Pilhyeon Lee

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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 *Seoul, South Korea*

PH.D IN COMPUTER SCIENCE *Mar. 2018 - Present*

- Supervised by Prof. Hyeran Byun

Chung-Ang University *Seoul, South Korea*

B.S. IN COMPUTER SCIENCE AND ENGINEERING *Mar. 2014 - Feb. 2018*

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

Experience

Microsoft Research Asia *Beijing, China*

RESEARCH INTERN *Dec. 2019 - Jun. 2020*

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

Publication

PREPRINT / IN SUBMISSION

Subject Adaptive EEG-based Visual Recognition

Pilhyeon Lee, Sunhee Hwang, Seogkyu Jeon, Hyeran Byun *2021*

- Under review

INTERNATIONAL CONFERENCE

Learning Action Completeness from Points for Weakly-supervised Temporal Action Localization

Pilhyeon Lee, Hyeran Byun *Oct. 2021*

- IEEE/CVF International Conference on Computer Vision (**ICCV**)
- **Oral presentation** (**3.3 %** acceptance rate)

Feature Stylization and Domain-aware Contrastive Learning for Domain Generalization

Seogkyu Jeon, Kibeom Hong, **Pilhyeon Lee**, Jewook Lee, Hyeran Byun *Oct. 2021*

- The 29th ACM International Conference on Multimedia (**MM**)
- **Oral presentation** (**9.2 %** acceptance rate)

Continuous Face Aging Generative Adversarial Networks

Seogkyu Jeon, **Pilhyeon Lee**, Kibeom Hong, Hyeran Byun *Jun. 2021*

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

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

Sunhee Hwang, **Pilhyeon Lee**, Sungho Park, Hyeran Byun *Feb. 2021*

- The 9th International Winter Conference on Brain-Computer Interface (**BCI**)
- **Spotlight presentation**

Weakly-supervised Temporal Action Localization by Uncertainty Modeling

Pilhyeon Lee, Jinglu Wang, Yan Lu, Hyeran Byun *Feb. 2021*

- The 35th AAAI Conference on Artificial Intelligence (**AAAI**)
- **Talk presentation** (**21.0 %** acceptance rate)

Exploiting Transferable Knowledge for Fairness-aware Image Classification

Sunhee Hwang*, Sungho Park*, **Pilhyeon Lee***, Seogkyu Jeon, Dohyung Kim, Hyeran Byun *Nov. 2020*

- The 15th Asian Conference on Computer Vision (**ACCV**)
- * Equal contributions

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