

# Hongseok Oh

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Experienced AI Research Engineer with 3+ years of expertise in machine learning and deep learning, on audio and speech. 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
  - GPA: 3.77/4.0
- Yonsei University** | Bachelor of Science in Information and Industrial Engineering Dec. 2014 - Jun. 2020
- GPA: 3.59(3.87<sup>†</sup>)/4.0 († Last 2 Years GPA)

## WORK & RESEARCH EXPERIENCE

- Graduate Student Researcher, Qualcomm Institute** Jan. 2024 - Current
- Mentor undergraduate students in mastering fundamental AI concepts and developing AI research projects utilizing KNIME, collaborating with Prof. Ramesh Rao and Dr. Justin Cho in the Qualcomm AI Development Project
- AI Research Engineer, Deeply Inc. (Intern: May 2020 - Oct. 2020)** 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

- Audio Domain Adaptation Through Microphone Conversion** | [project link](#) 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

## 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 [[link](#)]

## 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

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