Woojung Han

Website | Google Scholar | LinkedIn | GitHub

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Summary

I am broadly interested in learning algorithms that bridge **visual understanding** and **multi-modal generative modeling**, with a particular focus on label-efficient semantic segmentation (weakly supervised, unsupervised, and open-vocabulary) and multimodal generation, including text-to-image synthesis and medical-image foundation models.

Education

Ph.D. in Computer Science   Seoul, South Korea
Yonsei University   *Mar 2022 – Present*
Advisor: Seong Jae Hwang

B.S. in Human Intelligence and Information Engineering   Seoul, South Korea
Sangmyung University   *Mar 2017 – Feb 2022*
Advisor: Eui Chul Lee

Publications (* Equal Contribution)

Conference Publications

1. *Rare Text Semantics Were Always There in Your Diffusion Transformer*
   Woojung Han*, Seil Kang*, Dayun Ju, Seong Jae Hwang
   Neural Information Processing System (**NeurIPS**), 2025   [paper]

2. *PRETI: Patient-Aware Retinal Foundation Model via Metadata-Guided Representation Learning*
   Yeonkyung Lee, Woojung Han, Youngjun Jun, Hyeonmin Kim, Junkyung Cho, Seong Jae Hwang
   Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI**), 2025   [paper]
   Early Accepted (Acceptance Rate <9%)

3. *Pathology-Aware Adaptive Watermarking for Text-Driven Medical Image Synthesis*
   Chanyoung Kim*, Dayun Ju*, Jinyeong Kim, Woojung Han, Roberto Alcover-Couso, Seong Jae Hwang
   Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI**), 2025   [paper]
   Early Accepted (Acceptance Rate <9%)

4. *Spatial Transport Optimization by Repositioning Attention Map for Training-Free Text-to-Image Synthesis*
   Woojung Han, Yeonkyung Lee, Chanyoung Kim, Kwanghyun Park, Seong Jae Hwang
   Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025   [paper/page]

5. *Distilling Spectral Graph for Object-Context Aware Open-Vocabulary Semantic Segmentation*
   Chanyoung Kim, Dayun Ju, Woojung Han, Ming-Hsuan Yang, Seong Jae Hwang
   Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025   [paper/page]

6. *Advancing Text-Driven Chest X-Ray Generation with Policy-Based Reinforcement Learning*
   Woojung Han*, Chanyoung Kim*, Dayun Ju, Yumin Shim, Seong Jae Hwang
   Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI**), 2024   [paper/project]
   Spotlight (Acceptance Rate <3.4%)

7. *EAGLE: Eigen Aggregation Learning for Object-Centric Unsupervised Semantic Segmentation*
   Woojung Han*, Chanyoung Kim*, Dayun Ju, Seong Jae Hwang
   Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024   [paper/ page]
   Highlight (Acceptance Rate <2.8%)

8. *Effect of Time Window Size for Converting Frequency Domain in Real-Time Remote Photoplethysmography Extraction*
   Yu Jin Shin, Woojung Han, Kun Ha Suh & Eui Chul Lee
   Conference on Intelligent Human Computer Interaction (**IHCI**), 2021   [paper]

Journal Publications

1. *Complementary Branch Fusing Class and Semantic Knowledge for Robust Weakly Supervised Segmentation*
   Woojung Han, Seil Kang, Kyobin Choo, Seong Jae Hwang
   Pattern Recognition(**PR**) [Impact Factor: 7.5], 2024   [paper]

Workshop Papers

1. *Spatial Transport Optimization by Repositioning Attention Map for Training-Free Text-to-Image Synthesis*
   Woojung Han, Yeonkyung Lee, Chanyoung Kim, Kwanghyun Park, Seong Jae Hwang
   3rd Workshop on Generative Models for Computer Vision @ CVPR 2025(**CVPR Workshop**), 2025   [paper]

2. *Distilling Spectral Graph for Object-Context Aware Open-Vocabulary Semantic Segmentation*
   Chanyoung Kim, Dayun Ju, Woojung Han, Ming-Hsuan Yang, Seong Jae Hwang
   The 4th Workshop on Transformers for Vision @ CVPR 2025(**CVPR Workshop**), 2025   [paper]

3. *EAGLE: Eigen Aggregation Learning for Object-Centric Unsupervised Semantic Segmentation*
   Woojung Han*, Chanyoung Kim*, Dayun Ju, Seong Jae Hwang
   Causal and Object-Centric Representations for Robotics @ CVPR 2024(**CVPR Workshop**), 2024   [paper]

EXPERIENCES

Lab: Medical Imaging and Computer Vision Lab   Mar 2022 – Present
Yonsei University (Advisor: Seong Jae Hwang)   *Seoul, South Korea*

- Generative AI
- Weakly Supervised/Unsupervised Semantic Segmentation
- Diffusion Models in Medical Imaging

Lab Intern: Algorithm Machine Intelligence Lab   Jun 2021 – Aug 2021
POSTECH (Advisor: Tae-Hyun Oh)   *Remote – Pohang, South Korea*

- Efficient Human Behavior Understanding
- Human Mesh Recovery

Lab Intern: Computer Vision Lab   Mar 2021 – Jun 2021
Korea University (Advisor: Sangpil Kim)   *Seoul, South Korea*

- Hand Grasp Type Estimation

Lab Intern: Pattern Recognition Lab   Sep 2018 – Nov 2020
Sanmyung University (Advisor: Eui Chul Lee)   *Seoul, South Korea*

- Real-time Remote Photoplethysmography Extraction

+ Attended Google BootCamp in 2022

PROFESSIONAL SERVICES

* Teaching Experience
Samsung Korea *Teaching DX & AI Project*   *2022*
Samsung Korea *Teaching AI & DX*   *2022*
NAVER + MOBULLABS *Coach Machine Learning and Deep Learning (AI)*   *2020, 2021, 2022*
KT AIVLE *Coach of AI*   *2021*
LG Academy AI Camp *Coach of AI*   *2021*

* Outsourcing
 FaceSwap   *2021*

HONORS & AWARDS

- Graduation Project 2021 *(2nd)* Project: Lip Reading
- MAIC Surgical Instruments Segmentation 2021 *(3rd)* Project: Medical Segmentation
- Korea SW Central University Hackton 2021 *(3rd)* Project: Health Care Body Position
- SM AI Competition 2020 *(2nd & 4rd)* Project: Image Inpainting & Music Recommendation

CERTIFICATIONS

- Tensorflow Developer Certificate 2022
- YONSEI Medical Scientist Training Program 2023
- Summer Program in University of Southern California 2023
- Best Academic Paper Award at Yonsei University