Researcher (ETRI, Korea)

YOUNGSUN KWON

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Research Interest

- Real-time occupancy mapping
- Deep learning for 3-D reconstruction
- Sensor-based motion/path planning
- Multi-agent reinforcement learning

Experience

2023. 01. – present	Researcher at ETRI (Electronics and Telecommunications Research Institute), Daejeon, Korea
2022. 03. – 2022. 12.	Post-doc at KIST (Korea Institute of Science and Technology), Seoul, Korea

Education

2016. 02. – 2022. 02.	Ph.D., School of Computing, KAIST (advisor: Sung-Eui Yoon)
2014. 03. – 2016. 02.	M.S., Robotics Program, KAIST (advisor: Sung-Eui Yoon)
2010. 03. – 2014. 02.	B.S., Electronic & Electrical Engineering, Sungkyunkwan University
2010. 03. – 2014. 02.	B.S., Computer Engineering, Sungkyunkwan University (double major)

Publications

ICCAS 2022	PTZ Camera Control on Robot Telemedicine Service for Infectious Diseases, Seongah Park, **Youngsun Kwon**, and Yoonseob Lim The 22nd International Conference on Control, Automation and Systems (ICCAS) 2022
ICCAS 2022	Group Estimation for Social Robot Navigation in Crowded Environment, Mincheul Kim, **Youngsun Kwon**, and Sung-Eui Yoon The 22nd International Conference on Control, Automation and Systems (ICCAS) 2022
ICRA 2022	Implicit LiDAR Network: LiDAR Super-Resolution via Interpolation Weight Prediction, **Youngsun Kwon**, Minhyuk Sung, and Sung-Eui Yoon IEEE International Conference on Robotics and Automation (ICRA) 2022
Dissertation	Real-time Dense Occupancy Mapping using Spatial Correlation of Point Clouds, **Youngsun Kwon** (adviser: Sung-Eui Yoon) Ph.D. Thesis (School of Computing, KAIST) 2022
T-RO 2021	Diffraction- and Reflection-Aware Multiple Sound Source Localization, Inkyu An, **Youngsun Kwon**, and Sung-Eui Yoon IEEE Transactions on Robotics (T-RO) 2021
IROS 2021	Dynamic Humanoid Locomotion over Rough Terrain with Streamlined Perception-Control Pipeline, Moonyoung Lee, **Youngsun Kwon**, Sebin Lee, JongHun Choe, Junyong Park, Hyobin Jeong, Yujin Heo, Min-su Kim, Jo Sungho, Sung-Eui Yoon, and Jun-Ho Oh IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2021
IROS 2020	Adaptive Kernel Inference for Dense and Sharp Occupancy Grids, **Youngsun Kwon**, Bochang Moon, and Sung-Eui Yoon, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2020

ICRA 2020	Robust Sound Source Localization considering Similarity of Back-Propagation Signals, Inkyu An, Byeongho-Jo, **Youngsun Kwon**, Jung-woo Choi, and Sung-Eui Yoon, IEEE International Conference on Robotics and Automation (ICRA) 2020
SII 2020	Real-time 3-D Mapping with Estimating Acoustic Materials, Taeyoung Kim, **Youngsun Kwon**, and Sung-Eui Yoon, IEEE/SICE International Symposium on System Integration (SII) 2020
ANBRE 2019	An Objectness Score for Accurate and Fast Detection during Navigation, Hongsun Choi, Mincheul Kang, **Youngsun Kwon**, and Sung-Eui Yoon, The 2019 World Congress on Advances in Nano, Bio, Robotics and Energy (ANBRE) 2019
T-RO 2019	Super Rays and Culling Region for Real-Time Updates on Grid-based Occupancy Maps, **Youngsun Kwon**, Donghyuk Kim, Inkyu An, and Sung-Eui Yoon, IEEE Transactions on Robotics (T-RO) 2019
UR 2018	Adaptive Lazy Collision Checking for Optimal Sampling-based Motion Planning, Donghyuk Kim, **Youngsun Kwon**, and Sung-Eui Yoon, International Conference on Ubiquitous Robots (UR) 2018
UR 2018	Automated Task Planning using Object Arrangement Optimization, Mincheul Kang, **Youngsun Kwon**, and Sung-Eui Yoon, International Conference on Ubiquitous Robots (UR) 2018
ICRA 2018	Dancing PRM*: Simultaneous Planning of Sampling and Optimization with Configuration Free Space Approximation, Donghyuk Kim, **Youngsun Kwon**, and Sung-Eui Yoon, IEEE International Conference on Robotics and Automation (ICRA) 2018
ICRA 2017 WS	Ray Distribution to Parallel Batching-based Updates, **Youngsun Kwon** and Sung-eui Yoon, IEEE International Conference on Robotics and Automation (ICRA) 2017 Workshop on Robotics and Vehicular Technologies for Self-driving cars
ICRA 2016	Super Ray based Updates for Occupancy Maps, **Youngsun Kwon**, Donghyuk Kim, and Sung-Eui Yoon, IEEE International Conference on Robotics and Automation (ICRA) 2016

Awards

Outstanding PhD Thesis	Real-time Dense Occupancy Mapping using Spatial Correlation of Point Clouds, School of Computing, KAIST 2022
1st place	Real-time Updates for Occupancy Maps, Korea Compute Congress (KCC) 2017 SW Implementation/Demo Contest (Microsoft Research Award)
2nd place	Speech-To-Text Chess, Samsung SDS SW Club Championship 2013
1st place	Robot Soccer: Mirosot 5 vs 5, International Robot Contest (IRC) 2013 FIRA Challenge Cup (Ministry of Trade Industry & Energy Award)
Commendation	FIRA RoboWorld Cup and FIRA Korea Cup (Robot Soccer: Mirosot 5 vs 5), Sungkyunkwan University 2011 Fall

3rd place	Robot Soccer: Mirosot 5 vs 5, FIRA RoboWorld Cup 2011
1st place	Robot Soccer: Mirosot 5 vs 5, FIRA Korea Cup
Commendation	FIRA Challenge Cup (Robot Soccer: Mirosot 5 vs 5), Sungkyunkwan University 2011 Spring
1st place	Mirosot 5 vs 5, International Robot Contest (IRC) 2010 FIRA Challenge Cup (Prime Minister Award)

Activities

OPEN SOURCE

- ILN: https://github.com/PinocchioYS/iln
- AKIMap: https://github.com/PinocchioYS/akimap
- SuperRay: https://github.com/PinocchioYS/SuperRay
- ParallelBatch: https://github.com/PinocchioYS/ParallelBatch

PROGRAMMING SKILLS

- Language: C/C++, Python, JAVA, MATLAB
- Robot Operating System (ROS)
- Deep learning framework (PyTorch)

S.I.O.R. (SUNGKYUNKWAN INSTITUTE OF ROBOT): CLUB FOR MAKING ROBOTS

- 2012 Leader of S.I.O.R.
- Robot Soccer: Mirosot
- Robot Soccer: Teen-Size Humanoid
- 2010 ~ 2013 S.I.O.R. Exhibition: Line Tracer, LED Electric Piano, Drawer, Speech-To-Text Chess