Chanyoung Park

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Academics

University of California, San Diego — La Jolla, CA
Data Science, 4.0 — Jun. 2027

International School of Kuala Lumpur — Aug. 2019 - Jun. 2023
National Honor Society — May 2023
American Mathematics Competition 12A 94.5/150 (American Invitational Mathematics Examination Qualifier)
American Invitational Mathematics Exam 8/15 — Feb. 2022
Bronze Award in Korean Science Engineering Fair (KSEF) — Feb. 2022

Research or Project-Based Experiences

IEEE QUARTERLY GROUP PROJECT - SPEECH SENTIMENT ANALYSIS — **Mar. 2024 - Jun. 2024**
- Developed an LSTM-based machine learning model using Pytorch to predict the sentiment of a given audio that runs in real-time locally on Raspberry Pi Zero.
- Scored 2nd place out of all the groups that participated in the quarterly project.

SIMULATING OPTIMIZERS FROM SCRATCH USING PYTHON — **Mar. 2024**
- Researched and studied the evolution of optimizers and the larger intuition behind each method.
- Implemented the following optimizers for single input loss function: Gradient Descent, AdaGrad, RMSProp, AdaDelta, and Adam.
- Animated the optimization process of each optimizer on an arbitrary loss function using Matplotlib.

INDEPENDENT RESEARCH IN LEARNING TO DETECT DEEPFAKES WITH FACIAL LANDMARKS — **Jun. 2022 - Aug. 2022**
- Experimented with the viability of using facial landmarks to detect deepfakes with large variations of approaches and hyperparameter combinations, obtaining significant results.
- Learned how to effectively display research approaches and results using diagrams as well as commonly used methods for them.

INDEPENDENT RESEARCH IN IMAGE CLASSIFICATION WITH ARTIFICIAL INTELLIGENCE — **April 2022**
- Researched preprocessing methods for high-resolution images with various dimensions with limited computational power.
- Self-studied how to maximize the generality of a classification model with a limited dataset such as image augmentation.
- Researched further into the fundamentals of artificial neural networks and the process of creating models.
- Experienced the process of applying GPU into environments through the use of NVIDIA's CUDA on my personal computer.
- Achieved validation accuracy of 95%.

INDEPENDENT RESEARCH IN ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS IN PHYSICS — **Nov. 2021 – Jan. 2022**
- Created simulations of mechanical interactions such as a ball bouncing with physics applied.
- Used the data generated to train an LSTM model to predict the next frame based on several consecutive frames.
- Utilized the trained model to complete the rest of a simulation based on the first few frames.

Extracurricular Activities & Leadership Experiences

***Member,* IEEE SUPERCOMPUTING** — **Sep. 2024 - Present**
- Participated in the Student Cluster Competition as a helping member of the MLPerf team.
- Researched benchmark methods for text-to-image models such as Stable Diffusion XL

***Founder & Co-leader*, COMPUTER SCIENCE FOR BEGINNERS** — **Oct. 2021 - May 2023**
- Taught middle and high school students about the computer science language Java to make CS more accessible for others.
- Grew the club to over 60+ members over the span of a year.

***Member,* ISKL MATH CLUB** — **Oct. 2019 - May 2023**
- Practiced solving problems from the HighFour competition with three other team members and often placed in the top 5.
- Solved past problems from the American Mathematics Competition (AMC) 10 and 12 in preparation for the annual AMC.
- Learned and taught mathematics theorems appearing in the HighFour and AMC.

Community Services & Volunteering

Member, SCIENCE FOR KIDS — **Sep. 2022 - May 2023**
- Planned classes within the scope of biology, physics, and chemistry every other week.
- Taught refugee students using various equipments that school could provide, presenting a variety of experiments and teaching basic scientific theories.

Skills

- Python - Pandas, Tensorflow, Pytorch, etc.
- Java
- Git
- HTML, CSS