

CHAEHWA YOO

525-1 Asan Eng. Bldg,
52 Ewhayeodae-gil,
Seodaemun-gu, Seoul, Korea, 03760

Phone: (+82) 10 2080 3274
E-mail: chyoo@ewhain.net
website: chwaaaa.github.io

EDUCATION

Ewha W. University, Seoul, Korea	<i>Mar. 2018 ~ Present</i>
Ph.D. in Electronic and Electrical Engineering	3.98 / 4.0
Ewha W. University, Seoul, Korea	<i>Mar. 2013 ~ Feb. 2018</i>
B.S. in Electronics Engineering, <i>Summa Cum Laude</i>	3.85 / 4.0

OBJECTIVE

To pursue excellence in deep learning and signal processing research area.

RESEARCH INTERESTS

Understanding the mechanism of Deep learning

- Domain adaptation
- Explainable AI

Applying Deep learning on real-world problem

- Image/Video Understanding
- Medical Signal/Image Processing

RESEARCH PROJECTS

Research Assistant, Ewha W. University, Korea, Mar. 2018 ~ present.

- Mobile Multiple Biosignal Monitoring & Machine-learning Sleep Stage Analysis - Human Plus (supported by National Research Foundation (NRF) of Korea), 2018 ~ present:
 - Research works on Deep learning based automatic sleep staging algorithms.
 - Developed training algorithms for robust sleep staging network in wilder settings.
- Intelligent IIoT convergence technology center for human-centric smart factory (supported by Brain Korea 21 (BK21) organized by NRF of Korea), 2020 ~ present:
 - Developed reliable deep learning algorithms based on domain adaptation.
 - Developed learning algorithm for data privacy and security of human-centric system.
- Long-term Generation and Prediction of a Future Video with High Fidelity based on Interpretable Deep Learning (supported by National Research Foundation (NRF) of Korea), 2019 ~ 2021:
 - Research works on training algorithms for explainable feature learning.

Visiting Student, Massachusetts General Hospital (MGH), MA, USA, Jul. 2021 ~ Sep. 2021.

- Collaborative research works on domain adaptation algorithms and their applications on medical signal/image processing.

Principal Investigator, Ewha W. University, Korea, Apr. 2021 ~ Oct. 2021.

- Deep learning based COVID-19 diagnosis system: On designing an explainable architecture (supported by Center for Women in Science, Engineering and Technology (WISSET) of Korea), 2021:
 - Selected as an outstanding female graduate student from WISSET.
 - Research works on Deep learning based disease diagnosis system with an explainable architecture.

PUBLICATIONS

International Journal

1. **Chaehwa Yoo**, Xiaofeng Liu, Fangxu Xing, Georges El Fakhri, Jonghye Woo, and Je-Won Kang, “Noise-Robust Sleep Staging via Adversarial Training with an Auxiliary Model,” *IEEE Transactions on Biomedical Engineering (TBME)*, Nov. 2022.
2. Xiaofeng Liu, **Chaehwa Yoo**, Fangxu Xing, Hyejin Oh, Georges El Fakhri, Je-Won Kang, and Jonghye Woo, “Deep Unsupervised Domain Adaptation: A Survey of Recent Methods and Applications,” *APSIPA Transactions on Signal and Information Processing*, May. 2022.
3. Xiaofeng Liu, **Chaehwa Yoo**, Fangxu Xing, C.-C. Jay Kuo, Georges El Fakhri, Je-Won Kang, and Jonghye Woo, “Unsupervised Black-box Model Domain Adaptation for Brain Tumor Segmentation,” *Frontiers in Neuroscience*, Jun. 2022.
4. **Chaehwa Yoo**, Hyang-Woon Lee and Je-Won Kang, “Transferring Structured Knowledge in Unsupervised Domain Adaptation of a Sleep Staging Network,” *IEEE Journal of Biomedical and Health Informatics (JBHI)*, Aug. 2021.

International Conference

1. Xiaofeng Liu, **Chaehwa Yoo**, Fangxu Xing, C.-C. Jay Kuo, Georges El Fakhri, Je-Won Kang, and Jonghye Woo. “Unsupervised Domain Adaptation for Segmentation with Black-box Source Model,” *SPIE Medical Imaging, SPIE*, Feb. 2022.
2. Yu-Jin Ham, **Chaehwa Yoo**, and Je-Won Kang. “Training Compression Artifacts Reduction Network with Domain Adaptation,” *Applications of Digital Image Processing XLIV. Vol. 11842. International Society for Optics and Photonics*, Aug. 2021.
3. **Chaehwa Yoo**, Nayoung Kim, and Je-Won Kang, “Relevance Regularization of Convolutional Neural Network for Interpretable Classification,” *IEEE Computer Vision and Pattern Recognition Workshop (CVPRW)*, Jun. 2019.
4. Nayoung Kim, Jung Kyung Lee, **Chaehwa Yoo**, Seunghyun Cho, and Je-Won Kang, “Video Generation and Synthesis Network for Long-term Video Interpolation,” *Asia Pacific Signal and Information Processing (APSIPA)*, Oct. 2018.

Domestic paper

1. (Kor.) **Chaehwa Yoo**, and Je-Won Kang, “Co-knowledge Transfer Learning for Multi-source Black-box Domain Adaptation” *35th Workshop on Image Processing and Image Understanding (IPIU)*, Feb. 2023.
2. (Kor.) **Chaehwa Yoo**, and Je-Won Kang, “Multi-source Black-box Domain Adaptation through Entropy-based Pseudo Label Generation,” *34th IPIU*, Feb. 2022.

3. (Kor.) **Chaehwa Yoo**, Sumin Kim, Yeonui Kim, Taehee Park, Jiyoung Lee, and Je-Won Kang, "Source-free Unsupervised Domain Adaptation for COVID-19 Lesion Segmentation Network," *Autumn Annual Conference of IEIE*, Nov. 2021.
4. (Kor.) Yu-Jin Ham, **Chaehwa Yoo**, and Je-Won Kang, "Training Compression Artifacts Reduction Network with Domain Adaptation," *Korean Signal Processing Conference (KSPC)*, Sep. 2021.
5. (Kor.) **Chaehwa Yoo**, and Je-Won Kang, "Sleep Signal De-noising Network on Mobile Environments," *KSPC*, Aug. 2020.
6. (Kor.) **Chaehwa Yoo**, and Je-Won Kang, "Training Method for Noise-Robust Sleep Staging Network," *Summer Annual Conference of IEIE*, Aug. 2020.

Patent

1. (Kor) Learning Method for Neural Network using Relevance Propagation and Service Providing Apparatus (Grant. 10-2157441), 2020.
2. (Kor) Method and Apparatus for Denoising Sleep Signal using Signal Block (Grant. 10-2298699), 2021.
3. (US, Kor) Method and Apparatus of Coding Machine Vision data Using Prediction (Grant. US11516478B2), 2022.
4. (Kor) Method and Apparatus for Coding Feature Map Based on Deep Learning in Multitasking System for Machine Vision (filed), 2021.
5. (Kor) Feature Map Reduction in Feature Map Conversion for VCM (filed), 2021.
6. (Kor) Method and Apparatus for Predicting Sleep Stages using Deep Learning Networks (filed), 2021.
7. (Kor) Method and Apparatus for Coding Machine Vision Data using Feature Map Reduction (filed), 2022.

EXPERIENCE

- High Potential Individuals Global Training Program, Carnegie Mellon University (CMU), PA, USA, sponsored by Institute for Information & communication Technology Planning & evaluation (IITP) of Korea, Aug. 2019 ~ Feb. 2020.
- Teaching Assistant, Ewha W. University, Korea, Mar. 2018 ~ Aug. 2019.
 - Circuit Theory, Introduction to Programming, Digital Image Processing, Digital Engineering
- Senior Mentor, WE-UP (Women in Engineering - Undergraduate Leading Program) Senior Mentoring, Ewha W. University, Korea, Mar. 2018 ~ Jun. 2018.
- Visiting student, Philipps University of Marburg, Germany, Mar. 2016 ~ Jan. 2017.
- Incheon Asian Game Youth Supporters, Dec. 2013 ~ Feb. 2014.
- Happy Move Global Youth Volunteer, sponsored by Hyundai Motor Group, Jul. 2013 ~ Aug. 2013.

HONOR AND AWARD

- Scholarship for Convergence Research from Ewha W. University, Jan. 2023.
- Research Scholarship from BK21 funded by NRF of Korea, Mar. 2020 ~ present.
- Industry Interest Paper Award from NAVER, Summer Annual Conference of IEIE, Aug. 2020.

- Research Scholarship from Ewha W. University, Sep. 2020 ~ Jun. 2021.
- Scholarship for Outstanding Scientists from Ewha W. University, Mar. 2018 ~ Dec. 2018, Mar. 2020 ~ Jun. 2020.
- The National Scholarship for Science and Engineering from Korea Student Aid Foundation, Sep. 2013 ~ Dec. 2013, Mar. 2015 ~ Dec. 2017.
- DEAN's List, Ewha W. University, Mar. 2013 ~ Dec. 2015.
- Honors Scholarship from Ewha W. University, Sep. 2013 ~ Dec. 2014, Sep. 2015 ~ Dec. 2015.

PROFESSIONAL SKILLS

Programming

- Python (PyTorch, Tensorflow, Keras), MATLAB, C++, C

OS/Environments

- Ubuntu, Docker, Conda, Mac, Linux, Windows,

Languages

- English (fluent), Korean (native)

Mathematics and relevant course works

- Advanced Random Process, Artificial Intelligence, Bayesian Deep Learning, Computer Visions, Image Coding, Machine learning, Mathematics for System Design, Scene Analysis, Signal Detection and Estimation, Wavelet

REFERENCE

Prof. Je-Won Kang
Professor in Dept. of Electronic and Electrical Engineering

Ewha W. University
Email: jewonk@ewha.ac.kr
(+82) 2 3277 2347