Hyun Seok Seong

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I am Ph.D. candidate at Sungkyunkwan University, South Korea. My research interests include various tasks in machine learning and computer vision, with a particular focus on image segmentation and grounding with limited labeled data. Recently, my interest has been in unsupervised semantic segmentation and weakly-supervised affordance grounding.

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

- 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 (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

In-progress

- [Under review] Selective Contrastive Learning with Reliability and Specificity for Weakly Supervised Affordance Grounding
  Hyun Seok Seong*, WonJun Moon*, and Jae-Pil Heo (*: equal contribution)

Projects

Detection of AI-based Fake Investigation and Tip Videos (Video) **Jul. 2021 - Present**
- Supported by Korean national police agency & Ministry of Science and ICT ($2.2M in total)
- Role: Project co-leader
- Keywords: Video forgery detection / Video inpainting / Video-to-video translation / Space-time video super-resolution
- 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 Institute for Information & communication Technology Planning & evaluation (IITP) ($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 / 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: Team 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

Awarded by the Minister of the Ministry of Science and ICT **Dec. 2024**
- Outstanding Achievement in Social Problem-Solving R&D
- Detection of AI-based Fake Investigation and Tip Videos

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