Wooil Jung

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San Diego, CA

Technical Skills

- LLM & Gen AI: LLM, RAG, Vector DBs, AI Agents
- AI & Data: PyTorch, TensorFlow, Transformers, Classical ML, Speech Analysis, Multimodal Models
- Programming: C, C++, Python
- Systems & Tools: Linux, Bash, Git, CUDA

Experience

Machine Learning Research Engineer October/2022 - August/2025
LG Electronics (South Korea)

- Led the development of speech trigger-word detection edge models for the LG 2025 MoodUp Refrigerator and the 2025 Whisen Air Conditioner, achieving 98% recognition rate with 1/24hr false positive rate; orchestrated end-to-end TensorFlow training and inference pipelines for GRU time-series models, optimizing data flow for edge deployment
- Prototyped a new generation of image-based models to transition from the previous generation of time-series models, reducing type 1 error rate by 75%
- Integrated a C-based feature extraction pipeline into python-based prototyping development by compiling a C integer-based Mel Spectrogram extraction API with Python-C API interface
- Implemented and modified new models from recent research papers for performance and efficiency comparison with in-house model, including LSTM, CNN, and transformer models
- Modernized legacy integer-based MFCC extraction software by resolving critical memory mismanagement and calculation errors to enhance production robustness
    - Eliminated checkerboard artifacts by diagnosing windowing function flaws and expanding integer-based FFT dimensions (256 to 512), utilizing data visualization to validate improvements in signal clarity

Undergraduate Researcher January/2022 - August/2022
Korea University

- Advised by Prof. Kim Jong Ok
- Conducted color constancy research by designing and implementing novel deep learning models, and introducing new ideas(e.g. Vision Transformers) to existing research
- Improved upon the lab's previous best result by 13.7%, and published 2 first-author papers to 2022 IEIE conferences
- Conducted weekly reproductions of State-of-the-Art papers to benchmark new internal models against established baselines

Projects & Research

Variable-length Latent Space Reasoning LLM Jan/2026 – ongoing

- Developing a reasoning model extending the "Coconut" architecture (Hao et al.) to enable dynamic test-time compute allocation for complex logic tasks unconstrained by linguistic concepts of a single language.

Automated Biological Task Research using LLM Agents Sep/2025 - ongoing

- Developing a Claude-based agentic AI system that utilizes RAG and vector DB to automate planning, implementation, and execution of research tasks based on previous research; advised by Prof. Pengtao Xie

Improving Color Constancy via Cross-Attention with AC Light Amplitude Information Jan/2022 – Aug/2022

- First-authored publications to two 2022 IEIE conferences that improved on previous colored-lighting image color restoration method.

Education

University of California – San Diego September 2025 – March 2027 (expected)
M.S. in Electrical & Computer Engineering – Signal & Image Processing

Korea University March 2017 – August 2022
Bachelor's Degree, Electrical Engineering