optimization • Spring 2024

15862 Computational Photography • Fall 2023

18752 Estimation, Detection, and Learning • Spring 2023

18786 Introduction to Deep Learning • Spring 2023

18793 Image and Video Processing • Fall 2022

16720 Computer Vision • Fall 2022