

Hongseok Oh

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EDUCATION

Yonsei University <i>Bachelor of Science in Information and Industrial Engineering</i> • GPA: 3.66(4.0 ⁺)/4.3 (+ Last 2 Years GPA)	Mar. 2014 - Feb. 2022 Seoul, Republic of Korea
University of California, San Diego <i>Education Abroad Reciprocal Exchange Program</i> • GPA: 3.57/4.0	Dec. 2018 - Jun. 2019 San Diego, CA, United States

RESEARCH INTEREST

- Conversational AI, Natural Language Processing, Unsupervised Multimodal Representation Learning

SELECTED RESEARCH PROJECTS

Audio Domain Adaptation Through Microphone Conversion • Design a deep learning model simulating another microphones' properties without modifying acoustic information • Examine the deteriorating effects of recording device mismatch on the sound event classification model	Oct. 2022 - Present
Improving and Evaluating The Robustness of Sound Event Classification Model • Achieved an average 71%p error reduction on simulated real-world data compared to a baseline model • Established a pre-deployment benchmark to minimize the risk of malfunctions in adverse acoustic environments • Investigated the effectiveness of the various techniques in the model robustness, including auxiliary network	Mar. 2021 - Oct. 2021
DCASE2022 Challenge Task 4, Sound Event Detection in Domestic Environments • Surveyed the trends and challenges in the sound event detection research and shortlisted transferrable approaches • Implemented such approaches with PyTorch, including data augmentation, data loading, and preprocessing pipeline • Curated and prepared the dataset from multiple external sources suitable for our training scheme	May 2022 - Jul. 2022

PUBLICATIONS

Myeonghoon Ryu, Jeunghyun Byun, **Hongseok Oh**, Han Park, Suji Lee, "Selective Kernel Attention Neural Network for Sound Event Detection," in *Proc. ICASSP*, 2023 (Under review)

WORK EXPERIENCES

Deeply Inc. <i>Data Scientist in AI Research Team</i> • Developed and deployed 10+ state-of-the-art deep learning models with TensorFlow and PyTorch for services • Conducted research in speech and audio processing using deep learning for publication and product purposes	Nov. 2020 - Present Seoul, Republic of Korea
Deeply Inc. <i>Intern Data Scientist in AI Research Team</i> • Designed and executed data collection protocols for government-funded AI data construction projects • Constructed a human nonverbal vocalization classification and infant cry spotting module • Programmed feature extraction pipelines for infant cry sentiment classification neural network with Python	May 2020 - Oct. 2020 Seoul, Republic of Korea

SELECTED WORK PROJECTS

Respiratory Sound Classification for Elderly Monitoring System [\[Link\]](#) Nov. 2021 - Present

- Leveraged a state-of-the-art pre-trained Transformer (PaSST) to build a robust elderly respiratory sound classifier
- Reduced the false alarm rate to 0.25% from 4.0% by utilizing data augmentation and knowledge distillation

Anomalous Sound Detection Model for Korean Navy Ships Jun. 2021 - Sep. 2021

- Reproduced a state-of-the-art speech enhancement model (FullSubNet) and applied it to the audio domain
- Applied an anomaly detection algorithm (AnoGAN) to estimate the remaining useful lifetime of maritime engines

Infant Cry Spotting and Classification Model May - Jul. 2020, Jul. - Dec. 2021

- Programmed and compared audio & speech features based on digital signal processing for infant sentiment analysis
- Constructed an state-of-the-art infant cry spotting and infant sentiment analysis model achieving 95% f1-score

AI Data Collection Funded by The Korean Government [\[Link 1, 2, 3\]](#) May 2020 - Dec. 2020

- Curated the list of low-resource sounds for next-generation research in the field of deep audio analysis
- Designed and performed data recording procedures involving human subjects from babies to the elderlies

HONORS & SCHOLARSHIPS

Social Innovation Scholarship, Yonsei University (\$1,080) 2nd Semester 2019

Academic Excellence Scholarship, Yonsei University (\$4,200, \$2,920) 2nd Semester 2018, 1st Semester 2019

Honors List, Yonsei University (Top 10% of College) 1st Semester 2018

LEADERSHIP EXPERIENCES & EXTRACURRICULAR ACTIVITIES

Sustainable Development Program for Young Global Leaders Sep. 2019 - May 2020
Member of AI Team Seoul, Republic of Korea

- Investigated PPI (Private Participation in Infrastructure) deals in collaboration with the World Bank Group
- Constructed a Python crawler for PPI deals from online documents and analyzed them with Google's BERT
- Received the Social Innovation Scholarship from the Institute for Higher Education Innovation at Yonsei University

Auxiliary Police, Company 46, 4th Police Squad May 2016 - Feb 2018
Sergeant, Assistive Company Commander Seoul, Republic of Korea

- Led a police company to protect the headquarter of the leading opposition political party of the Republic of Korea

UCSD Salsa Club Dec. 2018 - Jun. 2019
Member San Diego, CA, United States

- Participated in weekly Latin social dancing practice and performed Salsa and Bachata at the end of the quarter

Yonsei CrossFit Club KWANG Aug. 2015 - May 2016
CrossFit Coach Seoul, Republic of Korea

- Organized the first official university CrossFit club in South Korea and the first competition with Korea university
- Coached university students to improve their physical fitness and performance safely

ADDITIONAL INFORMATION

Technical

- Python
 - Deep Learning Framework: PyTorch, TensorFlow, Keras
 - Digital Signal Processing & Image Processing: TorchAudio, Torchvision, Librosa
 - Certificates of Deep Learning Specialization Course (DeepLearning.AI)
- Bash, Git, SQL, GCP (Google Cloud Platform)
- Statistical software(R, SAS, SPSS), Arena, OPL CPLEX, and MATLAB

Language

- Korean: Native
- English: Full Professional Proficiency
- Spanish: Limited Working Proficiency

Interests

- Avid CrossFitter, Olympic weightlifter, language learner, and hiker