MINKYUNG KWON

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RESEARCH INTERESTS

Machine Learning, Computer Vision

EDUCATION

Pohang University of Science and Technology, Pohang, South Korea 2021 – 2025 (expected)
B.S in Computer Science and Engineering *GPA: 3.74/4.3*
Relevant Coursework: Deep Learning, Machine Learning, Artificial Intelligence, Computer Architecture, Operating System, Introduction to Computer Systems

Xi'an Hanova International School, Xi'an, China 2016 – 2020
International Baccalaureate (39 out of 45, Bilingual Diploma)
Higher Level: Math/Chemsitry/Biology/English, Standard Level: Korean/Psychology
EE Thesis: A study of the effect of goat's, cow's and formula milk on the growth of E. coli

LANGUAGE PROFICEINCY

TOEFL 102
R: 23, L: 28, S:25, W:26

RESEARCH EXPERIENCE

Vision Information Processing at SNU Aug.2024 – present

Machine Learning Lab at POSTECH Feb.2024 – Jun.2024
I designed a supervised model that reflects human knowledge states within the realm of programming education, investigating the ability of neural network in imitating knowledge acquisition process, using question (text) – reply (Java code) pairs.

Medical Imaging and Vision Lat at POSTECH Sep. 2023 – Dec.2023
I implemented a Medical Image Classification model specifically for Chest X-Rays, and integrated Class Activation Maps to precisely locate the areas of activation within the images.

Machine Learning Lab at POSTECH Dec. 2022 – Feb. 2023
I received a Certification in Supervised Machine Learning: Regression and Classification @ Coursera, taking an online course on ML basics. I had a chance to present ML basics in regular seminars, sharing ideas with lab members.

WORK EXPERIENCE

INNOWIRELESS, Seongnam, South Korea June 2023 – Aug. 2023
Summer Research Intern
I implemented a 3D reconstruction model in Computer Vision field (NeRF & TensoRF), analyzing code written in PyTorch and optimizing the learning pipeline of the model.

IB Math & Chemistry Private Tutor Feb. 2021 – present
Freelance

Flow Edu, Suwon, South Korea Dec. 2021 – Feb. 2022
Teaching Assistant @ Private Education Institute
I worked as a Math TA, instructing middle school students on problem solving skills.

LEADERSHIP

Head Girl 2019
Xi'an Hanova International School

House Leader 2017 - 2018
Xi'an Hanova International School

HONOURS AND AWARDS

Best Paper Awards Aug. 2023
The department of Humanities and Social Sciences at POSTECH

POSTECH X Handog University Hackathon Jan. 2023
Developed an entertainment website for seniors

The Duke of Edinburgh's International Award 2019
Silver Medal

Australian Science Olympiads 2019
Siver Medal in Biology
Bronze Medal in Chemistry

Australian Math Competition 2018
Certificate of Credit

SKILLS

Programming C/C++, Python, Verilog, PyTorch

INDIVIDUAL PROJECTS

Personal Project
Fine dust Air pollution in China
Xi'an, the city where I lived for four years, experiences severe fine dust air pollution during the winter. This sparked my curiosity about investigating the cause of the air pollution and understanding the effects of dust particles on the human body. It has been revealed that coal power plants and combustible waste are the main contributors to the air pollution. Fine dust particles pose a threat to people's lives, leading to various health issues such as respiratory diseases, cardiovascular problems, and even premature death.

Extended Essay
A study of the effect of goat's, cow's and formula milk on the growth of *Escherichia coli*.
Breastfeeding helps newborn babies develop their immune system. I wondered about the differences in antibacterial properties between human milk and that of other mammals. Culturing bacteria *Escherichia coli* with different types of milk, it was concluded that cow's milk has antibacterial properties, whereas others do not. Milk proteins, such as immunoglobulins, lysozyme, and lactoferrin, prevent bacteria from binding with host cells, thereby suppressing bacterial growth.

Calculus Investigation
Modelling a Sprite Bottle and Approximating its Surface Area
I read an article stating that the net income of the Coca-Cola company was $6.4 billion in 2018. I couldn't believe

that a company selling a 'one-dollar drink' could generate such substantial profits. They must have made significant efforts to reduce production costs, especially for the plastic bottle. So, I modeled a Sprite bottle and approximated its surface area using calculus. Then I estimated the production cost for the plastic bottle using the surface area and predicted the overall production cost. According to the calculation, the cost involved in producing the plastic bottle was $0.4615 per 500ml Sprite bottle, which accounts for 45% of the selling price.