

Pyojin Kim, Ph.D.

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RESEARCH INTERESTS	Visual Odometry & Simultaneous Localization and Mapping, 3D Computer Vision, Deep Learning	
EDUCATION	Seoul National University , Seoul, South Korea Ph.D. in Mechanical and Aerospace Engineering <i>Thesis</i> : Low-Drift Visual Odometry and SLAM for Indoor Robotics <i>Advisor</i> : Prof. H. Jin Kim Yonsei University , Seoul, South Korea Bachelor in Mechanical Engineering	March, 2013 - February, 2019 March, 2009 - February, 2013
WORK/ACADEMIC EXPERIENCE	Simon Fraser University , Burnaby, BC Postdoctoral Fellow. Working with Prof. Yasutaka Furukawa in GrUVi (Computer Graphics and Vision) Lab. Researching data-driven indoor localization and mapping with multi-modal sensor data fusion such as IMU, WiFi, etc. Google , Mountain View, CA Graduate Student Researcher. Worked with Chao Guo, Ryan DuToit, Daniya Zamalieva, and Leon Wong in ARCore 6-DoF Tracking Team. Developed and analyzed VIO fault detection module for ARCore motion tracking algorithm. NASA Ames Research Center , Mountain View, CA Graduate Student Researcher. Worked with Brian Coltin, Oleg Alexandrov, and Terry Fong in Intelligent Robotics Group (IRG). Proposed the robust visual localization algorithm in changing lighting conditions for Astrobe, a free-flying robot for the International Space Station (ISS).	July, 2019 - Present October, 2018 - December, 2018 June, 2016 - September, 2016
SELECTED PUBLICATIONS	ECCV European Conference on Computer Vision CVPR IEEE International Conference on Computer Vision and Pattern Recognition BMVC British Machine Vision Conference ICRA IEEE International Conference on Robotics and Automation IROS IEEE International Conference on Intelligent Robots and Systems URAI IEEE International Conference on Ubiquitous Robots and Ambient Intelligence SMC IEEE International Conference on Systems, Man and Cybernetics APISAT Asia-Pacific International Symposium on Aerospace Technology ICROS The Institute of Control, Robotics and Systems AURO Autonomous Robots IJCAS International Journal of Control Automation and Systems JICROS The Journal of Institute of Control, Robotics and Systems	

International Journals

Pyojin Kim, Hyeonbeom Lee, H. Jin Kim, “Autonomous Flight with Robust Visual Odometry under Dynamic Lighting Conditions.”, *AURO*, 2019.

Pyojin Kim, Hyon Lim, H. Jin Kim, “Visual Inertial Odometry with Pentafoveal Geometric Constraints.”, *IJCAS*, 2018.

International Conferences

Haram Kim, **Pyojin Kim**, H. Jin Kim, “Moving Object Detection for Visual Odometry in a Dynamic Environment based on Occlusion Accumulation.”, *ICRA*, 2020.

Pyojin Kim, Brian Coltin, H. Jin Kim, “Linear RGB-D SLAM for Planar Environments.”, *ECCV*, 2018.

Changhyeon Kim, **Pyojin Kim**, Sangil Lee, H. Jin Kim, “Edge-based Robust RGB-D Visual Odometry Using 2-D Edge Divergence Minimization.”, *IROS*, 2018.

Pyojin Kim, Brian Coltin, H. Jin Kim, “Indoor RGB-D Compass from a Single Line and Plane.”, *CVPR*, 2018.

Pyojin Kim, Brian Coltin, H. Jin Kim, “Low-Drift Visual Odometry in Structured Environments by Decoupling Rotational and Translational Motion.”, *ICRA*, 2018.

Pyojin Kim, Brian Coltin, H. Jin Kim, “Visual Odometry with Drift-Free Rotation Estimation Using Indoor Scene Regularities.”, *BMVC*, 2017.

Changhyeon Kim, Sangil Lee, **Pyojin Kim**, H. Jin Kim, “Time-Efficient Dense Visual 12-DoF State Estimator Using RGB-D Camera.”, *URAI*, 2017.

Pyojin Kim, Brian Coltin, Oleg Alexandrov, H. Jin Kim, “Robust Visual Localization in Changing Lighting Conditions.”, *ICRA*, 2017.

Pyojin Kim, Hyon Lim, H. Jin Kim, “Robust Visual Odometry to Irregular Illumination Changes with RGB-D Camera.”, *IROS*, 2015.

HONORS, AWARDS, SCHOLARSHIPS

- Teaching Assistant, Introductory Engineering Probability, 2013.
- Teaching Assistant, Flight Dynamics and Control, 2013.
- 15-th KAI Aerospace Paper Award, Korea Aerospace Industries, 2018.
- 24-th HumanTech Paper Award, Samsung Electronics, 2018.
- Best Paper Award, The Korea Navigation Institute Conference, 2015.
- Magna Cum Laude, Yonsei University, 2013.
- Kwanjeong Educational Foundation (KEF) Domestic Scholarship, 2013 ~ 2015.

PATENT

Pyojin Kim, H. Jin Kim, “Visual Odometry System and Method Using Structured Environmental Features.”, KR 10-2018-0004015.

Pyojin Kim, Hyon Lim, H. Jin Kim, “Visual Odometry System and Method.”, KR 10-2016-0108416.

Pyojin Kim, Hyon Lim, H. Jin Kim, “Robust Visual Odometry System and Method to Irregular Illumination Changes.”, KR 10-2015-0138558.

COMPUTER SKILLS

- Languages: MATLAB, C/C++, Python, Java, Swift, LabVIEW.
- Computer-Aided Design: SolidWorks, AutoCAD.