

# Pilhyeon Lee

PH.D. STUDENT · YONSEI UNIVERSITY

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## Summary

**Research Interest** How to learn from lacking data/labels in the real world

**Current Focus** Video Understanding, Weakly-supervised Learning

## Education

### Yonsei University

PH.D IN COMPUTER SCIENCE

- Supervised by Prof. Hyeran Byun

Seoul, South Korea

Mar. 2018 - Present

### Chung-Ang University

B.S. IN COMPUTER SCIENCE AND ENGINEERING

- Honors: Magna cum laude (GPA: 4.18/4.5)

Seoul, South Korea

Mar. 2014 - Feb. 2018

## Experience

### Microsoft Research Asia

RESEARCH INTERN

- Working with Dr. Jinglu Wang and Dr. Yan Lu in the Media Computing Group

Beijing, China

Dec. 2019 - Jun. 2020

## Publication

### INTERNATIONAL CONFERENCE

#### Continuous Face Aging Generative Adversarial Networks

Seogkyu Jeon, **Pilhyeon Lee**, Kibeom Hong, Hyeran Byun

- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

Jun. 2021

#### Learning Subject-independent Representation for EEG-based Drowsy Driving Detection

Sunhee Hwang, **Pilhyeon Lee**, Sungho Park, Hyeran Byun

- The 9<sup>th</sup> International Winter Conference on Brain-Computer Interface (BCI)
- Spotlight Presentation

Feb. 2021

#### Weakly-supervised Temporal Action Localization by Uncertainty Modeling

**Pilhyeon Lee**, Jinglu Wang, Yan Lu, Hyeran Byun

- The 35<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI)

Feb. 2021

#### Exploiting Transferable Knowledge for Fairness-aware Image Classification

Sunhee Hwang\*, Sungho Park\*, **Pilhyeon Lee\***, Seogkyu Jeon, Dohyung Kim, Hyeran Byun

- The 15<sup>th</sup> Asian Conference on Computer Vision (ACCV)
- (\* Equal contributions)

Nov. 2020

#### Background Suppression Network for Weakly-supervised Temporal Action Localization

**Pilhyeon Lee**, Youngjung Uh, Hyeran Byun

- The 34<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI)
- Spotlight Presentation (20.6 % acceptance rate)

Feb. 2020

### DOMESTIC JOURNAL / CONFERENCE

Conference: 3 papers (in Korean)

## Project

### Study on Audio, Video, 3d Map and Activation Map Generation System using Deep Generative Model

FUNDED BY INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGY (IITP)

- Developed a method to generate more precise temporal class activation map from untrimmed videos.

Yonsei Univ.

Jul. 2019 - Dec. 2020

## Fundamental Study of Vision Algorithms for Comprehensive and Thorough Understanding of Videos

Yonsei Univ.

FUNDED BY MINISTRY OF SCIENCE, ICT AND FUTURE PLANNING

Aug. 2017 - Dec. 2020

- Developed a new framework for weakly-supervised temporal action localization.
- This work was summarized in a paper and accepted to AAAI 2020.

## Development of Long-range and Multi-person Tracking Method

Yonsei Univ.

FUNDED BY SAMSUNG ELECTRONICS CO., LTD.

May. 2020 - Nov. 2020

- Developed a framework for action recognition based on pose and RGB streams.

## Background Modeling for Weakly-supervised Temporal Action Localization

Microsoft Research Asia

FUNDED BY INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGY (IITP)

Dec. 2019 - Jun. 2020

- Proposed a new background modeling approach to overcome the difficulty in rejecting background frames for weakly-supervised temporal action localization.
- This work was summarized in a paper and accepted to AAAI 2021.

## Deep Learning based Object Detection for Image Analysis

Yonsei Univ.

FUNDED BY SAMSUNG ELECTRONICS CO., LTD.

May. 2018 - Dec. 2018

- Built an object detection benchmark containing unusual factory scenes and reproduced the state-of-the-art object detection methods.

## Inter-cultural Korean Music Discovery based on Pluralistic Music Emotion

Chung-Ang Univ.

FUNDED BY MINISTRY OF SCIENCE, ICT AND FUTURE PLANNING

Jun. 2017 - Feb. 2018

- Assisted research on improving classification performance on multi-label data via instance selection algorithm.

## Honors & Awards

2020	<b>Best Paper Award</b> , The Joint Conference of Microsoft and Korean Artificial Intelligence Association	South Korea
2018	<b>Graduation Honors Award</b> , Chung-Ang University	South Korea
2015 - 2018	<b>Academic Excellence Scholarship</b> , Chung-Ang University	South Korea

## Presentation

### Weakly-supervised Action Localization by Uncertainty Modeling

- AAAI talk, 2021.

### Background Suppression Network for Weakly-supervised Temporal Action Localization

- Korean Conference on Computer Vision (KCCV), 2020.
- AAAI Spotlight talk, 2020.

## Professional Activity

### Reviewers

- IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Trans. on Neural Networks and Learning Systems (TNNLS)
- Pattern Recognition (PR)

## Patent

### Method and Device for Extracting Video Feature

Hyeran Byun, Jewook Lee, **Pilhyeon Lee**, Kibeom Hong

Nov. 2020

- Korea patent (applied), No. 10-2020-0153515

### Apparatus and Method for Detecting Action Frame Based on Weakly-supervised Learning through Background Modeling via Uncertainty Estimation

Hyeran Byun, **Pilhyeon Lee**, Jewook Lee

Sep. 2020

- Korea patent (applied), No. 10-2020-0122806

### Method and Apparatus for Detecting Action Frame Based on Weakly-supervised Learning through Background Frame Suppression

Hyeran Byun, **Pilhyeon Lee**

Nov. 2019

- PCT patent (applied), No. PCT/KR2020/012645
- Korea patent (registered), No. 10-2201353

## Framework for Generating an Image Reconstructing Brain Activity of a Subject

Hyeran Byun, Kibeom Hong, Sunhee Hwang, Gui-Young Son, Jewook Lee, **Pilhyeon Lee**, Sungho Park, Minsong Ki

Sep. 2018

- Korea patent (registered), No. 10-2089014

## Skill

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<b>Programming</b>	Python, OpenCV, C/C++, Java, LaTeX
<b>Deep Learning</b>	Pytorch, Tensorflow
<b>Language</b>	Korean, English