SEUNGCHAN KIM

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

EDUCATION

Carnegie Mellon University   *Pittsburgh, PA*
Ph.D. Student at Robotics Institute   Sep 2020 - Present
Advisor: Sebastian Scherer

Brown University   *Providence, RI*
M.S. in Computer Science   Sep 2019 - May 2020
B.S. in Applied Mathematics & Computer Science   Sep 2013 - May 2019
Advisor: George Konidaris

RESEARCH EXPERIENCE

CMU AirLab   *Pittsburgh, PA*
Graduate Research Assistant   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   *Providence, RI*
Undergraduate Research Assistant   Sep 2017 - May 2020

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

PUBLICATIONS

1. **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)

2. **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.
   Selected for Presentation at International Conference on Robotics and Automation (ICRA) 2024.

3. **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.

4. **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.

5. **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.

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.

7. **Combating the Compounding-Error Problem with a Multi-step Model**
Kavosh Asadi, Dipendra Misra, **Seungchan Kim**, Michael Littman.
arXiv preprint arXiv:1905.13320 (2019).

8. **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.

9. **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.

ADVISING & MENTORING

Undergraduate Research

Aditya Parandekar (Birla Institute of Technology and Science Pilani, Goa Campus)   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, ICRA 2023, MRS 2023
- **Machine Learning:** ICLR 2021/2023, NeurIPS 2021/2022, AAAI 2021, ICML 2020

INVITED TALKS

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