Yunho Choi

CONTACT INFORMATION	AI/Robotics Researcher Robotics AI Group, Robotics eXperience Office, Samsung Electronics Co., Ltd, Seoul, South Korea	*Homepage:* ececyh.github.io *Mobile:* +82-10-2858-4872 *Email:* ececyh@snu.ac.kr

RESEARCH INTERESTS

Vision-Based Robot Control, Reinforcement Learning, Robotics Foundation Model

EDUCATION

Ph.D. in Electrical and Computer Engineering Mar. 2017 - Feb. 2024
- Robot Learning Laboratory, Seoul National University, South Korea
- Thesis: Efficient Decision-Making of Embodied Agents Using Local Interest Points
- Advisor: Prof. Songhwai Oh GPA: 4.03 / 4.3

B.S. in Electrical and Computer Engineering Mar. 2013 - Feb. 2017
- Seoul National University, South Korea GPA: 3.91 / 4.3

PUBLICATIONS

Boseong Jeon, **Yunho Choi**, and Taehan Kim, **"Shallow-π: Knowledge Distillation for Flow-based VLAs,"** in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Sep. 2026. **(Best Paper Award Finalist)**

Hwiyeon Yoo, **Yunho Choi**, Jeongho Park and Songhwai Oh, **"Commonsense-Aware Object Value Graph Navigation for ObjectNav,"** *IEEE Robotics and Automation Letters (RA-L),* 2024 and *40th Anniversary of the IEEE Conference on Robotics and Automation (ICRA@40),* Sep. 2024.

Yunho Choi, Jaeseok Heo, Nuri Kim, and Songhwai Oh, **"KG-Nav: Bridging the Gap between Visual Servoing and Image-Goal Navigation via Keypoint Graph-Based Reinforcement Learning,"** *Preprint,* 2023.

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.

Jaeseok Heo, **Yunho Choi**, and Songhwai Oh, "Image-Goal Navigation via Metric Mapping and Keypoint based Reinforcement Learning," in *Proc. of the International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2021.

Yunho Choi and Songhwai Oh, **"Image-Goal Navigation via Keypoint-Based Reinforcement Learning,"** in *Proc. of the International Conference on Ubiquitous Robots (UR)*, Jul. 2021.

Yoonseon Oh, Kyunghoon Cho, **Yunho Choi**, and Songhwai Oh, "Chance-Constrained Multi-Layered Sampling-Based Path Planning for Temporal Logic-Based Missions," *IEEE Transactions on Automatic Control (TAC)*, Dec. 2020.

Kyungjae Lee, Jaegu Choy, **Yunho Choi**, Hogun Kee, and Songhwai Oh, "No-Regret Shannon Entropy Regularized Neural Contextual Bandit Online Learning for Robotic Grasping," in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 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

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.

Kyungjae Lee, **Yunho Choi**, and Songhwai Oh, "Inverse Optimal Control from Demonstrations with Mixed Qualities," in *Proc. of the International Conference on Ubiquitous Robots (UR)*, Jun. 2020.

Yunho Choi, Hogun Kee, Kyungjae Lee, Jaegoo Choy, Junhong Min, Sohee Lee, and Songhwai Oh, **"Hierarchical 6-DoF Grasping with Approaching Direction Selection,"** in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2020.

Kyungjae Lee, **Yunho Choi**, and Songhwai Oh, "Inverse Optimal Control from Demonstrations with Mixed Qualities," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA) Workshop on Learning Legged Locomotion*, May 2019.

Yunho Choi, Kyungjae Lee, and Songhwai Oh, **"Distributional Deep Reinforcement Learning with a Mixture of Gaussians,"** in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, May. 2019.

Hyemin Ahn, Timothy Ha*, **Yunho Choi***, Hwiyeon Yoo*, and Songhwai Oh, "Text2Action: Generative Adversarial Synthesis from Language to Action," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, May. 2018.

Yoonseon Oh, Kyunghoon Cho, **Yunho Choi**, and Songhwai Oh, "Robust Multi-Layered Sampling-Based Path Planning for Temporal Logic-Based Missions," in *Proc. of the IEEE Conference on Decision and Control (CDC)*, Dec. 2017.

Yunho Choi, Inhwan Hwang, and Songhwai Oh, "Wearable Gesture Control of Agile Micro Quadrotors," in *Proc. of the IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI)*, Nov. 2017.

Kyunghoon Cho, **Yunho Choi**, and Songhwai Oh, "Reactive Controller Synthesis for UAV Mission Planning," in *Proc. of the International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, Jun. 2017

Honors

Awards and Scholarships

- Graduate Scholarship, Korea Foundation for Advanced Studies 2017 - 2024
- Brain Korea 21 Plus Scholarship 2018 - 2022
- Certificate of Excellent Teaching Assistant in Introduction to IoT·AI·Big Data Course, Seoul National University 2018
- Summa Cum Laude, Seoul National University 2017
- Scholarship for Academic Excellence, Seoul National University 2014 -2016
- Samsung Scholarship for Junior Frontier Leader 2012

Experience

Work Experience

Staff Engineer, Robotics AI Group, Robotics eXperience Business Office, Samsung Electronics Co., Ltd.

- Development of Samsung's in-house VLA model architecture
- Pretraining VLAs for generalist humanoid with in-house data Jun. 2025 - Present

AI Robotics Researcher, Sequor Robotics, Inc.
- Development of visual localization algorithms
- Development of 3D perception foundation models Sep. 2023 - Apr. 2025

Research Intern at Advanced R&D Group, VD Division, Samsung Electronics Co., Ltd
- Development of a vision-based navigation for an RC car Jul. 2015 - Aug. 2015

Research Experience

AI Technology for Guidance of a Mobile Robot to its Goal with Uncertain Maps in Indoor/Outdoor Environments - Ministry of Science and ICT (MSIT)
- Team Lead & Development of a reinforcement learning algorithm for image-goal navigation of a mobile robot Mar. 2019 - 2023

Smart Campus - Samsung Electronics Co., Ltd
- Development of learning-based gesture recognition from sensor data of wearable devices May 2017 - Apr. 2019

Robot Learning from Demonstrations with Mixed Qualities - National Research Foundation (NRF)
- Development of an inverse optimal control algorithm for demonstrations with mixed qualities Mar. 2017 - Feb. 2019

Teaching Experience
- Lecturer, Bootcamp for AI Engineers with SOCAR Real-World Data 2021, 2022
- TA, Deep Reinforcement Learning, Seoul National University Spring 2019
- TA, Introduction to Deep Learning, SNU Big Data Academy Fall 2018
- TA, Introduction to IoT·AI·Big Data, Seoul National University Fall 2018
- TA, Introduction to Intelligent Systems, Seoul National University Fall 2017

Professional Services

Reviewer
- IEEE Transactions on Robotics (T-RO)
- IEEE Robotics and Automation Letters (RA-L)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE/CVF International Conference on Computer Vision (ICCV)
- IEEE International Conference on Ubiquitous Robots (UR)

Programming Skills

Language: C++/C, Python, Matlab
Software: ROS/ROS2, PyTorch, TensorFlow, OpenCV