

Pilhyeon Lee

PH.D. STUDENT · YONSEI UNIVERSITY

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Summary

Research Interest How to effectively train models given incomplete 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

PREPRINT / IN SUBMISSION

Subject Adaptive EEG-based Visual Recognition

Pilhyeon Lee, Sunhee Hwang, Seogkyu Jeon, Hyeran Byun

- Under review

2021

INTERNATIONAL CONFERENCE

Point-supervised Temporal Action Localization with Completeness Guidance

Pilhyeon Lee, Hyeran Byun

- IEEE/CVF International Conference on Computer Vision (ICCV)
- Oral presentation (3.0 % acceptance rate)

Oct. 2021

Feature Stylization and Domain-aware Contrastive Learning for Domain Generalization

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

- The 29th ACM International Conference on Multimedia (MM)
- 27.9 % acceptance rate

Oct. 2021

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 9th 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 35th AAAI Conference on Artificial Intelligence (AAAI)
- Long talk presentation (21.0 % acceptance rate)

Feb. 2021

Exploiting Transferable Knowledge for Fairness-aware Image Classification

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

- The 15th 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

Feb. 2020

- The 34th AAAI Conference on Artificial Intelligence (AAAI)
- **Spotlight presentation (20.6 % acceptance rate)**

DOMESTIC JOURNAL / CONFERENCE

Conference: 4 papers (in Korean)

Project

Development of BCI based Brain and Cognitive Computing Technology for Recognizing User's Intentions using Deep Learning

Yonsei Univ.

FUNDED BY INSTITUTE FOR INFORMATION & COMMUNICATIONS TECHNOLOGY PLANNING & EVALUATION (IITP)

Apr. 2017 - Dec. 2023

- Developed a system detecting drowsy driving using EEG signals.
- Part of this work was summarized in a paper and accepted to BCI 2021.

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

Yonsei Univ.

FUNDED BY INSTITUTE FOR INFORMATION & COMMUNICATIONS TECHNOLOGY PLANNING & EVALUATION (IITP)

Jul. 2019 - Dec. 2020

- Developed a method to generate more precise temporal class activation map from untrimmed videos.
- This project supported the abroad internship at Microsoft Research Asia.

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.
- Part of 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 FOR INFORMATION & COMMUNICATIONS TECHNOLOGY PLANNING & EVALUATION (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

2021	Excellent Paper Award , The Conference of Korean Artificial Intelligence Association	South Korea
2020	Best Paper Award , The Joint Conference of Microsoft and Korean Artificial Intelligence Association	South Korea
2018	Graduation Honors Award , Chung-Ang University	South Korea
2015 - 2018	Academic Excellence Scholarship , 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 Multimedia (**TMM**)
- IEEE Trans. on Image Processing (**TIP**)
- IEEE Trans. on Neural Networks and Learning Systems (**TNNLS**)
- Pattern Recognition (**PR**)

Patent

Learning Method for Fair Image Classification and Device for Classifying Image Fairly

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

Feb. 2021

- Korea patent (applied), No. 10-2021-0020521

Apparatus and Method for Detecting Subject-independent Fatigue State Based on Brain Signal of Driver

Hyeran Byun, Sunhee Hwang, Sungho Park, **Pilhyeon Lee**, Jewook Lee, Dohyung Kim

Jan. 2021

- Korea patent (applied), No. 10-2021-0002145

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

Programming Python, OpenCV, C/C++, Java, LaTeX

Deep Learning Pytorch, Tensorflow

Language Korean, English