

# Hongseok Oh

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Experienced AI Research Engineer with 3+ years of expertise in machine learning and deep learning, on speech and audio. 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  
• GPA: 3.88/4.0, Specialization in Artificial Intelligence
- Yonsei University** | Bachelor of Science in Information and Industrial Engineering Dec. 2014 - Jun. 2022  
• GPA: 3.59(3.87<sup>†</sup>)/4.0 (<sup>†</sup> Last 2 Years GPA)

## WORK & RESEARCH EXPERIENCE

- Incoming Machine Learning Engineer Intern, Speech Models & Algorithms, Qualcomm** Jun. 2024 - Sep. 2024  
• Will work in the area of speech analysis, coding, enhancement and neural speech synthesis, using digital signal processing with the latest advances in machine learning, LLMs, self-supervised learning and speech modeling
- AI Research Engineer, Deeply Inc.** May 2020 - Jul. 2023  
• Executed two deep learning research projects in cross-domain generalization of sound event classification systems, culminating in a publication at the 2024 IEEE ICASSP, a top-tier conference in signal processing  
• Developed 10+ state-of-the-art machine learning and deep learning models using Transformer, CNN, and RNN from academic publications and scratch, leading to 4 successful demo presentations and 3 production launches  
• 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

- Hierarchical Token-Semantic Audio Transformer for Sound Event Detection** Oct. 2023 - Current  
• Conduct research to adapt the state-of-the-art audio spectrogram transformer (HTS-AT) for the task of sound event detection, enhancing its application and performance in recognizing the temporal activity of sounds
- Audio Domain Adaptation Through Microphone Conversion** [[Website](#)] Oct. 2022 - Jul. 2023  
• Led a Generative AI research project on new augmentation techniques using CycleGAN, boosting sound models' robustness against device variability, by simulating microphones without compromising acoustic information  
• Achieved the state-of-the-art performance, by a 5.2 - 11.5% increase in F1 score, culminating in an academic publication at ICASSP 2024; Integrated the novel technique into companies' deep learning training pipeline
- Respiratory Sound Classification for Elderly Monitoring System** Nov. 2021 - Mar. 2023  
• Developed a Transformer-based sound event classification system for elderly health monitoring on low-resource edge devices using Transfer learning, knowledge distillation, and model quantization with Python and PyTorch  
• Achieved an 80% increase in inference speed, enabling real-time analysis for over 300 elderly households; Reduced false social worker dispatches by 40%, by suppressing false alarms to enhance the system reliability

## TECHNICAL SKILLS

**Programming Language** Python (4 years), Java (6 months), C++ (6 months), MATLAB (1 year), R (1 year)  
**Machine Learning** PyTorch, TensorFlow, Keras, NumPy, Pandas, Matplotlib, Scikit-Learn, OpenCV, Librosa, W&B  
**Tools** Linux, Bash, Git, SQL, GCP, L<sup>A</sup>T<sub>E</sub>X, Docker, Spark

## PUBLICATIONS

- [1] **Hongseok Oh**<sup>\*</sup>, Myeonghoon Ryu<sup>\*</sup>, Suji Lee, Han Park. "Microphone Conversion: Mitigating Device Variability in Sound Event Classification", IEEE International Conference on Acoustics, Speech and Signal Processing, 2024 [[PDF](#)]  
<sup>\*</sup>Equal contribution

## PATENTS

- [1] 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

## RELEVANT COURSEWORK

Probabilistic Reason&Learning, Recommender System&Web Mining, Computer Vision I, Search and Optimization, ML: Learning Algorithms, Unsupervised Learning, Convex Optimization, Optimization in Artificial Intelligence