

# Hongje Seong

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## Education

### Yonsei University

PH.D. DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

• **Advisor:** [Prof. Euntai Kim](#)

[Seoul, Korea](#)

Mar 2018 - Feb 2023

### Yonsei University

B.S. SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

[Seoul, Korea](#)

Mar 2012 - Feb 2018

## Experience

### University of Seoul

ASSISTANT PROFESSOR

School of Electrical and Computer Engineering

[Seoul, Korea](#)

Mar 2025 - Present

### Samsung Electronics

STAFF RESEARCHER

- Manufacturing/Material Handling AI Lab, AI Center (Dec 2024 - Feb 2025)

- Autonomous Driving Team, Computer Vision TU, Samsung Advanced Institute of Technology (SAIT) (Mar 2023 - Dec 2024)

[Suwon, Korea](#)

Mar 2023 - Feb 2025

### Adobe Research

RESEARCH INTERN

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

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

Mar 2021 - Dec 2021

## Publications

### JOURNAL

#### 2024

##### Correlation Verification for Image Retrieval and Its Memory Footprint Optimization

Seongwon Lee, [Hongje Seong](#), Suhyeon Lee, and Euntai Kim

IEEE Transactions on Pattern Analysis and Machine Intelligence (*TPAMI*), November, 2024, accepted. (IF: **20.8**)

#### 2023

##### Fallen Person Detection for Autonomous Driving

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

Expert Systems With Applications (*ESWA*), vol. 213, pp. 119242, March, 2023. (IF: **8.5**)

##### 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*), vol. 45, no 2, pp. 2595-2612, February, 2023. (IF: **23.6**)

#### 2022

##### 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*), vol. 52, no. 9, pp. 5877-5888, September, 2022. (IF: **11.471**)

##### 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*), vol. 52, no. 8, pp. 7265-7276, August, 2022. (IF: **19.118**)

## 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**)

## 2021

### 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**)

## 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, April, 2020. (IF: **3.745**)

## CONFERENCE

## 2024

### Unveiling the Hidden: Online Vectorized HD Map Construction with Clip-Level Token Interaction and Propagation

Nayeon Kim\*, Hongje Seong\*, Daehyun Ji, Sujin Jang (\*equal contribution)

Conference on Neural Information Processing Systems (*NeurIPS*), December, 2024.

## 2023

### Revisiting Self-Similarity: Structural Embedding for Image Retrieval

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

IEEE/CVF Conference on Computer Vision and Pattern Recognition (*CVPR*), June, 2023.

### SHUNIT: Style Harmonization for Unpaired Image-to-Image Translation

Seokbeom Song, Suhyeon Lee, Hongje Seong, Kyoungwon Min, and Euntai Kim

AAAI Conference on Artificial Intelligence (*AAAI*), February, 2023.

### Domain Adaptive Video Semantic Segmentation via Cross-Domain Moving Object Mixing

Kyusik Cho, Suhyeon Lee, Hongje Seong, and Euntai Kim

IEEE/CVF Winter Conference on Applications of Computer Vision (*WACV*), January, 2023.

## 2022

### One-Trimap Video Matting

Hongje Seong, Seoung Wug Oh, Brian Price, Euntai Kim, and Joon-Young Lee

European Conference on Computer Vision (*ECCV*), October, 2022.

**Winner** at Qualcomm Innovation Fellowship 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.

**Finalist** at Qualcomm Innovation Fellowship 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](#))

**Winner** at Qualcomm Innovation Fellowship 2022

### 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 (TENSYP), 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 & Honors

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2023	<b>Grand Award (1st Place) (₩2,000,000)</b> Outstanding Graduate Student	<i>BK21 Y-BASE, School of Electrical &amp; Electronic Engineering, Yonsei University</i>
2022	<b>Winner (₩4,000,000)</b> Qualcomm Innovation Fellowship (QIFK 2022)	<i>Qualcomm</i>
2022	<b>Outstanding Reviewer</b> European Conference on Computer Vision (ECCV 2022)	<i>ECCV'22</i>
2020	<b>3rd Place Award</b> The 2020 DAVIS Challenge on Video Object Segmentation (DAVIS 2020)	<i>DAVIS'20 (CVPR Workshop)</i>
2019	<b>Best Poster Award 3rd Place</b> Workshop on Frontiers of Electrical Engineering (FREE 2019)	<i>School of Electrical &amp; Electronic Engineering, Yonsei University</i>
2018	<b>2nd Place Award</b> The 1st Workshop and Challenge on Comprehensive Video Understanding in the Wild (CoVieW 2018)	<i>CoVieW'18 (ACM MM Workshop)</i>
2017	<b>4th Place Award</b> Autonomous Car Racing in 2017 International Student Car Competition	<i>Korea Transportation Safety Authority (TS) &amp; Korea Auto-Vehicle Safety Association (KASA)</i>
2015	<b>Scholarship (₩2,331,000)</b> Hope-sharing Foundation	<i>KT</i>

## Patents

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**Electronic Device For Recognising Object On The Road And Method For Operating The Same**  
Hongje Seong, Moonsub Byeon, Junho Cho, Jiyeoup Jeong, Jiwon Lee, Ui-Kun Kwon, Dae Ung Jo  
Korea - Application No. 10-2024-0198237

**Method and Apparatus with Vehicle Driving Control**  
Hongje Seong, Nayeon Kim, Sujin Jang, and Daehyun Ji  
US - Application No. 18/936,286  
EP - Application No. 24221093.8  
CN - Application No. 202411948774.7

**Method and Apparatus of Controlling Driving of Vehicle and Vehicle**  
Hongje Seong, Nayeon Kim, Sujin Jang, and Daehyun Ji  
Korea - Application No. 10-2024-0090377

**Joint Trimap Estimation and Alpha Matte Prediction for Video Matting**  
Joon-Young Lee, Seoungwug Oh, Brian Price, and Hongje Seong  
US - Application No. 17/736,397

**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  
Korea - Registration No. 10-2483738

**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  
Korea - Registration No. 10-2595207

**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  
Korea - Registration No. 10-2454281

**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, 2023, 2024, 2025

ECCV 2022, 2024

ICCV 2023, 2025

AAAI 2023, 2024, 2025

NeurIPS 2024, 2025

ICLR 2025

ICML 2025

AISTATS 2025

ACCV 2024

WACV 2024, 2025

UR 2022, 2023

Springer International Journal of Computer Vision (IJCV)

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

IEEE Transactions on Image Processing (TIP)

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

Elsevier Pattern Recognition (PR)

Elsevier Expert Systems With Applications (ESWA)

Elsevier Knowledge-Based Systems (KNOSYS)

Elsevier Applied Soft Computing (ASOC)

Elsevier Computer Vision and Image Understanding (CVIU)