

Sangil Lee

Address: 504, Bldg. 300, Seoul National University, Gwanak-gu, Seoul 08826, Korea, Republic of

Webpage: <http://www.sangillee.com> **Mobile:** +82-10-6577-2089 **Email:** sangil07 at snu.ac.kr

EDUCATION

Seoul National University, Korea, Republic of Sep. 2017 – present

Ph.D. (ABD) Student in Mechanical and Aerospace Engineering

- Advisor: Professor H. Jin Kim
- Status: Complete the course
- Research Focus: 3D Vision in Dynamic Environments for Autonomous Systems, Event Cameras

Seoul National University, Korea, Republic of Mar. 2015 – Aug. 2017

M.S. in Mechanical and Aerospace Engineering

- Thesis: Robust Visual Odometry via Rigid Motion Segmentation for Dynamic Environments
- Advisor: Professor H. Jin Kim
- Cumulative GPA: 3.89/4.3

Seoul National University, Korea, Republic of Mar. 2010 – Feb. 2015

B.S. in Electrical and Computer Engineering

- Thesis: Adaptive Formation Control for Multi-agent Systems
- Advisor: Professor Hyungbo Shim
- GPA: 3.82/4.3 (cumulative) 3.95/4.3 (in major) Cum Laude

PROJECTS

Research on Visual Navigation for Autonomous Vehicle May. 2016 – Apr. 2020

- Objective: Autonomous visual navigation for unmanned vehicle in dynamic environments
- Organization: SNU-Samsung Smart Campus R&D

RFD Solution Advancement Development Jun. 2019 – Nov. 2019

- Objective: Recognize target objects and measure the distance using monocular camera and imu
- Organization: Hyundai MnSoft

Adaptive Multimodal Integration for Accuracy Assurance of Navigation Systems Oct. 2016 – Mar. 2017

- Objective: Integration of sensors in an adaptive manner, depending on the context of mission and ambiguity of signal properties
- Organization: Lockheed Martin RoKST&R Initiatives

Development of Construction Sites Mapping with Drones and Images Jun. 2015 – Jan. 2016

- Objective: Automatic construction site monitoring system using panoramic map generated by drone
- Organization: Hyundai Heavy Industries

EXPERIENCES

Teaching Assistant, UAV Decision-making, Seoul National University 2015

Sigma Intelligence, Seoul National University

member of robotics club

- Served as club vice president Mar. 2012 – Feb. 2013
- Served as education director Mar. 2011 – Feb. 2012

PUBLICATIONS

INTERNATIONAL JOURNALS

Sangil Lee, Chungkeun Lee, Haram Kim, and H. Jin Kim, “Real-time Object-aware Monocular Depth Estimation in Onboard Systems,” *International Journal of Control, Automation, and Systems (IJCAS)*, 2020. (Under review)

INTERNATIONAL CONFERENCES

Sangil Lee, Clark Youngdong Son, and H. Jin Kim, “Robust Real-time RGB-D Visual Odometry in Dynamic Environments via Rigid Motion Model,” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.

Sangil Lee, Haram Kim, and H. Jin Kim, “Edge Detection for Event Cameras using Intra-pixel-area Events,” *The British Machine Vision Conference (BMVC)*, 2019.

Changhyeon Kim, Pyojin Kim, **Sangil Lee**, and H. Jin Kim, “Edge-based Robust RGB-D Visual Odometry Using 2-D Edge Divergence Minimization,” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018.

Sangil Lee and H. Jin Kim, “Real-time Rigid Motion Segmentation using Grid-based Optical Flow,” *IEEE International Conference on System, Man, and Cybernetics (SMC)*, 2017.

Changhyeon Kim, **Sangil Lee**, and H. Jin Kim, “Convergence-Enhanced Dense RGB-D Odometry with a Rotational Motion Prior from a Gyroscope,” *The 2017 Asian Control Conference (ASCC)*, 2017.

Changhyeon Kim, **Sangil Lee**, Pyojin Kim, and H. Jin Kim, “Time-Efficient Dense Visual 12-DoF State Estimator Using RGB-D Camera,” *International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, 2017.

Sangil Lee, P. Jin Kim, Changhyeon Kim, and H. jin Kim, “Depth-based Direct Visual Odometry for Stereo Camera,” *Asia-Pacific International Symposium on Aerospace Technology (APISAT)*, 2016.

Sangil Lee, Seung-jae Lee, Jaehyun Park, and H. Jin Kim, “Exposure Correction and Image Blending for Planar Panorama Stitching,” *International Conference on Control, Automation and Systems (ICCAS)*, 2016. (**Outstanding Paper Award**)

Sangil Lee and H. Jin Kim, “Detection of 3-Dimensional Textured Object without Depth Information,” *14th International Conference on Control, Automation and Systems (ICCAS)*, Korea, October 13-16, 2015.

DOMESTIC JOURNALS

Sangil Lee, P. Jin Kim, Changhyeon Kim, Hyeonbeom Lee, and H. Jin Kim, “Survey on Visual Odometry Technology for Unmanned Systems,” *Journal of Institute of Control, Robotics, and Systems*, 23(6):424-431, 2017.

DOMESTIC CONFERENCES

Sangil Lee, Haram Kim, Changhyeon Kim, and H. Jin Kim, “Optical Flow Estimation for Event Cameras using Surface of Time Difference Correspondence,” *35th Institute of Control, Robotics and Systems*, July 2-4, 2020.

Changhyeon Kim, **Sangil Lee**, and H. Jim Kim, “Hybrid RGB-D Visual Odometry Combining Edges and Point Features,” *35th Institute of Control, Robotics and Systems*, July 2-4, 2020.

Haram Kim, **Sangil Lee**, and H. Jin Kim, “Cost function for calculating similarity of normalized image patch in heterogeneous cameras,” *35th Institute of Control, Robotics and Systems*, July 2-4, 2020.

Sangil Lee and H. Jin Kim, “Image Stitching for 2-D Global Mapping,” *31st Institute of Control, Robotics and Systems Annual Conference*, March 10-11, 2016.

Sangil Lee and H. Jin Kim, "Hexa-rotors 3-dimensional Position Control based on Spiral Potential Function with Collision Avoidance," *The Korean Society for Aeronautical & Space Sciences Fall Conference*, November 18-20, 2015.

PATENTS

Wonhee Lee, **Sangil Lee**, H. Jin Kim, Sunghoon Hong, "Ego Motion Estimation Method and Apparatus," US 16/238,068.

HONORS, AWARDS, SCHOLARSHIPS

- Samsung DS PhD Industrial Scholarship Mar. 2020 – present
- Encouragement Prize (4th place) at the 24th Samsung Humantech Paper Award 7 Feb. 2018
- Outstanding Paper Award of the Ministry of Trade, Industry, and Energy 18 Oct. 2016
- BK21 plus PhD Fellowship Scholarship Mar. 2015 – Feb. 2016
- First prize in an 2012 International Capstone Design Fair Jan. 2012
- Presidential Science Scholarship Mar. 2010 – Feb. 2014

SKILLS

Programming	C/C++, Matlab, Simulink, ROS, LabVIEW, Markdown, Android Studio
Languages	English, Korean (native)
Hardware	AVR, Arduino, Arm Processor, Basic Spartan FPGA Board
Tools	Vim, Git, Adobe Photoshop/Premiere, Basic OrCAD, Solidworks