Eun Sun Lee

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Research Vision

Exploring visual-spatial representations for robotic perception, long-term adaptation and resilient decision-making.

Education

PhD   **Seoul National University**, Electrical and Computer Engineering   March 2021 – Present
- Advised by Prof. Young Min Kim, 3D Vision Lab

MS   **University of California, Los Angeles**, Electrical and Computer Engineering   Sep 2016 – Dec 2018
- Advised by Prof. Mani Srivastava, NESL

BS   **University of Virginia**, Electrical and Computer Engineering   Aug 2010 – May 2015
- *With Distinction*

Experience

3D Vision Lab, Seoul National University   Seoul, Korea
Graduate Student Researcher   March 2021 – Present
- Research robust and compact map representations for vision-based navigation, focusing on spatial consistency, multi-session alignment, and dynamic scene understanding.
- Explore domain adaptation techniques using self-supervised learning to enhance navigation robustness under noisy or shifted sensory conditions.

LG Electronics H&A R&D Lab   Seoul, Korea
Associate Researcher   Jul 2019 – Feb 2021
- Designed control systems for a robotic vacuum cleaner in a research-driven embedded robotics setting.

Networked & Embedded Systems Lab, UCLA   Los Angeles, CA
Graduate Student Researcher (KAUST Project)   Sep 2016 – Dec 2018
- Designed *AquaMote*, an energy-efficient inertial sensor tag for fine-grained animal localization and motion tracking.
- Conducted field deployment at Oceanogràfic València and collaborated with the internationally coordinated KAUST Sensor Initiative on system development, data analysis, and validation in marine environments.

Korea Institute of Science and Technology (KIST)   Seoul, Korea
Intern, Imaging Media Research Center   Aug 2015 – Jul 2016
- Designed and built an AR-based robotic assistant system for elderly care applications.

Publications

Multi-agent exploration with similarity score map and topological memory   IEEE RA-L 2024
Eun Sun Lee and Young Min Kim

Calibrating panoramic depth estimation for practical localization and mapping   ICCV 2023
Junho Kim, *Eun Sun Lee* and Young Min Kim

MoDA: Map style transfer for self-supervised Domain Adaptation of embodied agents   ECCV 2022
Eun Sun Lee, Junho Kim and Young Min Kim

Self-supervised domain adaptation for visual navigation with global map consistency
Eun Sun Lee, Junho Kim and Young Min Kim
<div align="right">WACV 2022</div>

Deep convolutional bidirectional LSTM based transportation mode recognition
Vikranth Jeyakumar, *Eun Sun Lee* et al.
<div align="right">HASCA 2018</div>

Given the machine a hand: A Boolean time-based decision-tree template for rapidly finding animal behaviours in multi-sensor data
Rory P. Wilson et al. (including *Eun Sun Lee*)
<div align="right">Methods in Ecology and Evolution 2018</div>

AquaMote-Ultra Low Power Sensor Tag for Animal Localization and Fine Motion Tracking
Eun Sun Lee Vikranth Jeyakumar Bharathan Balaji and Mani Srivastava
<div align="right">ACM SenSys Poster 2017</div>

Projector-camera based remote assistance device for the elderly: design issues and implementation
Jin Uk Kwon, *Eun Sun Lee*, and Sang Chul Ahn
<div align="right">IEEE/SICE SII 2016</div>

Relevant Skills

Programming Languages: Python, PyTorch, C++, Matlab

Tools & Frameworks: Habitat Simulator, ROS, Altium Designer

Languages: Korean and English (fluent)

Academic Activities

- Selected oral speaker, **ICRA Doctoral Consortium**, May 2025

- Invited lecture on generative AI at colloquium **"AI Robotics in the Humanities and Arts"**, Nov 2023

- Talk at the **MLAD Workshop** (Map-based Localization for Autonomous Driving), **ECCV**, Oct 2022