

# 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 object categorization and semantic segmentation. Recently my interest has been in addressing segmentation tasks with limited labeled data, with a specific focus on unsupervised semantic segmentation which is a key task for solving real-world problems.

## Education

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**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

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- ▶ 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-disruptive Background Suppression for Few-Shot Segmentation ([Link](#))  
*Proceedings of the 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](#))  
*Proceedings of the 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](#))  
*Proceedings of the 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

- ▷ [Awaiting final decision] Task-Oriented Channel Attention for Fine-Grained Few-Shot Classification  
SuBeen Lee, WonJun Moon, **Hyun Seok Seong**, and Jae-Pil Heo
- ▷ [Under review] Foreground-Covering Prototype Generation and Matching for SAM-Aided Few-Shot Segmentation  
Suho Park\*, SuBeen Lee\*, **Hyun Seok Seong**, Jaejoon Yoo, and Jae-Pil Heo

## Projects

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**Detection of AI-based Fake Investigation and Tip Videos** ([Video](#))

**Jul. 2021 - Present**

- Supported by Korean national police agency & Ministry of Science and ICT (₩2,975M≈\$2.2M in total)

- Role: Project co-leader
- Keywords: Video forgery detection / Video inpainting / Video-to-video translation / Space-time video super-resolution

### **Predicting low-carbon authentication through IoT data analysis** Jun. 2020 - Sep. 2020

- Participating company: GREENers, South Korea
- Role: Artificial intelligence team leader
- Keywords: Low-carbon authentication / Carbon footprint

### **Reconstruction of Non-Line-of-Sight Scene for VR/AR Contents** ([ppt](#)) Jan. 2020 - Dec. 2020

- Supported by Institute for Information & communication Technology Planning & evaluation (IITP) (₩2,800M≈\$2.1M in total)
- Role: Project member
- Keywords: Long-tailed classification / Image reconstruction

### **Developing Vision-based Crowd-enabled Intelligent Surveillance System** ([Video](#)) Feb. 2019 - Apr. 2021

- Supported by Korean national police agency & Ministry of Science and ICT (₩1,375M≈\$1.0M in total)
- Role: Project leader (2021), Project member (2019 - 2020)
- Keywords: Object detection / Super-resolution / Person re-identification ([Demo](#))

### **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 / Open-set recognition

## **External Activities**

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### **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

- 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 Scholarship**

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- Scholarship for outstanding students support from SKKU (₩22M in total) Sep. 2019 - Aug. 2022
- Served and discharged from ROK Army as Sergeant Jan. 2015 - Oct. 2016