

# Junhwa Hur

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INFO.	junhwa.hur@gmail.com / <a href="#">Google Scholar</a> / <a href="#">GitHub</a> / <a href="#">Portfolio Webpage</a>		
RESEARCH INTEREST	<b>3D Dynamic Scene Understanding:</b> Semantic segmentation, Motion, Depth, 3D reconstruction <b>Learning with Limited Supervision:</b> Self-supervised learning, Semi-supervised learning		
PROFESSIONAL EXPERIENCE	<b>Google, Cambridge, MA, USA</b> Research Scientist <ul style="list-style-type: none"><li>Research state-of-the-art computer vision algorithms</li></ul>	Oct. 2022 –	
	<b>42dot, Seoul, Korea</b> Research Internship at Autonomous Intelligence <ul style="list-style-type: none"><li>Researched a surround-view 3D depth estimation algorithm</li></ul>	Oct. 2021 – Jun. 2022	
	<b>Korea Institute of Science and Technology (KIST), Seoul, South Korea</b> Internship at Imaging Media Research Center <ul style="list-style-type: none"><li>Researched and developed a pipeline for RGB-D-based 3D deformable object modeling</li></ul>	Feb. 2014 – Aug. 2015	
EDUCATION	<b>Technische Universität Darmstadt, Darmstadt, Germany</b> <b>Ph.D.</b> in Computer Science <ul style="list-style-type: none"><li>Dissertation: Joint Motion, Semantic Segmentation, Occlusion, and Depth Estimation</li></ul>	2015 – 2022	
	<b>Seoul National University, Seoul, South Korea</b> <b>M.Sc.</b> in Electrical and Computer Engineering <ul style="list-style-type: none"><li>Thesis: Multi-Lane Detection in Highway and Urban Driving Environment</li></ul>	2011 – 2013	
	<b>Pohang University of Science and Technology, Pohang, South Korea</b> <b>B.Sc.</b> in Electronics and Electrical Engineering, <i>Magna Cum Laude</i>	2007 – 2011	
PUBLICATIONS (HYPERLINKED)	Daniel Geng, Charles Herrmann, <b>Junhwa Hur</b> , Forrester Cole, Serena Zhang, Tobias Pfaff, Tatiana Lopez-Guevara, Yusuf Aytar, Michael Rubinstein, Chen Sun, Oliver Wang, Andrew Owens, Deqing Sun, “ <a href="#">Motion prompting: Controlling video generation with motion trajectories</a> ”, <b>CVPR</b> , 2025, <b>Oral Presentation</b>		
	Junyi Zhang, Charles Herrmann, <b>Junhwa Hur</b> , Varun Jampani, Trevor Darrell, Forrester Cole, Deqing Sun, Ming-Hsuan Yang, “ <a href="#">MonST3R: A simple approach for estimating geometry in the presence of motion</a> ”, <b>ICLR</b> , 2025, <b>Highlight</b>		
	<b>Junhwa Hur*</b> , Charles Herrmann*, Saurabh Saxena, Janne Kontkanen, Wei-Sheng (Jason) Lai, Yichang Shih, Michael Rubinstein, David J. Fleet, Deqing Sun, “ <a href="#">High-Resolution Frame Interpolation with Patch-based Cascaded Diffusion</a> ”, <b>AAAI</b> , 2025		
	Omer Bar-Tal, Hila Chefer, Omer Tov, Charles Herrmann, Roni Paiss, Shiran Zada, Ariel Ephrat, Junhwa Hur, Guanghui Liu, Amit Raj, Yuanzhen Li, Michael Rubinstein, Tomer Michaeli, Oliver Wang, Deqing Sun, Tali Dekel, Inbar Mosseri, “ <a href="#">Lumiere: A Space-Time Diffusion Model for Video Generation</a> ”, <b>SIGGRAPH Asia</b> , 2024		
	Junyi Zhang, Charles Herrmann, <b>Junhwa Hur</b> , Eric Chen, Varun Jampani, Deqing Sun, and Ming-Hsuan Yang, “ <a href="#">Telling Left from Right: Identifying Geometry-Aware Semantic Correspondence</a> ”, <b>NeurIPS</b> , 2024		
	Hong-Xing Yu, Haoyi Duan, <b>Junhwa Hur</b> , Kyle Sargent, Michael Rubinstein, William T. Freeman, Forrester Cole, Deqing Sun, Noah Snavely, Jiajun Wu, Charles Herrmann, “ <a href="#">WonderJourney: Going from Anywhere to Everywhere</a> ”, <b>CVPR</b> , 2024		
	Mia Gaia Polansky, Charles Herrmann, <b>Junhwa Hur</b> , Deqing Sun, Dor Verbin, Todd Zickler, “ <a href="#">Boundary Attention: Learning Curves, Corners, Junctions and Grouping</a> ”, <b>ECCVW</b> on Traditional Computer Vision in the Age of Deep Learning, 2024		
	Saurabh Saxena, <b>Junhwa Hur</b> , Charles Herrmann, Deqing Sun, and David J. Fleet, “ <a href="#">Zero-Shot Metric Depth with a Field-of-View Conditioned Diffusion Model</a> ”, <b>ECCV Workshop</b> on Wild 3D: 3D Modeling,		

Reconstruction, and Generation in the Wild, 2024

Saurabh Saxena, Charles Herrmann, **Junhwa Hur**, Abhishek Kar, Mohammad Norouzi, Deqing Sun, and David J. Fleet, “The Surprising Effectiveness of Diffusion Models for Optical Flow and Monocular Depth Estimation”, **NeurIPS**, 2023, **Oral Presentation**

Junyi Zhang, Charles Herrmann, **Junhwa Hur**, Luisa Polania Cabrera, Varun Jampani, Deqing Sun, and Ming-Hsuan Yang, “A Tale of Two Features: Stable Diffusion Complements DINO for Zero-Shot Semantic Correspondence”, **NeurIPS**, 2023

Hsin-Ping Huang, Charles Herrmann, **Junhwa Hur**, Erika Lu, Kyle Sargent, Austin Stone, Ming-Hsuan Yang, and Deqing Sun, “Self-supervised AutoFlow”, **CVPR**, 2023

Bayram Bayramli, **Junhwa Hur**, and Hongtao Lu, “RAFT-MSF: Self-Supervised Monocular Scene Flow Using Recurrent Optimizer.”, **IJCV**, 2023

Jung Hee Kim\*, **Junhwa Hur**\*, Tien Phuoc Nguyen, and Seong-Gyun Jeong, “Self-Supervised Surround-View Depth Estimation with Volumetric Feature Fusion”, **NeurIPS**, 2022

Junho Lee, **Junhwa Hur**, Inwoo Hwang, and Young Min Kim, “MasKGrasp: Mask-based Grasping for Scenes with Multiple General Real-world Objects”, **IROS**, 2022

**Junhwa Hur** and Stefan Roth, “Self-Supervised Multi-Frame Monocular Scene Flow”, **CVPR**, 2021

**Junhwa Hur** and Stefan Roth, “Self-Supervised Monocular Scene Flow Estimation”, **CVPR**, 2020, **Oral Presentation**

**Junhwa Hur** and Stefan Roth, “Optical Flow Estimation in the Deep Learning Age”, as a book chapter in *Modelling Human Motion*, Springer, 2020

**Junhwa Hur** and Stefan Roth, “Iterative Residual Refinement for Joint Optical Flow and Occlusion Estimation”, **CVPR**, 2019

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	<p>Outstanding Reviewer Award: CVPR (2018, 2019, 2020, 2022, 2024), NeurIPS (2023), ICCV (2021), ECCV (2020), ACCV (2020)</p> <p>Doctoral Consortium, CVPR 2020</p> <p>Best Paper Award, 21. Darmstädter Computer Graphik Abend 2019, Impact on Science</p> <p>Best Paper Award, 20. Darmstädter Computer Graphik Abend 2018, Impact on Science</p> <p>Best Paper Award, ECCV Workshops 2016 - Computer Vision for Road Scene Understanding and Autonomous Driving</p> <p>2nd Place Prize, Korea Autonomous Vehicle Contest 2013</p> <p>National Science and Engineering Scholarship (covering full tuitions), KFAS, 2007 – 2011</p> <p>Merit-based Scholarship, POSTECH, 2007 – 2008</p>
PROFESSIONAL SERVICE	<p>Area Chair: ECCV 2024, CVPR 2025, ICCV 2025, NeurIPS 2025</p> <p>Reviewer: ICLR, NeurIPS, CVPR, ICCV, ECCV, 3DV, ACCV, WACV, ICRA, IROS, T-PAMI, T-IP, RA-L, PR, T-CSVT</p>
LANGUAGE	<p>Korean (Native, Citizenship), English (Fluent), German (Intermediate, Permanent residency)</p>