

# HAEJOON LEE

Email: [haejoonl@andrew.cmu.edu](mailto:haejoonl@andrew.cmu.edu)

Website: <https://haejoonlee.com>

---

## RESEARCH INTERESTS

COMPUTER VISION and COMPUTATIONAL PHOTOGRAPHY / IMAGING  
GENERATIVE MODELS for IMAGING

---

## 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**, Soumya 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)* • 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 (MICCAI)* • 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  
Awarded for outstanding academic performance at Yonsei University.
  - HIGH HONORS • 2020  
Ranked in the top 3% of undergraduate students in the EEE department at Yonsei University.
- 

## SERVICES

- Reviewer: CVPR, ICCV, Transactions on Computers
  - Teaching: Recitation lecture TA for 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