

YOUNGSUN KWON

Research Interest

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

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

IROS 2023 Heterogeneous Robot-assisted Services in Isolation Wards: A System Development and Usability Study, **Youngsun Kwon**, Soyeon Shin, Kyonmo Yang, Seongah Park, Soomin Shin, Hwawoo Jeon, Kijung Kim, Guhnoo Yun, Sangyong Park, Jeewon Byun, Sang Hoon Kang, Kyoung-Ho Song, Doik Kim, Dong Hwan Kim, Kapho Seo, Sonya S. Kwak, and Yoonseob Lim
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2023 (accepted)

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** (advisor: 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: Mirobot 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: Mirobot 5 vs 5), Sungkyunkwan University 2011 Fall

3rd place	Robot Soccer: Mirobot 5 vs 5, FIRA RoboWorld Cup 2011
1st place	Robot Soccer: Mirobot 5 vs 5, FIRA Korea Cup
Commendation	FIRA Challenge Cup (Robot Soccer: Mirobot 5 vs 5), Sungkyunkwan University 2011 Spring
1st place	Mirobot 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: Mirobot
- Robot Soccer: Teen-Size Humanoid
- 2010 ~ 2013 S.I.O.R. Exhibition: Line Tracer, LED Electric Piano, Drawer, Speech-To-Text Chess