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 — *Seoul, Korea*
Ph.D Student School of Electrical and Electronic Engineering — *Mar 2018 - Current*
- ***Advisor:*** *Prof. Euntai Kim*

Yonsei University — *Seoul, Korea*
B.S. School of Electrical and Electronic Engineering — *Mar 2012 - Feb 2018*

Experience

Yonsei University — *Seoul, Korea*
Research Assistant @ CILAB — *Mar 2018 - Current*
Participation in several research projects

Adobe Research — *San Jose, CA, USA (remote)*
Research Intern — *Mar 2021 - Dec 2021*
- ***Mentors:*** *Joon-Young Lee, Seoung Wug Oh, and Brian Price*

Yonsei University — *Seoul, Korea*
Teaching Assistant — *Mar 2018 - Dec 2018*
- Data Structure and Algorithms
- Introduction Artificial Intelligence

Publications

Journal

2022

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: ***3.576*** in JCR2020)

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: ***16.389*** in JCR2020)

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 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.

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.

Is Whole Object Information Helpful for Scene Recognition?
Hongje Seong, Junhyuk Hyun, and Euntai Kim
International Conference on Ubiquitous Robots (*UR*), June, 2020.

A Kernel-based Approach for Video Object Segmentation
Hongje Seong, Junhyuk Hyun, and Euntai Kim
IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (***CVPRW-DAVIS***), 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.

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.

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

2020 **3rd Place Award** — *DAVIS'20 (CVPR Workshop)*
The 2020 DAVIS Challenge on Video Object Segmentation (DAVIS 2020)

2019 **Best Poster Award 3rd Place** — *School of Electrical & Electronic Engineering, Yonsei University*
Workshop on Frontiers of Electrical Engineering (FREE) 2019

2018 **2nd Place Award** — *CoVieW'18 (ACM MM Workshop)*
The 1st Workshop and Challenge on Comprehensive Video Understanding in the Wild (CoVieW 2018)

2017 **4th Place Award** — *Korea Transportation Safety Authority (TS) & Korea Auto-Vehicle Safety Association (KASA)*
Autonomous Car Racing in 2017 International Student Car Competition

Patents

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

(*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

- 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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