

EDUCATION

- Korea Advanced Institute of Science and Technology** Korea
Ph.D. in Electrical Engineering, Advisor: In So Kweon 2019–Current
- Korea Advanced Institute of Science and Technology** Korea
M.S. in Electrical Engineering, Advisor: In So Kweon, GPA: 3.81/4.30 2017–2019
– Thesis: “Noise-Aware Camera Exposure Control for Robust Robot Vision”
- Seoul National University of Science and Technology** Korea
B.S. in Electrical and Information Engineering, GPA: 4.20/4.50 2011–2017
– Project: “Real-Time Ethernet Protocol based Omni Directional Mobile Robot”

EXPERIENCE

- Seoul National University of Science and Technology** Korea
Research Intern, Embedded System Lab (Advisor: Byoung Wook Choi) 2015 - 2017
– Research topics: Embedded Linux, Real-time Operating System, Real-time Ethernet, Robotics.
- Korea Advanced Institute of Science and Technology** Korea
Research Assistant, Robotics and Computer Vision Lab (Advisor: In So Kweon) 2017 - Present
– Research topics: Multi-modal 3D Geometry, Visual SLAM, Robot Vision, Deep Learning.

PROJECTS

- **Real-Time Ethernet Protocol Development for Low-power Embedded System**(2015 - 2016)
 - Real-time embedded system (Xenomai) and real-time ethernet protocol (EtherCAT) implementation for real-time distributed motor control.
- **Real-Time Embedded Linux and Device Driver Development for Mobile Robot**(2016 - 2017)
 - Real-time device driver development for sensors (Motor, encoder, LRF, IMU) and I2C based control system.
- **Computer Vision based Automated Visual Inspection System for Electric Power Distribution Equipment**(2017 - 2020)
 - Multi-camera sensor system (8 color cameras, 2 thermal cameras, 6 motors, 1 GPS/IMU) and its control algorithm development for automated visual inspection from a moving vehicle.

SKILLS

- **Programming Language:** C, C++, Python, Matlab
- **Embedded Linux:** Linux Programming, Device Driver, Real-time Operating System, Embedded System.
- **Deep Learning:** 3D Geometry, Multi-modal Depth and Pose estimation, Reinforcement Learning
- **Sensors:** Visible Camera, Thermal Camera, Motor, Wheel Encoder, IMU, Lidar

PUBLICATIONS

- [1] Y. Kim, **U. Shin**, J. Park, and I. S. Kweon, “Msg-dat: Multi-spectral guided domain adaptation for unsupervised thermal image semantic segmentation”, *under review*, 2021.
- [2] **U. Shin**, K. Lee, S. Lee, and I. S. Kweon, “Unsupervised depth and ego-motion estimation for monocular thermal video using multi-spectral consistency loss”, *under review*, 2021.
- [3] K. Lee, B. Lee, **U. Shin**, and I. S. Kweon, “An efficient asynchronous method for integrating evolutionary and gradient-based policy search”, in *34th Conference on Neural Information Processing Systems, NeurIPS 2020*, Conference on Neural Information Processing Systems, 2020.
- [4] J. Park, **U. Shin**, G. Shim, K. Joo, F. Rameau, J. Kim, D.-G. Choi, and I. S. Kweon, “Vehicular multi-camera sensor system for automated visual inspection of electric power distribution equipment”, in *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2019, pp. 281–288.
- [5] **U. Shin**, J. Park, G. Shim, F. Rameau, and I. S. Kweon, “Camera exposure control for robust robot vision with noise-aware image quality assessment”, in *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2019, pp. 1165–1172.
- [6] **U. Shin** and B. W. Choi, “Performance evaluation of real-time mechanisms on open embedded hardware platforms”, *Journal of Institute of Control, Robotics and Systems*, vol. 23, no. 1, pp. 60–66, 2017.
- [7] R. Delgado, **U. Shin**, C. H. Hong, and B. W. Choi, “Development and control of an omnidirectional mobile robot on an ethercat network”, *International Journal of Applied Engineering Research*, vol. 11, no. 21, pp. 10 586–10 592, 2016.
- [8] R. Delgado, C. H. Hong, **U. Shin**, and B. W. Choi, “Implementation and performance analysis of an ethercat master on the latest real-time embedded linux”, *International Journal of Applied Engineering Research*, vol. 10, no. 24, pp. 44 603–44 609, 2015.

ACADEMIC ACTIVITIES

- Reviewer
AAAI Conference on Artificial Intelligence

2021