

SEUNGCHAN KIM

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Website: <https://seungchan-kim.github.io>

EDUCATION

Carnegie Mellon University

Ph.D. Student at Robotics Institute

Advisor: Sebastian Scherer

Pittsburgh, PA

Sep 2020 - Present

Brown University

M.S. in Computer Science

B.S. in Applied Mathematics & Computer Science

Advisor: George Konidaris

Providence, RI

Sep 2019 - May 2020

Sep 2013 - May 2019

RESEARCH EXPERIENCE

CMU AirLab

Graduate Research Assistant

Pittsburgh, PA

Sep 2020 - Present

- Conducting research in artificial intelligence and robotics, toward a Ph.D.
- Focus on robot exploration & navigation, multi-robot systems, and embodied AI.

Brown University Intelligent Robot Lab

Undergraduate Research Assistant

Providence, RI

Sep 2017 - May 2020

- Researched on deep reinforcement learning and model-based reinforcement learning.

JOURNAL PUBLICATIONS

1. Multi-Robot Multi-Room Exploration with Geometric Cue Extraction and Circular Decomposition

Seungchan Kim, Micah Corah, John Keller, Graeme Best, Sebastian Scherer

IEEE Robotics and Automation Letters (RA-L) 2023

Presentation at International Conference on Robotics and Automation (ICRA) 2024

2. Unsupervised Online Learning for Robotic Interestingness with Visual Memory

Chen Wang, Yuheng Qiu, Wenshan Wang, Yafei Hu, Seungchan Kim, Sebastian Scherer

IEEE Transactions on Robotics (T-RO) 2021

CONFERENCE PUBLICATIONS

1. AirDet: Few-Shot Detection without Fine-tuning for Autonomous Exploration

Bowen Li, Chen Wang, Pranay Reddy, Seungchan Kim, Sebastian Scherer

European Conference on Computer Vision (ECCV) 2022

2. Robotic Interestingness via Human-Informed Few-Shot Object Detection

Seungchan Kim, Chen Wang, Bowen Li, Sebastian Scherer

IEEE/RSJ International Conference on Robotics and Systems (IROS) 2022

3. DeepMellow: Removing the Need for a Target Network in Deep Q-Learning

Seungchan Kim, Kavosh Asadi, Michael Littman, George Konidaris

International Joint Conference on Artificial Intelligence (IJCAI) 2019

Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM) 2019

PREPRINTS, WORKSHOP PAPERS, EXTENDED ABSTRACTS

1. MapEx: Indoor Structure Exploration with Probabilistic Information Gain from Global Map Predictions

Cherie Ho*, Seungchan Kim*, Brady Moon, Aditya Parandekar, Narek Harutyunyan, Chen Wang,

Katia Sycara, Graeme Best, Sebastian Scherer

arXiv preprint arXiv:2409.15590 (2024). Submitted to ICRA 2025. Under Review

(*: Equal Contributions)

2. **Toward General-Purpose Robots via Foundation Models: A Survey and Meta-Analysis**
 Yafei Hu*, Quanting Xie*, Vidhi Jain*, Jonathan Francis, Jay Patrikar, Nikhil Keetha, **Seungchan Kim**,
 Yaqi Xie, Tianyi Zhang, Shibo Zhao, Yu-Quan Chong, Chen Wang, Katia Sycara, Matthew Johnson-Roberson,
 Dhruv Batra, Xiaolong Wang, Sebastian Scherer, Zsolt Kira, Fei Xia, Yonatan Bisk
arXiv preprint arXiv:2312.08782 (2023)
3. **Adaptive Temperature Tuning for Mellowmax in Deep Reinforcement Learning**
Seungchan Kim, George Konidaris
NeurIPS 2019 Deep Reinforcement Learning Workshop
4. **Combating the Compounding-Error Problem with a Multi-step Model**
 Kavosh Asadi, Dipendra Misra, **Seungchan Kim**, Michael Littman
arXiv preprint arXiv:1905.13320 (2019)
5. **Removing the Target Network from Deep Q-Networks with the Mellowmax Operator**
Seungchan Kim, Kavosh Asadi, Michael Littman, George Konidaris
International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2019
6. **Using Computational Analysis of Behavior to Discover Developmental Change in Memory-Guided Attention Mechanisms in Childhood**
 Dima Amso, Lakshmi Govindarajan, Pankaj Gupta, Heidi Baumgartner, Andrew Lynn, Kelley Gunther,
 Diego Placido, Tarun Sharma, Vijay Veerabadran, Kalpit Thakkar, **Seungchan Kim**, Thomas Serre
PsyArXiv. doi:10.31234/osf.io/gq4rt

ADVISING & MENTORING

Undergraduate Research

- Narek Harutyunyan (Brown University; CMU RISS Intern) Jun 2024 - Aug 2024
- Aditya Parandekar (BITS Pilani - Goa Campus; Visiting Intern) Jun 2023 - Dec 2023

TEACHING

- Teaching Assistant, CMU 16-711 Kinematics, Dynamics, Control Jan 2023 - May 2023
- Teaching Assistant, CMU 16-833 Robot Localization and Mapping Jan 2022 - May 2022
- Teaching Assistant, Brown CSCI1430 Computer Vision Jan 2019 - May 2019
- Teaching Assistant, Brown CSCI0040 Scientific Computing and Problem Solving Jan 2015 - May 2015

ACADEMIC ACTIVITIES

Organizer

- Tartan Planning Series Mar 2023 - May 2023

Reviewer

- **Robotics:** IJRR, IEEE RA-L, IROS, ICRA, MRS
- **Machine Learning:** ICLR, NeurIPS, AACL, ICML

INVITED TALKS

- An Alternative Softmax Operator for Deep Reinforcement Learning** Sep 2019
 Machine Intelligence Community (MIC) Conference, Boston, MA

MEDIA COVERAGE

- Autonomous Aerial Robots Communicate, Prioritize Rooms in Multiroom Exploration** Jul 2024
 Marylee Williams, CMU School of Computer Science News