Junhwa Hur

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RESEARCH INTEREST
Dynamic 3D video understanding: Semantic segmentation, Motion, Depth, 3D reconstruction
Machine learning: Self-supervised learning, Semi-supervised learning, Multi-task learning

EDUCATION

Technische Universität Darmstadt, *Darmstadt, Germany* Oct. 2015 –
Ph.D. candidate in Department of Computer Science
- Dissertation: Joint Motion, Semantic Segmentation, Occlusion, and Depth Estimation
- Advisor: Prof. Stefan Roth Ph.D.
- Researched visual understanding of dynamic scenes: motion, depth, occlusion and semantic segmentation using (self-)supervised learning

Seoul National University, *Seoul, South Korea* 2011 – 2013
M.Sc. in Department of Electrical and Computer Engineering
- Thesis: Multi-Lane Detection in Highway and Urban Driving Environment
- Researched computer vision algorithms for autonomous driving and deployed on self-driving cars.

Pohang University of Science and Technology, *Pohang, South Korea* 2007 – 2011
B.Sc. in Department of Electronics and Electrical Engineering
- Magna Cum Laude
- National Science and Engineering Scholarship (2007 – 2011), Merit-based Scholarship (2007 – 2008)

WORK EXPERIENCE

Korea Institute of Science and Technology (KIST), *Seoul, South Korea* Feb. 2014 –
Internship at Imaging Media Research Center Aug. 2015
- Researched on semantic dense correspondence estimation
- Developed a pipeline for RGBD-based 3D deformable object modeling (correspondence estimation, camera pose estimation, mesh generation, and loop closure)

PUBLICATIONS (HYPERLINKED)

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

Outstanding Reviewer Award: CVPR (2018, 2019, 2020), 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

Reviewer Activity

Conference: ICLR, CVPR, ICCV, ECCV, ACCV, WACV, ICRA, NeurIPS-W, ICML-W
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, Permanant residency)