

# Hongje Seong

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## Research Interest

Computer vision, visual segmentation, matting, visual recognition, domain adaptation / generalization, image retrieval, place recognition

## Education

### Yonsei University

PH.D STUDENT SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

• Advisor: [Prof. Euntai Kim](#)

[Seoul, Korea](#)

Mar 2018 - Current

### Yonsei University

B.S. SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

[Seoul, Korea](#)

Mar 2012 - Feb 2018

## Experience

### Adobe Research

RESEARCH INTERN

• Mentors: [Joon-Young Lee](#), [Seoung Wug Oh](#), and [Brian Price](#)

[San Jose, CA, USA \(remote\)](#)

Mar 2021 - Dec 2021

### Yonsei University

RESEARCH ASSISTANT @ [CILAB](#)

Participation in several research projects

[Seoul, Korea](#)

Mar 2018 - Current

### Yonsei University

TEACHING ASSISTANT

- Data Structure and Algorithms
- Introduction Artificial Intelligence

[Seoul, Korea](#)

Mar 2018 - Dec 2018

## Publications

### JOURNAL

#### 2022

Video Object Segmentation using Kernelized Memory Network with Multiple Kernels

[Hongje Seong](#), [Junhyuk Hyun](#), and [Euntai Kim](#)

IEEE Transactions on Pattern Analysis and Machine Intelligence (*TPAMI*), 2022. (Accepted) (IF: **24.314** in JCR2021)

Content Swapping: A New Image Synthesis for Construction Sign Detection in Autonomous Vehicles

[Hongje Seong](#), [Seunghyun Baik](#), [Youngjo Lee](#), [Suhyeon Lee](#), and [Euntai Kim](#)

Sensors, vol. 22, no. 9 pp. 3494, May, 2022. (IF: **3.847** in JCR2021)

#### 2021

Adjacent Feature Propagation Network (AFPNet) for Real-Time Semantic Segmentation

[Junhyuk Hyun](#), [Hongje Seong](#), [Sangki Kim](#), and [Euntai Kim](#)

IEEE Transactions on Systems, Man, and Cybernetics: Systems (*TSMC*), 2021. (Accepted) (IF: **13.451** in JCR2020)

Indoor Place Category Recognition for a Cleaning Robot by Fusing a Probabilistic Approach and Deep Learning

[Soowook Choe\\*](#), [Hongje Seong\\*](#), and [Euntai Kim](#) (\*equal contribution)

IEEE Transactions on Cybernetics (*TCYB*), 2021. (Accepted) (IF: **11.448** in JCR2020)

## Universal Pooling - A New Pooling Method for Convolutional Neural Networks

Junhyuk Hyun, Hongje Seong, and Euntai Kim

Expert Systems With Applications (*ESWA*), vol. 180, pp. 115084, October, 2021. (IF: **6.954** in JCR2020)

## 2020

### FOSNet: An End-to-End Trainable Deep Neural Network for Scene Recognition

Hongje Seong, Junhyuk Hyun, and Euntai Kim

IEEE Access, vol. 8, pp. 82066-82077, December, 2020. (IF: **3.745** in JCR2019)

## CONFERENCE

## 2022

### Spatial-Channel Transformer for Scene Recognition

Seunghyun Baik, Hongje Seong, Youngjo Lee, and Euntai Kim

International Joint Conference on Neural Networks (*IJCNN*), July, 2022.

### WildNet: Learning Domain Generalized Semantic Segmentation from the Wild

Suhyeon Lee, Hongje Seong, Seongwon Lee, and Euntai Kim

IEEE/CVF Conference on Computer Vision and Pattern Recognition (*CVPR*), June, 2022.

### Correlation Verification for Image Retrieval

Seongwon Lee, Hongje Seong, Suhyeon Lee, and Euntai Kim

IEEE/CVF Conference on Computer Vision and Pattern Recognition (*CVPR*), June, 2022. ([Oral presentation](#))

### Iteratively Selecting an Easy Reference Frame Makes Unsupervised Video Object Segmentation Easier

Youngjo Lee, Hongje Seong, and Euntai Kim

AAAI Conference on Artificial Intelligence (*AAAI*), February, 2022.

### Graph-Based Point Tracker for 3D Object Tracking in Point Clouds

Minseong Park, Hongje Seong, Wonje Jang, and Euntai Kim

AAAI Conference on Artificial Intelligence (*AAAI*), February, 2022.

## 2021

### Hierarchical Memory Matching Network for Video Object Segmentation

Hongje Seong, Seoung Wug Oh, Joon-Young Lee, Seongwon Lee, Suhyeon Lee, and Euntai Kim

IEEE/CVF International Conference on Computer Vision (*ICCV*), October, 2021.

### Improving Nighttime Object Detection by Generating Synthetic Nighttime Dataset from Daytime Dataset

Youngjo Lee, Suhyeon Lee, Hongje Seong, and Euntai Kim

International Conference on Control, Automation and Systems (*ICCAS*), October, 2021. (*Best poster paper award*)

### Loop Closure Detection in Crowded Place

Seongwon Lee, HyungGi Jo, Hongje Seong, and Euntai Kim

IEEE Region 10 Symposium (*TENSYMP*), August, 2021.

### Metric Learning in Mini-batch for Robust 6-DoF Camera Relocalization in Outdoor Environments

Gyuhyeon Pak, Hongje Seong, and Euntai Kim

International Conference on Ubiquitous Robots (*UR*), June, 2021.

### The Effective Method for 3D LiDAR Point Clouds Processing

Youngjoo Kim, Hongje Seong, Wonje Jang, and Euntai Kim

International Conference on Ubiquitous Robots (*UR*), June, 2021.

### Unsupervised Domain Adaptation for Semantic Segmentation by Content Transfer

Suhyeon Lee, Junhyuk Hyun, Hongje Seong, and Euntai Kim

AAAI Conference on Artificial Intelligence (*AAAI*), February, 2021.

## 2020

### Kernelized Memory Network for Video Object Segmentation

Hongje Seong, Junhyuk Hyun, and Euntai Kim

European Conference on Computer Vision (*ECCV*), August, 2020.

IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (*CVPRW-DAVIS*), June, 2020. (3rd place award)

### Is Whole Object Information Helpful for Scene Recognition?

Hongje Seong, Junhyuk Hyun, and Euntai Kim

International Conference on Ubiquitous Robots (*UR*), June, 2020.

## 2019

### Video Multitask Transformer Network

Hongje Seong, Junhyuk Hyun, and Euntai Kim

IEEE/CVF International Conference on Computer Vision Workshops (*ICCVW-CoVieW*), October, 2019. (4th place award)

Workshop on Frontiers of Electrical Engineering (*FREE*) in Yonsei University, October, 2019. (Best poster award 3rd place)

### Partial Convolution for Scene Recognition

Hongje Seong, Junhyuk Hyun, Seongwon Lee, and Euntai Kim

International Conference on Control, Automation and Systems (*ICCAS*), October, 2019.

### Scene Recognition via Object-to-Scene Class Conversion: End-to-End Training

Hongje Seong, Junhyuk Hyun, Hyunbae Chang, Suhyeon Lee, Suhan Woo, and Euntai Kim

International Joint Conference on Neural Networks (*IJCNN*), July, 2019.

## 2018

### New Feature-level Video Classification via Temporal Attention Model

Hongje Seong, Junhyuk Hyun, Suhyeon Lee, Suhan Woo, Hyunbae Chang, and Euntai Kim

ACM International Conference on Multimedia Workshops (*MMW-CoVieW*), October, 2018. (2nd place award)

### Weakly Supervised Temporal Localization in Video Scene Recognition

Junhyuk Hyun, Hongje Seong, Suhyeon Lee, Suhan Woo, and Euntai Kim

International Conference on Control, Automation and Systems (*ICCAS*), October, 2018.

## Awards

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2020	<b>3rd Place Award</b>	<i>DAVIS'20 (CVPR Workshop)</i>
	The 2020 DAVIS Challenge on Video Object Segmentation (DAVIS 2020)	
2019	<b>Best Poster Award 3rd Place</b>	<i>School of Electrical &amp; Electronic Engineering, Yonsei University</i>
	Workshop on Frontiers of Electrical Engineering (FREE) 2019	
2018	<b>2nd Place Award</b>	<i>CoVieW'18 (ACM MM Workshop)</i>
	The 1st Workshop and Challenge on Comprehensive Video Understanding in the Wild (CoVieW 2018)	
		<i>Korea Transportation Safety Authority (TS)</i>
2017	<b>4th Place Award</b>	<i>&amp; Korea Auto-Vehicle Safety Association (KASA)</i>
	Autonomous Car Racing in 2017 International Student Car Competition	

## Patents

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### Apparatus and method for domain adaptation using zero style loss

Euntai Kim, Suhyeon Lee, Junhyuk Hyun, and Hongje Seong

Korea - Application No. 10-2021-0003078

### Apparatus and method for solving class imbalance problem of domain adaptation using content transfer

Euntai Kim, Suhyeon Lee, Hongje Seong, and Junhyuk Hyun

Korea - Application No. 10-2021-0003077

### Apparatus for predicting traffic line of box-level multiple object using only position information of box-level multiple object

Euntai Kim, Youngjo Lee, Hongje Seong, and Junhyuk Hyun

Korea - Application No. 10-2020-0149533

### **Apparatus for predicting movement of box-level object using only position information of box-level object**

Euntai Kim, Youngjo Lee, Hongje Seong, and Junhyuk Hyun  
Korea - Application No. 10-2020-0149532

### **Pixel Level Video Object Tracking Apparatus Using Box Level Object Position Information**

Euntai Kim, Hongje Seong, Youngjo Lee, and Junhyuk Hyun  
Korea - Application No. 10-2020-0030214  
International (PCT) - Application No. PCT/KR2020/005383

### **Action Recognition Method and Apparatus in Untrimmed Videos Based on Artificial Neural Network**

Euntai Kim, Hongje Seong, and Junhyuk Hyun  
Korea - Application No. 10-2020-0029743  
Korea - Registration No. 10-2357000

### **Apparatus for Recognizing a Place based on Artificial Neural Network and Learning Method thereof**

Euntai Kim, Hongje Seong, Junhyuk Hyun, Suhyeon Lee, Suhan Woo, and Hyunbae Chang  
Korea - Application No. 10-2019-0041544  
Korea - Registration No. 10-2211842  
International (PCT) - Application No. PCT/KR2020/001018

### **Apparatus and Method for Detecting Object based on Heterogeneous Sensor**

Euntai Kim, Junhyuk Hyun, Suhyeon Lee, Suhan Woo, and Hongje Seong  
Korea - Application No. 10-2018-0055179  
Korea - Registration No. 10-2138681

### **Method and Apparatus for Generating Scene Situation Information of Video Using Differentiation of Image Feature and Supervised Learning**

Euntai Kim, Junhyuk Hyun, Suhyeon Lee, Suhan Woo, and Hongje Seong  
Korea - Application No. 10-2018-0049520  
Korea - Registration No. 10-2120453

## **Projects**

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(Apr 2021 - Feb 2023) Development of multipurpose mid-size bus platform technology for automated driving based on predefined route  
Ministry of Trade, Industry and Energy (MOTIE)

(Sep 2020 - Jun 2021) 클라우드기반 도로객체인식 개발 PoC  
LG U+ & Soonchunhyang University

(Sep 2017 - Dec 2020) Research on fundamental technology for deep learning-based semantic state understanding  
National Research Foundation of Korea (NRF)

(Sep 2017 - May 2019) Development of part-based pedestrian detection and tracking system for autonomous vehicle  
National Research Foundation of Korea (NRF)

## **Activities**

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### **REVIEWER**

CVPR 2022  
ECCV 2022  
UR 2022  
Elsevier International Journal of Computer Vision (IJCV)  
Elsevier Pattern Recognition (PR)  
Elsevier Knowledge-Based Systems (KNOSYS)  
Elsevier Applied Soft Computing (ASOC)

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