

Hyun Seok Seong

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I am a Ph.D. candidate at Sungkyunkwan University, South Korea. My research primarily focuses on representation learning (self-supervised learning) for image segmentation and grounding under limited supervision. In addition, I am interested in vision-language models, including multi-modal learning and video understanding. More broadly, I aim to address real-world challenges such as domain generalization, few-shot learning, open-set recognition, and 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

Publications

- ▶ Selective Contrastive Learning for Weakly Supervised Affordance Grounding ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
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 ([Link](#))
Pattern Recognition Letters, 2023
Jaehyun Choi, **Hyun Seok Seong**, Sanguk Park, and Jae-Pil Heo
- ▶ Difficulty-Aware Simulator for Open Set Recognition ([Link](#))
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 ([Link](#))
IEEE Access, 2022
Hyun Seok Seong, Jaehyun Choi, Woojin Jeong, and Jae-Pil Heo

Projects

- Named Entity Recognition for Video Understanding AI** Apr. 2025 - Present
 - Supported by PYLER ([url](#))
 - Role: Project member
 - Keywords: Video Understanding / Named-Entity Recognition / Large (Vision)-Language Model
- Detection of AI-based Fake Investigation and Tip Videos** ([Video](#)) Jul. 2021 - Feb. 2025
 - Supported by Korean national police agency & Ministry of Science and ICT (\$2.2M in total)
 - Role: Project co-leader
 - Keywords: Deepfake detection / 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** ([Video](#) / [Slide](#)) Jan. 2020 - Dec. 2020
 - Supported by Ministry of Science and ICT (\$2.1M in total)
 - Role: Project member
 - Keywords: Long-tailed classification / Image reconstruction
- Developing Vision-based Crowd-enabled Intelligent Surveillance System** ([Video](#) / [Demo](#)) Feb. 2019 - Apr. 2021
 - Supported by Korean national police agency & Ministry of Science and ICT (\$1.0M in total)
 - Role: Project leader (2021), Project member (2019 - 2020)
 - Keywords: Object detection / Object tracking / Super-resolution / Person re-identification
- Designing Optimal Domain Adaptation Model for Cost-saving in Data** Feb. 2019 - Nov. 2019
 - Supported by Electronics and Telecommunications Research Institute
 - Role: Project member
 - Keywords: Domain adaptation / Domain generalization

External Activities

- 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
- Korean Conference on Computer Vision (KCCV) 2023** Aug. 2023
 - Organization: Korean Computer Vision Society (KCVS)
 - Role: Poster presenter
 - Presentation paper: Leveraging Hidden Positives for Unsupervised Semantic Segmentation, CVPR 2023
- 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
- Teaching assistant at external institutions**
 - Military specialized AI education program from Ministry of National Defense Apr. 2023 - Oct. 2023
 - AI Intensive Course for Samsung SDS 2019

Honors and Awards

- Scholarship for outstanding students support from SKKU** Sep. 2019 - Aug. 2022
 - \$15K in total