

Hongje Seong

RESEARCHER, SAMSUNG ADVANCED INSTITUTE OF TECHNOLOGY (SAIT)

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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. SCHOOL 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

Samsung Advanced Institute of Technology (SAIT)

RESEARCHER

Computer Vision Lab

Suwon, Korea

Mar 2023 - Current

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

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: 8.665 in JCR2021)

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: 24.314 in JCR2021)

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 in JCR2021)

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** 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

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, April, 2020. (IF: **3.745** in JCR2019)

CONFERENCE

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 (*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 & Honors

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

Patents

Joint Trimap Estimation and Alpha Matte Prediction for Video Matting

Joon-Young Lee, Seoungwug Oh, Brian Price, and Hongje Seong

US patents in pending

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

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

(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

REVIEWER

AAAI 2023

CVPR 2022, 2023

ECCV 2022

ICCV 2023

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)

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)

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