

Hyun Seok Seong

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I am a Ph.D. candidate at Sungkyunkwan University, South Korea. My research focuses on representation learning for image and video understanding under limited supervision, including multi-modal learning. More broadly, I have extensive experience addressing real-world challenges such as domain generalization, few-shot & open-set & long-tailed recognition.

Education

Sungkyunkwan University (SKKU), South Korea Integrated M.S. and Ph.D., Artificial Intelligence ◇ Advisor: Prof. Jae-Pil Heo	Sep. 2019 - Present
Sungkyunkwan University (SKKU), South Korea B.S., Electronic and Electrical Engineering	Mar. 2013 - Feb. 2019

Experience

Electronics and Telecommunications Research Institute (ETRI) Researcher ◇ Supervised by Jangho Choi and Sungwon Yi	Sep. 2025 - Feb. 2026
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Publications

- ▶ From Vicious to Virtuous Cycles: Synergistic Representation Learning for Video Object-Centric Learning
International Conference on Learning Representations (**ICLR**), 2026
Hyun Seok Seong*, WonJun Moon*, and Jae-Pil Heo (*: equal contribution)
- ▶ Selective Contrastive Learning for Weakly Supervised Affordance Grounding
IEEE/CVF International Conference on Computer Vision (**ICCV**), 2025
WonJun Moon*, **Hyun Seok Seong***, and Jae-Pil Heo (*: equal contribution)
- ▶ Temporal Alignment-Free Video Matching for Few-shot Action Recognition
IEEE/CVF Conference Computer Vision and Pattern Recognition (**CVPR**), 2025 [Oral presentation]
SuBeen Lee, WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo
- ▶ Foreground-Covering Prototype Generation and Matching for SAM-Aided Few-Shot Segmentation
AAAI Conference on Artificial Intelligence (**AAAI**), 2025
Suho Park*, SuBeen Lee*, **Hyun Seok Seong**, Jaejoon Yoo, and Jae-Pil Heo (*: equal contribution)
- ▶ Progressive Proxy Anchor Propagation for Unsupervised Semantic Segmentation
European Conference on Computer Vision (**ECCV**), 2024
Hyun Seok Seong, WonJun Moon, SuBeen Lee, and Jae-Pil Heo
- ▶ Task-Oriented Channel Attention for Fine-Grained Few-Shot Classification
IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2024
SuBeen Lee, WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo
- ▶ Task-disruptive Background Suppression for Few-Shot Segmentation
AAAI Conference on Artificial Intelligence (**AAAI**), 2024
Suho Park, SuBeen Lee, Sangeek Hyun, **Hyun Seok Seong**, and Jae-Pil Heo
- ▶ Leveraging Hidden Positives for Unsupervised Semantic Segmentation
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023
Hyun Seok Seong, WonJun Moon, SuBeen Lee, and Jae-Pil Heo
- ▶ Minority-Oriented Vicinity Expansion with Attentive Aggregation for Video Long-Tailed Recognition
AAAI Conference on Artificial Intelligence (**AAAI**), 2023 [Oral presentation]
WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo

- ▶ TCX: Texture and Channel Swappings for Domain Generalization
Pattern Recognition Letters, 2023
Jaehyun Choi, Hyun Seok Seong, Sanguk Park, and Jae-Pil Heo
- ▶ Difficulty-Aware Simulator for Open Set Recognition
European Conference on Computer Vision (ECCV), 2022
WonJun Moon, Junho Park, Hyun Seok Seong, Cheol-Ho Cho, and Jae-Pil Heo
- ▶ Pivot-Guided Embedding for Domain Generalization
IEEE Access, 2022
Hyun Seok Seong, Jaehyun Choi, Woojin Jeong, and Jae-Pil Heo

Projects

Comprehensive Deepfake Detection Incorporating Common Sense Error Analysis	Sep. 2025 - Present
◊ Research on AI-generated image detection	
Named Entity Recognition (NER) for Video Understanding AI	Apr. 2025 - Sep. 2025
◊ Video NER model development and evaluation with multimodal LLM	
Detection of AI-based Fake Investigation and Tip Videos	Jul. 2021 - Feb. 2025
◊ Role: Project co-leader (video forgery detection, video inpainting, video-to-video translation, ...) ◊ Awarded by the Minister of the Ministry of Science and ICT: Outstanding Achievement in Social Problem-Solving R&D	
Reconstruction of Non-Line-of-Sight Scene for VR/AR Contents	Jan. 2020 - Dec. 2020
◊ Develop long-tailed recognition and image reconstruction models	
Developing Vision-based Crowd-enabled Intelligent Surveillance System	Feb. 2019 - Apr. 2021
◊ Role: Project leader (2021), Project member (2019 - 2020) (Object detection&tracking, person re-identification)	
Designing Optimal Domain Adaptation Model for Cost-saving in Data	Feb. 2019 - Nov. 2019
◊ Research on domain adaptation and generalization	

External Activities

Seoul Forum on AI Safety & Security — Red Teaming Competition	Oct. 2025
◊ Organization: ETRI AI Safety Institute & Scale AI ◊ Focus: LLM jailbreak / AI vulnerability assessment ◊ Role: Red teaming competition participant (2nd place award)	
Korea Innovation Challenge Research Expo (2024 APRO Open Lab)	Dec. 2024
◊ Organization: Ministry of Science and ICT ◊ Role: Exhibitor ◊ Related project: Detection of AI-based Fake Investigation and Tip Videos	
Korea Police World Expo	2019 2020 2022 2023 2024
◊ Organization: Korean national police agency & Incheon Metropolitan City, South Korea ◊ Role: Exhibitor ◊ Keywords: Crowd-enabled intelligent surveillance system & Video forgery detection model	