Sangho Kang

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EDUCATION

Imperial College London London, UK
Computing (AI and Machine Learning) | GPA: A October 2022 – June 2025

Shanghai High School International Division Shanghai, China
International Baccalaureate Diploma | 43/45 January 2016 – July 2022

PROGRAMMING SKILLS

Languages: Python, Java, Kotlin, Javascript, C, Haskell, Scala, SQL

Technical Experiences

- **Pintos**: Developed an operating system in C as part of Imperial College London's second-year Operating Systems project.
- **WACC**: Built a compiler for a custom programming language using Scala as part of a second-year compilers course at Imperial.
- **Spring Boot API**: Built and maintained Kotlin-based RESTful APIs with Spring Boot, incorporating data validation, error handling, and MySQL integration following modular design principles.
- **App Development**: Experience with Android Studio, Swift (iOS), and WeChat Mini Programs.
- **Machine Learning**: Proficient in PyTorch and Scikit-Learn for developing and training deep learning models in Python.

EXPERIENCE

Guardian AI Icheon, Korea
AI Research Intern January 2025 – Present

- Conducted applied research on AI-driven industrial safety systems, analyzing the NVIDIA COSMOS framework and Reason-1 model through NVIDIA Tech Blogs to identify features relevant to the company's industrial safety solutions.
- Contributed as a listed author to a research poster submitted to NVIDIA GTC 2026, presenting an AI-based industrial safety monitoring system for real-time PPE detection and worker action recognition.
- Poster accepted for presentation at NVIDIA GTC 2026, with presentation scheduled.

Republic of Korea Army Korea
Communications Equipment Operator, Signal Corps (Mandatory Military Service) September 2024 – March 2026

- Operated and maintained military radio and wireless communications systems.
- Managed and troubleshooted computer systems and intranet network, ensuring secure and reliable transmission of information across units.

Dunamu Seoul, Korea
Software Development Intern August 2024 – September 2024

- Built an LSTM-based Seq2Seq model to transliterate English names into probable Korean counterparts, enabling effective identification of blacklisted users and strengthening KYC/AML compliance in a high security digital asset environment supporting cryptocurrency transactions.
- Developed a Kotlin Spring Boot API to detect potentially malicious accounts, surpassing a legacy Soundex-based system in accuracy, flagging 8,000+ suspicious accounts and enhancing global customer verification for a leading Bitcoin exchange.

KCGI Co., Ltd. Seoul, Korea
Global Management Intern August 2023 – September 2023

- Built a Python application to analyze 10 years of KOSDAQ 150 and KOSPI 200 data, identifying statistically significant mean reversion patterns using a 12-month lookback.
- Simulated and evaluated multiple algorithmic trading strategies—including momentum, mean reversion, and Google Trends-based models—using historical market data for comparative performance analysis.
- Engineered an automated pipeline to scrape and visualize hedge fund holdings from SEC Edgar Form 13F filings, enabling insights into institutional investment trends.
- Designed a Python-based ETF simulator replicating hedge fund portfolios via 13F data, assessing performance through return metrics, turnover rate, Sharpe ratio, and tracking error.

Seoul National University AI Lab Seoul, Korea
Software Development Intern March 2023 – April 2023

- Contributed to Waffle Hub, a Python-based machine learning library used in industrial visual inspection systems.
- Developed a synthetic image generation tool to enhance model performance in low-data environments, supporting deployment in sectors like automotive and manufacturing.

RESEARCH

Self-Alignment in Agents August 2025 – December 2025
- Researched cyclic synchronization behaviors in deterministic multi-agent systems; formalized the "Box Workers" bottleneck problem using deterministic finite transition systems and proved that finite-state synchronized agents inevitably enter cycles.
- Extended the DFSMAS framework to explain cyclic patterns in random number generation and simulation theory, proposing a deterministic yet non-cyclic RNG method using unsynchronized clocks.
- Submitted to the *Journal of Emerging Investigators*; pending review.

PROJECTS

AI English Tutor March 2025 - Present
- Developed backend for an AI-driven English learning platform that generates personalized exercises for students based on specified criteria (e.g., vocabulary, grammar usage).
- Implemented automatic scoring for both multiple-choice and AI-evaluated open-ended questions.

MilMatch – AI-Powered Military Role Matching Platform September 2025 – January 2026
- Built a web app using OpenAI API, RAG pipeline, and Netlify Functions to match Korean military applicants to roles based on qualifications.
- Deployed with a TypeScript/JavaScript frontend and JSON-based evaluation models for automated eligibility scoring.
- Available on: www.mil-match.com

Optical Distance Measurement November 2021 – April 2022
- Designed a low-cost distance measurement method using optical triangulation and image processing. Aimed at applications in hardware-constrained environments.

Graduation Hat Image Generator November 2021 – April 2022
- Developed a Python application using face recognition to generate graduation hat images.
- Produced 250+ outputs used in the yearbook and graduation ceremony.

WeChat Student Body App April 2019 – June 2022
- Built and maintained a WeChat in-app tool for Shanghai High School's student body.
- Enabled communications across 800+ students and streamlined school-wide coordination.

VOLUNTEERS

Purun Gongbubang Community Child Care Center | *Government-registered Child Welfare Center* Seoul, Korea
Teaching Volunteer October 2024 - Present
- Taught programming and mathematics to elementary and middle school students after earning Level 1 Coding Instructor Certification from the Korea Institute for Qualification.
- Donated two computers and received a recognition award for contributions to the center's digital learning initiative.
- Developing an AI-guided English learning program to help children from low-income families learn interactively without direct teacher support, bridging educational and technological gaps.

Liuhaisu Museum Shanghai, China
Tour Assistant July 2020 – June 2022
- Assisted museum staff by guiding visitors and providing translation support for exhibits and tours.

AWARDS & HONORS

Certificate of Commendation December 2025
- Recognized for dedication, responsibility, and exemplary conduct as a system installation solder, serving as a model for peers in the unit.

Certificate of Appreciation December 2025
- Received the first certificate of appreciation from Purun Gongbubang Community Child Care Center for donating two computers and developing an AI English Tutor.

American Mathematics Competition 12 (AMC 12) 2021
- Top 5% Distinction (126 points)

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Princeton University Math Competition (PUMaC) 2021
- Division B Individual Finalist (Algebra 9th place); Team Overall 4th, Power Round 3rd

British Physics Olympiad (BPhO) 2020
- Global Gold

Canadian Open Mathematics Competition (COMC)   2019
- Gold

Australian Mathematics Competition   2019
- High Distinction

ARML Power Round China   2019
- 2nd place

LANGUAGE PROFICIENCY
- Korean (Native), English (Native), Chinese (Fluent), Japanese (Fluent)