Nuri Kim

Contact Information

Samsung Advanced Institute of Technology (SAIT)
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Citizenship

Republic of Korea

Research Interests

Deep Reinforcement Learning, Computer Vision, Robotics.

Education

Seoul National University, Seoul, South Korea — Mar. 2016 - Feb. 2023
- Ph.D. Thesis: Robust Semantic Visual Graphs for Navigation of Embodied Agents
- Advisor: Prof. Songhwai Oh

Australian National University, Canberra, Australia — Jul. 2014 - Nov. 2014
- Overseas Study Program in Electrical Engineering

Korea University, Seoul, South Korea — Mar. 2012 - Feb. 2016
- B.S. in Electrical Engineering (*Cum Laude*) — GPA: 4.2/4.5, Major: 4.4/4.5

Research Experience

Computer Vision Lab, Samsung Advanced Institute of Technology (SAIT)
- Staff researcher — Mar. 2023 - Present

Robot Learning Laboratory, SNU (Advisor: Prof. Songhwai Oh)
- Graduate researcher — Mar. 2016 - Feb. 2023

HandS (Hardware and Software research club)
- Member — Mar. 2014 - Dec. 2015
- Team leader — Jan. 2015 - Dec. 2015

International Journal

Nuri Kim, Jeongho Park, Mineui Hong, and Songhwai Oh, "Semantic Environment Atlas for Object-Goal Navigation", *Knowledge-Based Systems*, pp. 112446, Sep 2024.

Nuri Kim, Donghoon Lee, and Songhwai Oh, "Learning Instance-Aware Object Detection Using Determinantal Point Processes", *Computer Vision and Image Understanding* (CVIU), vol. 201, Dec 2020.

Hyemin Ahn, Sungjoon Choi, **Nuri Kim**, Geonho Cha, and Songhwai Oh, "Interactive Text2Pickup Networks for Natural Language based Human-Robot Collaboration," *IEEE Robotics and Automation Letters* (RA-L), vol. 3, no. 4, pp. 3308–3315, Oct 2018.

International Conference

Nuri Kim, Obin Kwon, Hwiyeon Yoo, Yunho Choi, Jeongho Park, and Songhwai Oh, "Topological Semantic Graph Memory for Image-Goal Navigation," in *Proc of the Conference on Robot Learning* (CoRL), Dec. 2022. **(Oral Presentation, Acceptance Rate: 6.5%)**

Obin Kwon, **Nuri Kim**, Yunho Choi, Hwiyeon Yoo, Jeongho Park, and Songhwai Oh, "Visual Graph Memory with Unsupervised Representation for Visual Navigation," in *Proc. of the International Conference on Computer Vision* (ICCV), Oct. 2021.

Nuri Kim, Minjae Kang, and Songhwai Oh, "Semantic Descriptors into Representation for Robust Indoor Visual Place Recognition," in *Proc. of the International Conference on Control, Automation and Systems* (ICCAS), Oct. 2021.

Nuri Kim, Yunho Choi, Minjae Kang, Songhwai Oh, "GOPE: Geometry-Aware Optimal Viewpoint Path Estimation Using a Monocular Camera," in *Proc. of the International Conference on Control, Automation and Systems* (ICCAS), Oct. 2020.

Hwiyeon Yoo, **Nuri Kim**, Jeongho Park, Songhwai Oh, "Path-Following Navigation Network Using Sparse Visual Memory," in *Proc. of the International Conference on Control, Automation and Systems* (ICCAS), Oct. 2020.

Yunho Choi, **Nuri Kim**, Jeongho Park, Songhwai Oh, "Viewpoint Estimation for Visual Target Navigation by Leveraging Keypoint Detection," in *Proc. of the International Conference on Control, Automation and Systems* (ICCAS), Oct. 2020.

Hyemin Ahn, Sungjoon Choi, **Nuri Kim**, Geonho Cha, and Songhwai Oh, "Interactive Text2Pickup Networks for Natural Language based Human-Robot Collaboration," in *IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Oct. 2018.

Awards and Honors

Awards and Scholarships

- Brain Korea 21 Plus Scholarship 2021, 2020, 2019
- Great Paper Award, Korean Institute of Information Scientists and Engineers 2017
- Lecture & Research Scholarship 2016
- Graduate with Great Honor, Korea University 2016
- National Scholarship For Science and Engineering 2014-2015
  Funded by Korea Student Aid Foundation (KOSAF)
- Creative Challenger Scholarship, Korea University 2015

Teaching Experiences

Invited Talk

- Semantic Visual Navigation for Embodied Agents: A Graph-Based Approach, KAIST Feb 2023
- Intelligent Robotics Course, Korea University June 2022

Teaching Assistant

- Graduation Project, Seoul National University Fall 2018
- Introduction to Intelligent Systems, Seoul National University Fall 2016

Research Project Experiences

[**Navi AI**] Development of AI Technology for Guidance of a Mobile Robot to its Goal with Uncertain Maps in Indoor/Outdoor Environments 2019-2023

- Developed an indoor environment navigation robot that works even in unknown environments by leveraging semantic understanding when maps are unavailable.

[**SW Star Lab**] Robot Learning: Efficient, Safe, and Socially-Acceptable Machine Learning 2019-2023

- Developed a robot navigation technology capable of predicting crowd trajectories and performing social actions in various crowd cluster scenarios.

[**Brain AI**] Brain-Inspired AI with Human-Like Intelligence 2019-2023

- Developed a reliable object detector in occluded environments

[**Giga 4D**] Real-time 4D reconstruction of dynamic objects for ultra-realistic service 2017-2020

- Collected 3D point cloud data for dynamic object registration and alignment.

Programming Skills

Programming language: Python, C/C++, Matlab, HTML/CSS, Javascript, Google app scripts
Software: Pytorch, Habitat, OpenCV, TensorFlow, LaTeX