

# SEUNGCHAN KIM

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

## EDUCATION

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### 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

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### 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.

## PUBLICATIONS

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1. **MapEx: Fast Indoor Structure Understanding by Exploring with Global Map Predictions**  
Cherie Ho\*, **Seungchan Kim\***, Brady Moon, Aditya Parandekar, Chen Wang, Katia Sycara, Graeme Best, Sebastian Scherer. *Submitted to IROS 2024. Under Review.*
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. **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.*  
*International Conference on Robotics and Automation (ICRA) 2024.*
4. **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.*
5. **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.*
6. **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.*
7. **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.

8. **Combating the Compounding-Error Problem with a Multi-step Model**

Kavosh Asadi, Dipendra Misra, **Seungchan Kim**, Michael Littman.

*arXiv preprint arXiv:1905.13320 (2019)*.

9. **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*.

10. **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*.

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**ADVISING & MENTORING**

**Undergraduate Research**

Aditya Parandekar (BITS Pilani, Goa Campus)

Jun 2023 - Dec 2023

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**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 |

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**ACADEMIC ACTIVITIES**

**Organizer**

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| • Tartan Planning Series | Mar 2023 - May 2023 |
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**Reviewer**

- **Robotics:** IJRR, IEEE RA-L, IROS 2024, ICRA 2023, MRS 2023
- **Machine Learning:** ICLR 2021/2023, NeurIPS 2021/2022, AAAI 2021, ICML 2020

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**INVITED TALKS**

**An Alternative Softmax Operator for Deep Reinforcement Learning**

Machine Intelligence Community (MIC) Conference

Sep 2019

*Boston, MA*