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**
Research Intern
◇ Supervised by Jangho Choi and Sungwon Yi

Publications

- Reconstruction-Guided Slot Curriculum: Addressing Object Over-Fragmentation in Video Object-Centric Learning
  IEEE/CVF Conference Computer Vision and Pattern Recognition (**CVPR**), 2026
  WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo
- Looking Beyond the Window: Global-Local Aligned CLIP for Training-free Open-Vocabulary Semantic Segmentation
  IEEE/CVF Conference Computer Vision and Pattern Recognition (**CVPR**), 2026
  ByeongCheol Lee, **Hyun Seok Seong**, Sangeek Hyun, Gilhan Park, WonJun Moon, and Jae-Pil Heo
- 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)
- Task-Oriented Channel Attention for Fine-Grained Few-Shot Classification
  IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2025
  SuBeen Lee, WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo
- 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-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