

Sungjin Cheong

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EDUCATION

- **University of Wisconsin-Madison** *Sep. 2025 – Present*
Ph.D. in Computer Sciences (*Advisor: Mohit Gupta*) *Madison, WI, USA*
- **KAIST** *Sep. 2021 – Aug. 2023*
M.S. in Mechanical Engineering (*Advisor: Yong-Hwa Park*) *Daejeon, Republic of Korea*
- **Yonsei University** *Mar. 2014 – Aug. 2021*
B.S. in Mechanical Engineering *Seoul, Republic of Korea*

RESEARCH INTERESTS

- Physics-Grounded Intelligent Sensing and Imaging Systems
- Multisensor World Representations
- ToF/LiDAR Computational Imaging
- Statistical Signal Processing and Inverse Problems
- Physics-Based and Learning-Based Modeling

PUBLICATIONS & CONFERENCES

J=JOURNAL, IC=INTERNATIONAL CONFERENCE, DC = DOMESTIC CONFERENCE

- [IC.1] **Ghosts in the Point Clouds: De-glaring LiDAR in the Transient Domain**
Gump, A.; Henley, C. A.; **Cheong, S. J.**; Prabhakara, A.; Gupta, M. *CVPR*
- [J.1] **Thermal-Infrared Remote-Target Detection System for Maritime Rescue Using 3-D Game-Based Data Augmentation With GAN**
Cheong, S. J.; Jung, W.; Lim, Y. S.; Park, *IEEE Transactions on Geoscience and Remote Sensing* (*IF: 9.4)
Y. H.
- [IC.2] **LiDAR Blooming Artifacts Estimation Method Induced by Retro-Reflectance With Synthetic Data Modeling and Deep Learning**
Cheong, S. J.; Ha, J. S. *ICCE-Asia*
- [IC.3] **Infrared Image-Based Remote Target Detection for Maritime Rescue Utilizing a Deep Learning Network and Data Augmentation**
Cheong, S. J.; Lim, Y. S.; Jung, W. H.; Park, Y. H. *SPIE*
- [IC.4] **MEMS-Based Indirect Time-of-Flight Scanning LiDAR With Parallel-Phase Demodulation and Multi-path Interference Suppression**
Lee, S. H.; Lim, Y. S.; **Cheong, S. J.**; Park, Y. H. *SPIE*
- [IC.5] **A Long-Distance 3D Face Recognition Architecture Utilizing MEMS-Based Region-Scanning LiDAR**
Lim, Y. S.; Lee, S. H.; **Cheong, S. J.**; Park, Y. H. *SPIE*
- [DC.1] **Head Pose Estimation Method Using Depth Camera Based on 3D Point Cloud**
Cheong, S. J.; Lee, S. H.; Lim, Y. S.; Park, Y. H. *The Korean Society of Mechanical Engineers*
- [DC.2] **Validation of Simulation Model for 3D Indirect Time-of-Flight Sensor**
Lee, S. H.; Lim, Y. S.; **Cheong, S. J.**; Park, Y. H. *The Korean Society of Mechanical Engineers*
- [DC.3] **Infrared Small Object Detection Based on Histogram Transformation**
Cheong, S. J.; Jung, W.; Park, Y. H. *The Korean Society of Mechanical Engineers*
- [DC.4] **Depth Image Super Resolution Method for Time-of-Flight Camera Using Single RGB Image Depth Estimation**
Lim, Y. S.; Lee, S. H.; **Cheong, S. J.**; Park, Y. H. *The Korean Society of Mechanical Engineers*
- [DC.5] **Depth Error Correction of 3D Scanning Sensor Using Machine Learning**
Lee, S. H.; Lim, Y. S.; **Cheong, S. J.**; Park, Y. H. *The Korean Society of Mechanical Engineers*

RESEARCH & WORK EXPERIENCE

- **University of Wisconsin-Madison** Aug. 2025 – Current
Research Assistant | WISION Lab
Topic: De-glaring in Time-of-Flight Imaging
 - Contributed to the development of **de-glaring algorithm** in dToF LiDAR transient domain.
- **LG Innotek Inc.** Aug. 2023 – Aug. 2025
LiDAR Software Researcher | Base Technology Lab
Topic: Single-Photon LiDAR Imaging & Statistical Signal Processing
 - Contributed to the development of **company's first dToF LiDAR prototype**.
 - Developed **statistical image/signal processing algorithms** for single-photon LiDAR.
 - Designed **artifact-suppression pipelines** for single-photon LiDAR.
 - Developed **range-walk compensation** algorithms for single-photon LiDAR using **statistical signal processing** on time-resolved photon histograms.
- **KAIST** Sep. 2021 – Aug. 2023
Research Assistant | Human-Machine Interaction Lab
Project: Indirect Time-of-Flight LiDAR Imaging & Signal Processing (Intek Plus Inc., Daejeon, Republic of Korea)
 - Contributed to the development of an **iToF AMCW LiDAR platform**, including optical architecture, modulation scheme, and signal processing workflow.
 - Developed **machine learning-based signal processing algorithms** to correct **internal stray light and multi-path interference** within the iToF optical system.
 - Built an **iToF LiDAR-based vision platform** that integrates depth and intensity data for downstream 3D perception and human-machine interaction tasks.*Project: Thermal-Infrared Imaging (Korean Coast Guard, Incheon, Republic of Korea)*
 - Led development of an **infrared imaging system** for remote target detection using **physics engine-based simulation** for data augmentation to enhance detectability and localization performance.

HONORS & AWARDS

- **Summer Research Fellowship** 2026
University of Wisconsin-Madison
- **Academic Excellence Scholarship** 2017, 2020
Yonsei University
- **Academic Excellence Award** 2017
Yonsei University

SKILLS

- **Programming Languages:** Python, C/C++, MATLAB, LabVIEW
- **Frameworks and Libraries:** PyTorch, OpenCV, Open3D, MMDetection3D, ROS, Git
- **Visualization Tools:** CloudCompare, MeshLab, Weights and Biases
- **Hardware:** Oscilloscope, Function Generator
- **Language Skills:** Korean (Native), English (fluent)

RELEVANT COURSEWORK

- **Machine learning:** Mathematical Foundation of ML, Advanced Deep Learning in NLP, Pattern Recognition, Theoretical Foundation of ML, Matrix Methods in ML
- **Computer Vision:** Mobile Robotics and Autonomous Navigation, Autonomous Mobile System Programming, Introduction to Visual Intelligence
- **Statistics & Signal Processing:** Probability and Statistics, Introduction to Statistics, Random Data Analysis and Processing
- **Robotics:** Intelligent Robotics
- **Optimization:** Nonlinear Optimization

TEACHING EXPERIENCE

- **University of Wisconsin-Madison** Sep. 2025 – Current
Teaching Assistant
Madison, WI, USA
 - CS 766: Computer Vision
 - CS566: Introduction to Computer Vision