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. 2022**
- GPA: 3.59(3.87†)/4.0 († Last 2 Years GPA)

WORK & RESEARCH EXPERIENCE

Graduate Student Researcher, Qualcomm Institute **Jan. 2024 - Current**
- Collaborated with Prof. Ramesh Rao and Dr. Justin Cho in the Qualcomm AI Development Project, mentoring undergraduate students in mastering fundamental AI concepts and developing AI research projects utilizing KNIME

AI Research Engineer, Deeply Inc. (Intern: May 2020 - Oct. 2020) **May 2020 - Jul. 2023**
- Executed two deep learning research projects in speech and audio, culminating in an academic publication at the esteemed 2024 IEEE ICASSP, 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 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, LaTeX, Docker, Spark

PUBLICATIONS

[1] **Hongseok Oh***, Myeonghoon Ryu*, 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

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