

Junhwa Hur

INFO.	junhwa.hur@gmail.com / Google Scholar / GitHub / Portfolio Webpage
RESEARCH INTEREST	3D Dynamic Scene Understanding: Semantic segmentation, Motion, Depth, 3D reconstruction Learning with Limited Supervision: Self-supervised learning, Semi-supervised learning
PROFESSIONAL EXPERIENCE	<div><div>Google, Cambridge, MA, USA Research Scientist <ul style="list-style-type: none">Research state-of-the-art computer vision algorithms</div><div>Oct. 2022 –</div></div> <div><div>42dot, Seoul, Korea Research Internship at Autonomous Intelligence <ul style="list-style-type: none">Researched a surround-view 3D depth estimation algorithm</div><div>Oct. 2021 – Jun. 2022</div></div> <div><div>Technische Universität Darmstadt, Darmstadt, Germany Doctoral Research Assistant (Supervised by Prof. Stefan Roth, Ph.D.) <ul style="list-style-type: none">Researched multi-task learning for 3D dynamic scene understanding: motion, depth, occlusion, and semantic segmentation using (self-)supervised learning</div><div>Oct. 2015 – Oct. 2020</div></div> <div><div>Korea Institute of Science and Technology (KIST), Seoul, South Korea Internship at Imaging Media Research Center <ul style="list-style-type: none">Researched and developed a pipeline for RGB-D-based 3D deformable object modeling</div><div>Feb. 2014 – Aug. 2015</div></div> <div><div>Seoul National University, Seoul, South Korea Research Assistant at Vehicle Intelligence Lab <ul style="list-style-type: none">Researched computer vision algorithms for autonomous driving and deployed them on self-driving cars.</div><div>Sep. 2011 – Dec. 2013</div></div>
EDUCATION	<div><div>Technische Universität Darmstadt, Darmstadt, Germany Ph.D. in Computer Science <ul style="list-style-type: none">Dissertation: Joint Motion, Semantic Segmentation, Occlusion, and Depth Estimation</div><div>2015 – 2022</div></div> <div><div>Seoul National University, Seoul, South Korea M.Sc. in Electrical and Computer Engineering <ul style="list-style-type: none">Thesis: Multi-Lane Detection in Highway and Urban Driving Environment</div><div>2011 – 2013</div></div> <div><div>Pohang University of Science and Technology, Pohang, South Korea B.Sc. in Electronics and Electrical Engineering, <i>Magna Cum Laude</i></div><div>2007 – 2011</div></div>
PUBLICATIONS (HYPERLINKED)	<p>Jung Hee Kim*, Junhwa Hur*, Tien Phuoc Nguyen, and Seong-Gyun Jeong, “Self-Supervised Surround-View Depth Estimation with Volumetric Feature Fusion”, NeurIPS, 2022</p> <p>Junho Lee, Junhwa Hur, Inwoo Hwang, and Young Min Kim, “MasKGrasp: Mask-based Grasping for Scenes with Multiple General Real-world Objects”, IROS, 2022</p> <p>Junhwa Hur and Stefan Roth, “Self-Supervised Multi-Frame Monocular Scene Flow”, CVPR, 2021</p> <p>Junhwa Hur and Stefan Roth, “Self-Supervised Multi-Frame Monocular Scene Flow”, CVPR, 2021</p> <p>Junhwa Hur and Stefan Roth, “Self-Supervised Monocular Scene Flow Estimation”, CVPR, 2020, Oral Presentation</p> <p>Junhwa Hur and Stefan Roth, “Optical Flow Estimation in the Deep Learning Age”, as a book chapter in Modelling Human Motion, Springer, 2020</p> <p>Junhwa Hur and Stefan Roth, “Iterative Residual Refinement for Joint Optical Flow and Occlusion Estimation”, CVPR, 2019</p>

Simon Meister, **Junhwa Hur** and Stefan Roth, “UnFlow: Unsupervised Learning of Optical Flow with a Bidirectional Census Loss”, **AAAI**, 2018, **Oral Presentation**

Junhwa Hur and Stefan Roth, “MirrorFlow: Exploiting Symmetries in Joint Optical Flow and Occlusion Estimation”, **ICCV**, 2017

Junhwa Hur and Stefan Roth, “Joint Optical Flow and Temporally Consistent Semantic Segmentation”, **ECCV Workshop** on CVRSUAD, 2016, **Best paper award**

Junhwa Hur, Hwasup Lim, Changsoo Park, Sang Chul Ahn, “Generalized Deformable Spatial Pyramid: Geometry-Preserving Dense Correspondence Estimation”, **CVPR**, 2015

Junhwa Hur, Hwasup Lim, Sang Chul Ahn, “3D Deformable Spatial Pyramid for Dense 3D Motion Flow of Deformable Object”, **ISVC**, 2014

Seung-Nam Kang, Soo-Mok Lee, **Junhwa Hur**, and Seung-Woo Seo, “Multi-lane Detection based on Accurate Geometric Lane Estimation in Highway Scenarios”, **IV**, 2014

Junhwa Hur, Seung-Nam Kang, and Seung-Woo Seo, “Multi-lane Detection in Urban Driving Environments using Conditional Random Fields”, **IV**, 2013.

Junhwa Hur, “Multi-lane Detection in Highway and Urban Driving Environment”, Master’s thesis, Seoul National University, 2013

TEACHING
EXPERIENCE

Teaching Assistantship, *TU Darmstadt, Germany*

2015 – 2020

- Computer Vision I & II
- Advanced Topics in Computer Vision Machine Learning
- Project Lab Deep Learning for Computer Vision – supervised 4 team projects (Self-supervised learning, Semantic image inpainting using GAN, Monocular depth, Optical flow)
- B.Sc. & M.Sc. Thesis Supervision – supervised 5 students (Scene flow, Monocular depth, Dataset bias analysis, Moving object detection, Multi-task learning)

AWARDS
AND HONORS

Outstanding Reviewer Award: CVPR (2018, 2019, 2020, 2022), ICCV (2021), ECCV (2020), ACCV (2020)
Doctoral Consortium, CVPR 2020
Best Paper Award, 21. Darmstädter Computer Graphik Abend 2019, Impact on Science
Best Paper Award, 20. Darmstädter Computer Graphik Abend 2018, Impact on Science
Best Paper Award, ECCV Workshops 2016 - Computer Vision for Road Scene Understanding and Autonomous Driving
2nd Place Prize, Korea Autonomous Vehicle Contest 2013
National Science and Engineering Scholarship (covering full tuitions), KFAS, 2007 – 2011
Merit-based Scholarship, POSTECH, 2007 – 2008

REVIEWER
ACTIVITY

Conference: ICLR, NeurIPS, CVPR, ICCV, ECCV, ACCV, WACV, ICRA, IROS
Journal: T-PAMI, T-IP, RA-L, PR, T-CSVT

SKILL

C/C++, Python, Matlab, PyTorch, TensorFlow

LANGUAGE

Korean (Native, Citizenship), English (Fluent), German (Intermediate, Permanent residency)