Hongseok Oh

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Experienced AI Research Engineer with 3+ years of expertise in **audio and speech deep learning** at a startup. Currently pursuing a Master's degree in Computer Science at UCSD to advance my career in AI/ML.

EDUCATION

University of California, San Diego | Master of Science in Computer Science — Sep. 2023 - Jun. 2025

- Specialization in **Artificial Intelligence**
- Major courseworks: **Probabilistic Reason&Learning**, **Computer Vision I**, Recommender System&Web Mining

University of California, San Diego | Education Abroad Reciprocal Exchange Program — Dec. 2018 - Jun. 2019

- GPA: 3.57/4.0
- Major courseworks: Data Science in Practice, Intro/Computer SCI: JAVA(1)

Yonsei University | Bachelor of Science in Information and Industrial Engineering — Mar. 2014 - Feb. 2022

- GPA: 3.59(3.87†)/4.0 († Last 2 Years GPA)
- Major courseworks: **Optimization in Artificial Intelligence**, Probabilistic Model in OR, Advanced Programming

SKILLS

Programming	• Python (4 years), Java (6 months), C++ (6 months), MATLAB (1 year), R (1 year)
ML/DL	• PyTorch, TensorFlow, Keras, Numpy, Pandas, Matplotlib, Scikit-Learn, OpenCV, Librosa, W&B
Tools	• Linux, Bash, Git, SQL, GCP, LaTeX, Docker, Spark

WORK EXPERIENCES

Deeply Inc. | *AI Research Engineer (Intern: May 2020 - Oct. 2020)* — May 2020 - Jul. 2023

- Executed two deep learning research projects in the model generalization problem in speech and audio, culminating in **a publication at the esteemed ICASSP 2024**, a top-tier conference in signal processing and acoustics
- Developed **10+ state-of-the-art machine learning and deep learning models** using Transformer, CNN, and RNN either from academic publications or scratch, leading to 4 successful demo presentations and 3 production launches
- Diagnosed and resolved persistent false alarm issues in both the elderly monitor system and the casino surveillance system, enhancing operating efficiency and system reliability by reducing false positive rate by 20%
- Designed and led government-funded AI data collection projects, leading to over 600 hours of unique audio and speech dataset recorded in the wild, generating $115k in total sales revenue

SELECTED PROJECTS

Audio Domain Adaptation Through Microphone Conversion — Oct. 2022 - Jul. 2023

- **Technologies**: Generative AI, CycleGAN, ResNet50, data augmentation, domain adaptation, Python, PyTorch
- **Description**: Led a research initiative to design a new augmentation technique, improving sound event classifiers' resilience against device variability by simulating microphones without compromising acoustic information
- **Achievement:** Groundbreaking research accepted for publication at ICASSP 2024, surpassing state-of-the-art by 5.2 - 11.5% in F1 score; pivotal in enhancing product robustness against harsh acoustic environments

Respiratory Sound Classification for Elderly Monitoring System — Nov. 2021 - Mar. 2023

- **Technologies**: Transformer, Transfer learning, knowledge distillation, model quantization, Python, PyTorch
- **Description**: Developed a sound event classification system for elderly health monitoring on resource-constrained edge devices; Quantified and pinpointed the sources of false alarms to enhance the system reliability
- **Achievement**: Achieved 80% inference speed acceleration enabling real-time inference for 300+ elderly-only households; Reduced false dispatch rate of social workers by 40% boosting the quality of social home care

PUBLICATIONS

Hongseok Oh*, Myeonghoon Ryu*, Suji Lee, Han Park. "Microphone Conversion: Mitigating Device Variability in Sound Event Classification", in *Proc. ICASSP*, 2024

PATENTS

Myeonghoon Ryu, Han Park, **Hongseok Oh**, Suji Lee, "Anomaly Detection Method for Sound Classification Based on Neural Network Analysis", KR Patent No. 1026007450000, 2023-11-07, Korean Intellectual Property Office