

# Moonyoung (Mark) Lee

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## Education

### Carnegie Mellon University

PhD in Robotics, School of Computer Science (Aug. '21 – Present)  
Advisor: Oliver Kroemer, George Kantor

### Cornell University, Ithaca, NY

M.Eng. Electrical & Computer Engineering (Aug.'15 – May'16)  
B.S. Electrical & Computer Engineering, *Cum Laude* (Aug.'11 – May'15)

## Publications

R. Ge\*, **M. Lee\***, Y. Zhou, G. Rui, G. Loianno, "Vision-based Detection and Tracking for Relative Localization of Aerial Swarms" IEEE Robotics and Automation Letters (RA-L), 2022 (under review)

**M. Lee**, Y. Kwon, S. Lee, J. Choe, J. Park, H. Jeong, Y. Heo, M. Kim, S. Jo, S.E. Yoon, J.H. Oh, "Dynamic Humanoid Locomotion over Rough Terrain with Streamlined Perception-Control Pipeline" IEEE Conf. on Intelligent Robots & Systems (IROS), 2021 [[PDF](#)]

O. Sim, H. Jeong, J. Oh, **M. Lee**, K. Lee, H. Park, J.H. Oh "Joint Space Position/Torque Hybrid Control of the Quadruped Robot for Locomotion and Push Reaction" IEEE Conf Robotics & Automation (ICRA), 2020 [[PDF](#)]

**M. Lee**, Y. Heo, J. Park, H. Yang, P. Benz, H. Jang, H. Park, I. Kweon, J.H. Oh, "Fast Perception, Planning, and Execution for a Robotic Butler: Wheeled Humanoid M-Hubo", IEEE Conf. on Intelligent Robots & Systems (IROS) 2019 [[PDF](#)]

**M. Lee**, Y. Heo, S. Cho, H. Park, J.H. Oh, "Motion Generation Interface of ROS to PODO Software Framework for Wheeled Humanoid Robot", IEEE Conf. on Advanced Robotics (ICAR), 2019 [[PDF](#)]

J. Kreitz, **M. Lee**, A. Dave, H. Park, P.Y. Oh, J.H. Oh, "Implementing ROS Communications for Sensor Integration with the RB5 Collaborative Robot" IEEE Computing, Communication Workshop Conf. (CCWC), 2019 [[PDF](#)]

## Workshop Presentations

**M. Lee**, Y. Kwon, S. Lee, H. Jeong, Y. Heo, M. Kim, J.H. Oh, "Geometric Footstep Planning and Control for Dynamic Humanoid Locomotion over Uneven Terrain" Workshop on Geometric Methods to Robot Learning, Optimization, Control, (IROS) 2020

**M. Lee**, Y. Heo, S. Cho "Wheeled Humanoid API" (ROSCon) 2019

## Magazine Publication

P. Slater, **M. Lee**, "Building a Robotic Candy Sorter" Circuit Cellar Graphics & Vision, Issue 329 Dec.'17: 10-16

## Project Experience

**New York University: Agile Robotics Perception Lab** Brooklyn, NY  
Research Scientist (Nov. '20 – Jul. '21)

- State estimation of multi-robots fusing Kalman Filter and DNN

**Korea Advanced Institute of Sci. Tech.: Hubo Lab** Daejeon, S. Korea  
Research Scientist (Mar. '17 – Oct. '20)

- Visual navigation for a legged robot in complex terrain
- Robot manipulation combining deep neural network detection with kinematically optimal trajectory
- Indoor mapping with Lidar and RGB-D camera in real-time
- Lead developer for mobile manipulator in WRS2019 competition

### **Computer Systems Lab, Cornell University**

Master's Project: Vision-Based Localization of Multiple Robots on Heterogeneous Platform, (Aug. '15 – Dec. '16)

- Implemented real-time robot tracking image pipeline on FPGA using HLS design flow for multi-robot navigation

**iRobot Corporation**, Bedford, MA

Systems Engineering Lead Intern, (Jan. '16 – Jul. '16)

- Created automated speed verification system for Roomba's cleaning test; system used for Roomba's performance claims

### **Cornell Project Team, Cornell University**

Team Leader of Autonomous Underwater Vehicle, (Aug. '11 – May '15)

- Oversaw design & production cycle of robotic submarine to navigate an underwater course (1<sup>st</sup> place, 2012-2014)
- Created PCB and firmware for vehicle's motor controller board

## Teaching Experience

### **Teaching Assistant, Cornell University**

- ECE4760: Digital Systems Design with Microcontrollers
- ECE2200: Signals and Information

## Honors

**KAIST Institute Excellence in Research Award** / 2018

**Cornell Knight Scholarship** (\$20,000 per year) / 2015 – 2016

**Korea's STX Foundation Scholarship** (\$50,000 per year) / 2011 – 2015

## Awards

**Stock & Disposal Competition, 3<sup>rd</sup> Place** / World Robot Summit / 2019

**International RoboSub Competition, 1<sup>st</sup> Place** / AUVSI & Naval Research / 2012, 2013, 2014

**International Botball Robotics Competition, 4<sup>th</sup> Place** / KIPR / 2010

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