Sanghyun Hahn

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EDUCATION

Seoul National University (SNU), College of Engineering, Seoul, Korea — *Feb. 2026* (expected)
B.S. in Aerospace Engineering — *GPA*: 4.13/4.30 (3.95/4.00)

- *GRE Scores***:** Verbal (156), Quantitative (170), Analytical Writing (3.5)

Seoul Science High School, Seoul, Korea — *Feb. 2020*
Specialized in Mathematics and Physics — *GPA:* 4.16/4.30

RESEARCH EXPERIENCE

SNU Machine Perception and Reasoning Lab*,* Seoul, Korea
Undergraduate Researcher (Advisor: Prof. Jonghyun Choi) — *Mar. 2025 – Present*

- Applied action chunking to dexterous grasping by modifying PPO. Outperformed all PPO-based methods in success rate and training time. Presented at **IEEE Humanoids 2025 Workshop**; preparing for **ICML 2026**.
- Reformulated manipulation tasks into a 3D matching problem. Utilized Gaussian Splatting as SE(3) equivariant features for one-shot imitation learning across novel object poses and instances.

SNU Lab for Autonomous Robotics Research, Seoul, Korea
Undergraduate Research Intern (Advisor: Prof. Hyoun Jin Kim) — *Sep. 2024 – Feb. 2025*

- Improved Gaussian Splatting by clustering-based seeding in under-reconstructed regions and integrating reconstruction error for opacity initialization. Awarded a $700 scholarship from SNU AeroDrone.

SNU Robust Perception and Mobile Robotics Lab, Seoul, Korea
Undergraduate Research Intern (Advisor: Prof. Ayoung Kim) — *Jul. 2023 – Aug. 2024*

- Proposed a target-based accuracy evaluation metric for LiDAR-Inertial SLAM. Raised $3,500 in funding through the undergraduate research program at SNU. Presented at **ICCAS 2024.**
- Developed a LiDAR–Thermal camera system on a UGV; led design, manufacturing, calibration, and control.

PUBLICATIONS

1. **Hahn, S**., & Choi, J. Action Chunking Proximal Policy Optimization for Universal Dexterous Grasping. ***IEEE Humanoids 2025 Workshop*** *on Dexterous Human Manipulation,* 2025.
2. **Hahn, S**., Oh, S., Jung, M., Kim, A., & Jung, S. Quantitative 3D Map Accuracy Evaluation Hardware and Algorithm for LiDAR(-Inertial) SLAM. ***IEEE ICCAS****,* 2024.

TEACHING

Seminar Organizer – Reinforcement Learning for Robotics | SNU — *Fall 2025*

- Founded a peer-learning seminar (1 Credit); designed syllabus, selected papers, hosted weekly sessions.

SPLIT Tutor in Physics | SNU — *Jan. 2022 – Feb. 2022*

- Delivered weekly lectures and review sessions for incoming freshmen on general physics.

HONORS & AWARDS

Student-Directed Education Undergraduate Research Program | SNU — *Fall 2024*
National Scholarship for Science and Engineering | Korea Student Aid Foundation — *2020 – 2024*

- Full tuition scholarship for eight semesters.

ADDITIONAL EXPERIENCE & LEADERSHIP

Reviewer | IEEE RA-L *2025*

Translator and Tutor | EL. Brown Academy *Feb. 2020 – Mar. 2023*

- Translated JEE Advanced Physics materials and developed SNU entrance-exam practice tests.
- Taught mathematics to high-school student groups for school exams and the SNU entrance exam.
- Mar. 2022 – Nov. 2022: Left for mandatory military service

Supply Specialist | Republic of Korea Army *May 2022 – Oct. 2022*

- Mandatory military service, medically discharged.

Private Tutor | Self Employed *Feb. 2020 – Apr. 2022*

- Mentored a high school student in mathematics, leading to acceptance into SNU.

Powertrain Team Leader | SNU Baja Student Team *Dec. 2020 – Nov. 2021*

- Led powertrain and chassis design. Supervised mechanical fabrication/testing teams.

SELECTED COURSES

Engineering: Control Theory, Structural Analysis, Sensor Systems, Robot Vision

Mathematics: Linear Algebra, Stochastic Processes, Mathematics of Neural Networks, Mathematics of RL & LLMs

AI/CS: Machine Learning, Deep Learning, 3D Computer Vision, Algorithms, Topics in Computer & VLSI

SELECTED COURSE PROJECTS

Forward Facing 3D Gaussian Splatting as Markov Chain Monte Carlo, Deep Learning *Fall 2024*

- Removed floating artifacts in forward-facing scenarios for 3DGS-MCMC. Selected for oral presentation.

OceanGate Titan Structural Analysis, Mechanics of Aerospace Structures (Structural Analysis) *Fall 2023*

- Simulated the effects of thermal shock and vertical impact on ANSYS. Selected for oral presentation.

SKILLS & INTERESTS

Languages: Korean (Native), English (Fluent)

Programming & Frameworks: Python, C, MATLAB, PyTorch, JAX/Flax, ROS

Simulation: Isaac Gym, Isaac Sim, Gazebo, ANSYS

Hardware: Welding, Machining, Circuits, 3D Printing, Sensors (LiDAR, RGB-D/Thermal Camera)

Research Interests: Dexterous Manipulation, Humanoids, Reinforcement Learning, Robot Learning