

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

Sep. 2019 - Present

Integrated M.S. and Ph.D., Artificial Intelligence

◇ Advisor: Prof. Jae-Pil Heo

Sungkyunkwan University (SKKU), South Korea

Mar. 2013 - Feb. 2019

B.S., Electronic and Electrical Engineering

Experience

Electronics and Telecommunications Research Institute (ETRI)

Sep. 2025 - Feb. 2026

Researcher

◇ Supervised by Jangho Choi and Sungwon Yi

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