# Sangho An

Electrical Engineering, Hanyang University
Seoul, South Korea | anshangho1005@gmail.com | +82-10-4590-4857 | ansangho.com

## Profile

*Start Fearlessly. Build Steadily. Finish Fully.*

Interdisciplinary engineer aspiring to expand human horizons, with interests spanning hardware, software, and the humanities. Currently studying robot manipulation policy learning and the relationship between people and robots.

## Education

**Hanyang University (Seoul)**, B.Eng. in Electrical Engineering — Mar 2025 - Feb 2027 (Expected)

- GPA: 4.32 / 4.5 (Major: 4.29 / 4.5)
- Cumulative Rank: 2/75 (through Spring 2026)

**KOREATECH**, Coursework in Electrical & Electronics Engineering — Mar 2020 - Feb 2025

- GPA: 3.97 / 4.5 (Major: 4.0 / 4.5) [Credits : 85/150]
- Transferred to Hanyang University

## Publications

**Enhancing Visuomotor Manipulation Control with a Predictive-Dynamics-Aware World-Model-Conditioned Diffusion Policy**

Sangho An[1]†, Geunha Kim[2]†, and Jun Moon[1]*. The 26th International Conference on Control, Automation and Systems (ICCAS 2026). Presented orally at ICCAS 2026 (Paper WeBT8.3, Oct 28, 2026).

- Designed a world-model-conditioned Diffusion Policy for real-world Franka Panda manipulation, improving pick-and-place success from 45.0% to 72.5% with approximately 70 ms added inference latency.
- Paper (PDF) · Experiment Video · Presentation slides (PDF) · ICCAS 2026 Technical Program

## Awards & Scholarships

**Excellence Award (2nd Place) · 2026 Robot Manufacturing Process Competition** — Nov 10, 2026
Korea Electronics Technology Institute (KETI)

**2nd Place · Energy Up! 2026 New Energy Industry Idea Lab Competition** — Aug 21, 2026
Hanyang University COSS for New Energy Industry

**President of Korea Electrical Engineers Association Award · 2026 KIPE IE Competition** — Jul 14, 2026
Korea Electrical Engineers Association · KIPE

**Excellence Award · Manufacturing Problem Solving AI Agent Hackathon** — Jan 28, 2026
Hyundai NGV · Hanyang University

**Hanyang Brain Academic Excellence Scholarship** — Aug 15, 2026
Hanyang University

**K-Electric KEPCO Donation Scholarship** — Mar - Dec 2026
Korea Student Aid Foundation · KEPCO

**KakaoBank Everyone's Mentoring Scholarship** — Mar - Dec 2026
KakaoBank · JUMP

**KOREATECH Academic Excellence Scholarship** — Feb 2024
KOREATECH

## Experience

**Undergraduate Researcher**, COLAB (Control & Optimization Lab), Hanyang University — Jan 2026 - Present
Research on robot manipulation and control through reinforcement and imitation learning.

- Designed and implemented a world-model-conditioned Diffusion Policy and conducted real-world manipulation experiments.
- Collected Apple Vision Pro teleoperation demonstrations in MuJoCo and analyzed reward signals for a KETI Allegro dual-arm cashier policy.
- Developed a curriculum-learning approach to quadruped fault recovery for the Simulink Student Challenge 2025.

**Sergeant (Honorably Discharged)**, Republic of Korea Army (51st Infantry Division) — Sep 2021 - Mar 2023
Served as a Coastal TOD Operator and Squad Leader (6 months)

**National Work-Study Student Intern**, Public-sector organizations — Jun 2023 - Aug 2025
Administrative and research support across public-sector organizations.

- Prosecution Service, Uijeongbu District Goyang Branch (Jun 2025-Aug 2025) · KOSME, North Gyeonggi Branch (Jun 2023; Jan 2024-Mar 2024) · Chungnam Office of Education Lifelong Education Institute (Sep 2023-Dec 2023)

## Skills

**Robotics & Embedded:** Franka Panda · Doosan A0509 · Raspberry Pi · ESP32 · Arduino

**Modeling & Simulation:** MATLAB · Simulink · Isaac Sim · MuJoCo · PSIM · Fusion 360

**Software Development:** Python · TypeScript · React · FastAPI · Git

**Certifications:** OPIc IH · TEPS 371 · Korean History Proficiency Test Level 1 · Computer Specialist in Spreadsheet & Database Level 1 · Taekwondo 4th Dan

## Projects

**MediGrip: Autonomous Surgical Instrument Delivery Cart** 2026 - Present

Team Leader. Developing a non-clinical proof-of-concept cart that combines voice commands, visual recognition, and robot manipulation to move dummy surgical instruments from a tray to a designated delivery zone.

- Designed a three-layer pipeline for wake-word-triggered command recognition, tray-level instrument and inventory recognition, and imitation-learning-based pick-and-place.
- Technologies: SO-ARM101 · LeRobot · Whisper · VAD · Computer Vision · Imitation Learning

**MACS: Magnetic AGV Contactless-charging System** Mar 2026 - Aug 2026

Team Project · Hardware Lead. Proposed and validated waypoint-based dynamic wireless charging for indoor logistics AGVs using commercial 82-85 kHz WPT modules.

- Awarded 2nd place at the Energy Up! 2026 New Energy Industry Idea Lab Competition, ranking 2nd among 13 teams.
- Technologies: WPT · Raspberry Pi · ROS · Arduino · Fusion 360 · Isaac Sim
- Notion

**Manufacturing Defect Analysis AI Agent** Jan 2026

Team Leader. Built a multimodal LLM agent that classifies semiconductor device images and explains abnormality decisions.

- Implemented explainable defect analysis with a vision LLM, providing the basis for each classification decision.
- Technologies: LangChain · OpenCV · FastAPI · React · GPT-4o-mini · Python
- GitHub · Notion · Dacon

**Efficient Learning for Quadruped Fault Recovery** Jan 2026

Individual Project. Developed a DDPG controller with curriculum learning to recover from actuator signal attenuation in quadruped locomotion.

- Implemented real-time fault-injection scenarios in Simulink.
- Technologies: MATLAB · Simulink · Reinforcement Learning Toolbox · Simscape Multibody
- Notion · YouTube · Base example

**HOYA LAB: Robot Learning Research Blog** Jan 2026 - Present

Writer & Operator. Publish research notes connecting robot-learning theory, paper reading, and practical experiments.

- Focus on Diffusion Policy, world models, and reinforcement and imitation learning.
- Technologies: Tistory · Robot Learning · Diffusion Policy · World Model
- Tistory

**ECL4015 Applied Power Conversion LLC Resonant DC-DC Converter for an EV On-Board Charger** Mar 2026 - Jun 2026

Design & Validation. Designed and verified an LLC resonant DC-DC converter for an electric-vehicle on-board charger, from resonant-network design and component selection through switching-level simulation.

- Designed for an 800 Vdc input, 400/500/600 V outputs, and 25-100% load conditions while maintaining zero-voltage switching across the specified range.
- Technologies: PSIM · MATLAB
- Notion

**ECL4007 Renewable Distributed Generation PV & Wind Power System Modeling** Mar 2026 - Jun 2026

Team Leader. Modeled PV charging and wind generation control in MATLAB/Simulink.

- Implemented PV MPPT and wind-turbine/PMSM power conversion with optimal-current control.
- Technologies: MATLAB · Simulink
- Notion