Pilhyeon Lee

Dept. of Computer Science, Yonsei University, Seoul, South Korea

CONTACT INFORMATION
Tel. : +82-10-2908-9564 / +82-2-2123-3876
E-mail : lph1114@yonsei.ac.kr
Homepage : https://pilhyeon.github.io
GitHub : https://github.com/Pilhyeon

RESEARCH INTEREST
Computer Vision, Deep Learning
Video Understanding
Weakly-supervised Learning

EDUCATION

Ph.D. Student, Dept. of Computer Science, Yonsei University, Seoul, South Korea — Mar. 2018 - Present
Supervised by Prof. Hyeran Byun

B.S. Dept. of Computer Science and Engineering, Chung-Ang University, Seoul, South Korea — Mar. 2014 - Feb. 2018
Honors: ***Magna cum laude*** (GPA: 4.18/4.5)

PUBLICATION

INTERNATIONAL CONFERENCE

1. **Pilhyeon Lee**, Jinglu Wang, Yan Lu, and Hyeran Byun. "Background Modeling via Uncertainty Estimation for Weakly-supervised Action Localization", *In 35th AAAI Conference on Artificial Intelligence* (**AAAI**), Feb. 2021. (**Spotlight Presentation**) (**21.0** % acceptance rate)

2. Sunhee Hwang*, Sungho Park*, **Pilhyeon Lee***, Seokgyu Jeon, Dohyung Kim, and Hyeran Byun. "Exploiting Transferable Knowledge for Fairness-aware Image Classification", *In 15th Asian Conference on Computer Vision* (**ACCV**), Nov. 2020. (* equal contributions)

3. **Pilhyeon Lee**, Youngjung Uh, and Hyeran Byun. "Background Suppression Network for Weakly-supervised Temporal Action Localization", *In 34th AAAI Conference on Artificial Intelligence* (**AAAI**), Feb. 2020. (**Spotlight Presentation**) (**20.6** % acceptance rate)

DOMESTIC
Conference: 3 papers (in Korean)

RESEARCH EXPERIENCE

Dept. of Computer Science, Yonsei University — Mar. 2018 - Present
Advised by Prof. Hyeran Byun
(Researcher)

- **Study on Audio, Video, 3d Map and Activation Map Generation System using Deep Generative Model**
  - Jul. 2019 - Dec. 2020
  - Funded by Institute of Information & Communication Technology (IITP)
  - Developed a method to generate more precise temporal class activation map from untrimmed videos.
- **Fundamental Study of Vision Algorithms for Comprehensive and Thorough Understanding of Videos**
  - Aug. 2017 - Dec. 2020
  - Funded by Ministry of Science, ICT and Future Planning
  - Assisted research on fully-supervised temporal action localization.
  - Developed a new framework for weakly-supervised temporal action localization.
  - The work for the weakly-supervised setting was summarized in a paper and accepted to AAAI 2020.
- **Development of Long-range and Multi-person Tracking Method**
  - May. 2020 - Nov. 2020
  - Funded by Samsung Electronics Co., Ltd.
  - Enhanced 2D pose estimation results in complex scenes.
  - Developed a framework for action recognition based on pose and RGB streams.

- **Deep Learning based Object Detection for Image Analysis**
  - May. 2018 - Dec. 2018
  - Funded by Samsung Electronics Co., Ltd.
  - Created a dataset for object detection task.
  - Experimented with state-of-the-art object detection methods.

Media Computing Group, Microsoft Research Asia Dec. 2019 – Jun. 2020
Working with Dr. Yan Lu and Dr. Jinglu Wang
(Research Intern)

- **Background Modeling for Weakly-supervised Temporal Action Localization**
  - Dec. 2019 – Jun. 2020
  - Proposed a new background modeling approach and an end-to-end framework for weakly-supervised temporal action localization.
  - This work was summarized in a paper and accepted to AAAI 2021.

Dept. of Computer Science and Engineering, Chung-Ang University Jun. 2017 - Feb. 2018
Advised by Prof. Jaesung Lee
(Research Intern)

- **Inter-cultural Korean Music Discovery based on Pluralistic Music Emotion**
  - June. 2016 – May. 2019
  - Funded by Ministry of Science, ICT and Future Planning
  - Established a multi-label music dataset.
  - Assisted research on improving classification performance on multi-label data via instance selection algorithm.

AWARDS

Best Paper Award from Microsoft Research, The 3rd Joint Conference of Korean Artificial Intelligence Association 2020
Graduation Honors Award, Chung-Ang University 2018
Academic Excellence Scholarship, Chung-Ang University 2015-2017

PROFESSIONAL ACTIVITY

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

PATENT

1. Hyeran Byun, Jewook Lee, **Pilhyeon Lee**, and Kibeom Hong. "Method and Device for Extracting Video Feature"
   - Korea patent, No. 10-2020-0153515 (Nov. 2020)

2. Hyeran Byun, **Pilhyeon Lee**, and Jewook Lee. "Apparatus and Method for Detecting Action Frame Based on Weakly-supervised Learning through Background Modeling via Uncertainty Estimation"
   - Korea patent, No. 10-2020-0122806 (Sep. 2020)

3. Hyeran Byun and **Pilhyeon Lee**. "Method and Apparatus for Detecting Action Frame Based on Weakly-supervised Learning through Background Frame Suppression"
   - PCT patent, No. PCT/KR2020/012645 (Sep. 2020)
   - Korea patent, No. 10-2019-0151551 (Dec. 2019)

4. Hyeran Byun, Kibeom Hong, Sunhee Hwang, Gui-Young Son, Jewook Lee, **Pilhyeon Lee**, Sungho Park, and Minsong Ki. "Framework for Generating an Image Reconstructing Brain Activity of a Subject"
   - Korea patent, No. 10-2018-0107014 (Sep. 2018)

TALK

- **Background Suppression Network for Weakly-supervised Temporal Action Localization**
  - Korean Conference on Computer Vision (KCCV), 2020.
  - AAAI Spotlight talk, 2020.

SKILL

Programming Languages
C/C++, Python, OpenCV, Tensorflow, Pytorch