Wonhyeok Choi *Researcher of Computer Vision & Deep learning*

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Contact Information

DGIST (Daegu Gyeongbuk Institute of Science and Technology), **Tel.**: +82-10-2997-2903
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Research Interests

Computer Vision (3D perception tasks, Scene Understanding)
Deep Learning (Multi-task Learning, Meta Learning, Dynamic Neural Networks)
Applications (Autonomous driving, AR/VR)

Education

M.S. - Ph.D. Integrated Course, Electrical Engineering & Computer Sciences (EECS), DGIST, South Korea — *Mar. 2022 – present*
***Advisor**: Prof. Sunghoon Im*

Visiting Scholar, Psychiatry & Behavioral Sciences, Stanford University, United States of America — *Sep. 2024 – Dec. 2024*
***Advisor**: Prof. Kilian M. Pohl*

Bachelor of Convergence Science, DGIST, South Korea — *Mar. 2018 – Feb. 2022*

Exchange Student, UC Berkeley, United States of America — *Jun. 2018 – Aug. 2018*

Hansung Science High School, South Korea — *Mar. 2015 – Feb. 2018*

Publications

Wonhyeok Choi*, Kyumin Hwang*, Kiljoon Han, Wonjoon Choi, Minwoo Choi, Yongcheon Na, Minwoo Park, Sunghoon Im. "Learning Scale-invariant and View-relational Representations for Full Surround Monocular Depth Estimation", (**Under Review**)

Wonhyeok Choi, Wei Peng, Kyumin Hwang, Minwoo Choi, Sanghyun Park, Kilian M. Pohl, Sunghoon Im. "Abnormality-aware Multi-Task Learning for 3D Brain MRI Using Dynamic Neural Networks", (**Under Review**)

Wonhyeok Choi*, Kyumin Hwang*, Wei Peng, Minwoo Choi, Sunghoon Im. "Self-supervised Monocular Depth Estimation Robust to Reflective Surface Leveraged by Triplet Mining", International Conference on Learning Representations (**ICLR**), Apr 2025.

Wonhyeok Choi*, Kyumin Hwang*, Minwoo Choi, Kiljoon Han, Wonjoon Choi, Mingyu Shin, Sunghoon Im. "Intrinsic Image Decomposition for Robust Self-supervised Monocular Depth Estimation on Reflective Surfaces", The Association for the Advancement of Artificial Intelligence (**AAAI**), Feb 2025.

Wonhyeok Choi*, Mingyu Shin*, Hyukzae Lee, Jaehoon Cho, Jaehyeon Park, Sunghoon Im. "Multi-task Learning for Real-time Autonomous Driving leveraging Task-wise Attention Generator", IEEE International Conference on Robotics and Automation (**ICRA**), May 2024.

Wonhyeok Choi*, Mingyu Shin*, Sunghoon Im. "Depth-discriminative Metric Learning for Monocular 3D Object Detection", Neural Information Processing Systems (**NeurIPS**), Dec 2023.

Wonhyeok Choi, Sunghoon Im. "Dynamic Neural Network for Multi-Task Learning Searching across Diverse Network Topologies", IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), Jun 2023.

Seunghun Lee, **Wonhyeok Choi**, Changjae Kim, Minwoo Choi, Sunghoon Im. "ADAS: A Direct Adaptation Strategy for Multi-Target Domain Adaptive Semantic Segmentation", IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), Jun 2022.

Academic Activities

Awards

- Top Prize, 16th ICT Paper Competition and Grand Exhibition, *Dec. 2024*
  — Electronic News
- 3rd Prize, 30th HumanTech Paper Award, *Feb. 2024*
  — Samsung Electronics Co., Ltd.
- Outstanding Researcher Award, *Dec. 2023*
  — Electronic Engineering & Computer Sciences, DGIST
- Excellence Prize, 15th ICT Paper Competition and Grand Exhibition, *Dec. 2023*
  — Electronic News
- Kyu-Young Hwang Outstanding Research Award, *Oct. 2023*
  — Electronic Engineering & Computer Sciences, DGIST
- Top Prize, Autonomous Driving AI Development Challenge, *Oct. 2023*
  — Ministry of Land, Infrastructure and Transport
- Participation Prize, 28th HumanTech Paper Award, *Feb. 2022*
  — Samsung Electronics Co., Ltd.

Reviewer

- International Conference on Medical Image Computing & Computer-Assisted Intervention (MICCAI) *2025*
- International Conference on Learning Representations (ICLR) *2025*
- International Conference on Machine Learning (ICML) *2025*
- Neural Information Processing Systems (NeurIPS) *2024 – 2025*
- IEEE Robotics and Automation Letters (RA-L) *2024 – 2025*
- IEEE International Conference on Robotics and Automation (ICRA) *2024 – 2025*
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR) *2023 – 2025*
- IEEE International Conference on Computer Vision (ICCV) *2023 – 2025*
- The European Conference on Computer Vision (ECCV) *2024*

Patents

Registration

- METHOD FOR MONOCULAR DEPTH ESTIMATION,
  Publication date: Dec. 27, 2024 (10-2024-0098600)
- METHOD FOR MONOCULAR DEPTH ESTIMATION ON REFLECTIVE SURFACE,
  Publication date: Jul. 25, 2024 (10-2024-0098600)
- METHOD FOR MOBILITY DEVICES LEVERAGING ARTIFICIAL INTELLIGENCE-BASED MULTI-TASK PROCESSING,
  Publication date: Mar. 25, 2024 (10-2024-0040179)
- METHOD FOR ESTIMATING DEPTH FROM MONOCULAR CAMERA IMAGES,
  Publication date: Jul. 26, 2023 (10-2023-0087465)
- METHOD AND APPARATUS FOR MULTI-TASK LEARNING,
  Publication date: Feb. 17, 2023 (10-2023-0021790)
- METHOD AND APPARATUS FOR DOMAIN ADAPTATION,
  Publication date: Jul. 14, 2022 (10-2022-0087222)
- METHOD AND APPARATUS FOR DOMAIN ADAPTATION,
  Publication date: Jul. 13, 2022 (10-2022-0086614)

Skills

Languages: Python, C, C++, C#
Theory: Type theory, Operation systems, Data structures, and Computer algorithms.
Development: Pytorch, HTML, CSS