Minseo Kim

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EDUCATION

Information and Communications Engineering, Computer Science March 2019 - Present

Catholic university, KR GPA : 4.3 (1/92), Expected graduation(August, 2025)

EXPERIENCE

Undergraduate Research Assistant July 2023 - July 2024

Networkscience lab, Catholic univ, KR

- Participated in various research projects under the guidance of the lab supervisor
- Conducted literature reviews and studied deep learning models to support ongoing research
- Assisted in data collection, analysis, and interpretation for research projects
- Collaborated with a team of researchers to discuss findings and improve methodologies

Enrollee August 2024 - Present

Boostcamp by NAVER Connect

- Enrolled in Naver Boostcamp AI Tech program.

PROJECT

Internal Pipe Corrosion Assessment Using Ultrasound and Convolutional Neural Networks *Short-Time Fourier Transform (STFT), Convolutional Neural Networks (CNN)* https://www.nature.com/articles/s41545-024-00358-x
Developed a novel approach to predict the potential lifespan and water quality of pipes by measuring the concentration of ferric oxide inside the pipe using ultrasound. The collected ultrasound signals were transformed into 2D tensors using Short-Time Fourier Transform (STFT) and then used as input for a Convolutional Neural Network (CNN) model.

Non-invasive Blood Glucose Measurement Using Ultrasound
Conducted an experiment to non-invasively measure blood glucose levels by applying ultrasound to blood vessels. The aim of the project was to explore an alternative to traditional invasive methods of glucose testing, potentially improving patient comfort and compliance.

Optimization Techniques for Fitting ReRAM Voltage-Current Characteristic Graph Data *Python Optimizer library(scipy.optimize)*
Implemented a variety of optimization techniques to fit experimental graph data for the voltage-current characteristics of Resistive Random-Access Memory (ReRAM). This involved adjusting 12 parameters, such as alphamin, alphamax, imax, imin, etc., to match the experimental graph. Global optimization algorithms like differential evolution, dual annealing, brute force, and local optimization algorithms like BFGS and Nelder-Mead were learned and utilized in this process. This project was conducted in cooperation with the Advanced Institute of Convergence Technology (AICT).

AWARDS

Participation in the Pixel Data Analysis Competition *May 2024* Catholic University
Completed a university competition project in May 2024, awarded Honorable Mention in the Pixel Data Analysis Competition. Developed and optimized a Convolutional Neural Network (CNN) model for detecting defects in printed circuit boards (PCBs) through image analysis. The project utilized Pixel's dataset, containing images of both normal and defective PCBs, and successfully built a model that not only performed well on the provided PCBs but also generalized effectively to new, unseen PCBs.

PRE CORANA: AI Techathon(Excellence Award) *January 2021* Catholic University

Development of a meeting minutes arrangement program using voice classification, voice recognition, and intent classification APIs

ICE Department Academic Festival(First Prize) *November 2020* Catholic University

Successfully engineered a project to replicate the data from a Catholic University student ID card onto a sticker-type RFID card, highlighting vulnerabilities in Mifare RFID technology. This involved reverse-engineering the encryption keys, utilizing Arduino for data reading and writing, and testing in real-world environments

LED Control Circuit Design(First Prize) *December 2019* Catholic University

An automatic LED control circuit was designed and built using an unstable multivibrator for a Christmas tree project in 2019. The circuit, soldered onto a universal board, operates based on light detection and controls a 220V LED power supply through an integrated relay.