Dong Ki Kim

Contact Information

77 Massachusetts Avenue, Room 31-232C
Cambridge, MA, 02139

Email: dkkim93@mit.edu
Web: https://dkkim93.github.io/

Education

Massachusetts Institute of Technology, Cambridge, MA — **September 2017 – Present**
S.M. in Aeronautics and Astronautics
Focus: Reinforcement Learning
Cumulative GPA: 5.0/5.0

Cornell University, Ithaca, NY — **Graduated January 2016**
B.S. in Electrical and Computer Engineering
Highest Honors: *Summa Cum Laude*

Research Experience

Laboratory for Information and Decision Systems — **September 2017 – Present**
Massachusetts Institute of Technology
Advisor: Professor. Jonathan P. How

- As part of MIT-IBM Watson AI Lab, developed peer-to-peer teaching frameworks for agents to learn to teach in cooperative multiagent reinforcement learning settings.
- Built attention-based hierarchical reinforcement learning framework that identifies useful latent features across multiple sensory inputs and accelerates in transfer learning.

The Air Lab, The Robotics Institute — **August 2016 – July 2017**
Carnegie Mellon University
Advisor: Professor. Sebastian Scherer

- Developed deep multimodal network that improves segmentation robustness to appearance variations, e.g., Summer vs Winter, by combining image and LiDAR sensor data.
- Built ROS-based system that estimates terrain roughness from LiDAR sensor data in real-time.

The Robot Intelligence through Perception Lab — **January 2016 – July 2016**
Toyota Technological Institute at Chicago
Advisor: Professor. Matthew R. Walter

- Developed cross-view visual localization system that estimates vehicle's pose on georeferenced satellite map given sequence of ground-level images.
- Improved LSD-SLAM's pose estimation by incorporating ORB-SLAM's pose-graph keyframe constraints.

Advanced Multimedia Processing Lab — **May 2014 – January 2016**
Cornell University
Advisor: Professor. Tsuhan Chen

- Built vision-based system that enables drone to navigate indoors autonomously and find specific target.
- Developed indoor localization algorithm based on floor plan and camera.

Publication

Conference Paper

- Samir Wadhwania, **Dong-Ki Kim**, Shayegan Omidshafiei, and Jonathan P. How. Policy Distillation and Value Matching in Multiagent Reinforcement Learning. *International Conference on Intelligent Robots and Systems (IROS)*. 2019. (Under Review)
- Shayegan Omidshafiei, **Dong-Ki Kim**, Miao Liu, Gerald Tesauro, Matthew Riemer, Christopher Amato, Murray Campbell, and Jonathan P. How. Learning to Teach in Cooperative Multiagent Reinforcement Learning. *Association for the Advancement of Artificial Intelligence (AAAI)*. 2019. (**outstanding student paper honorable mention**)
- Shayegan Omidshafiei, **Dong-Ki Kim**, Jason Pazis, and Jonathan P. How. Crossmodal Attentive Skill Learner. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2018.
- **Dong-Ki Kim**, Daniel Maturana, Masashi Uenoyama, and Sebastian Scherer. Season-Invariant Semantic Segmentation with A Deep Multimodal Network. *Field and Service Robotics (FSR)*. 2017.
- **Dong-Ki Kim** and Matthew R. Walter. Satellite Image-based Localization via Learned Embeddings. *International Conference on Robotics and Automation (ICRA)*. 2017.
- Hang Chu, **Dong-Ki Kim**, and Tsuhan Chen. You Are Here: Mimicking the Human Thinking Process in Reading Floor-Plans. *International Conference on Computer Vision (ICCV)*. 2015.

Journal Paper

- **Dong-Ki Kim**, Shayegan Omidshafiei, Jason Pazis, and Jonathan P. How. Crossmodal Attentive Skill Learner. *Journal of Autonomous Agents and Multiagent Systems (JAAMAS)*. (submitted; invited submission)

Workshop and Symposium Paper

- **Dong-Ki Kim**, Miao Liu, Shayegan Omidshafiei, Sebastian Lopez-Cot, Matthew Riemer, Gerald Tesauro, Murray Campbell, Golnaz Habibi, and Jonathan P. How. Heterogeneous Knowledge Transfer via Hierarchical Teaching in Cooperative Multiagent Reinforcement Learning. *Association for the Advancement of Artificial Intelligence (AAAI) Workshop*. 2019.
- Shayegan Omidshafiei, **Dong-Ki Kim**, Miao Liu, Gerald Tesauro, Matthew Riemer, Christopher Amato,

Murray Campbell, and Jonathan P. How. Learning to Teach in Cooperative Multiagent Reinforcement Learning. *International Conference on Machine Learning (ICML) Workshop*. 2018.

- Shayegan Omidshafiei, **Dong-Ki Kim**, Jason Pazis, and Jonathan P. How. Crossmodal Attentive Skill Learner. *Neural Information Processing Systems (NIPS) Symposium*. 2017.
- Daniel Maturana, Sankalp Arora, Po-Wei Chou, **Dong-Ki Kim**, Masashi Uenoyama, and Sebastian Scherer. Online Semantic Mapping for Autonomous Navigation and Scouting. *Robotics: Science and Systems (RSS) Workshop*. 2017.

Technical Report

- **Dong-Ki Kim** and Tsuhan Chen. Deep Neural Network for Real-Time Autonomous Indoor Navigation. *arXiv preprint arXiv:1511.04668*. 2015.

Skill

Programming Language: Python, C/C++, Matlab, HTML, CSS, JavaScript
Tools/Library/Software: PyTorch, TensorFlow, Theano, Keras, Caffe, OpenCV, ROS, Point Cloud Library

Fellowship and Award

Kwanjeong Education Foundation Scholarship **September 2017 – Present**

- Receiving $30,000/year for 4-5 years for graduate studies

Merrill Presidential Scholar **February 2015**

- Nominated for Cornell University's prestigious award given to top 1% graduating seniors