

Gyeongmin Kim

CONTACT INFORMATION	Department of Intelligent Robotics Helper lab (<i>Advisor : Mun-Taek Choi</i>) Sungkyunkwan University, Suwon 16419, South Korea	+82 10-3516-1968 hn04008@skku.edu gmkim97.github.io
RESEARCH INTERESTS	Human-Robot Interaction, Robot Learning, Reinforcement Learning-based Control, Deep Learning, Computer Vision	
EDUCATION	Sungkyunkwan University, South Korea Masters student in Intelligent Robotics GPA : 4.5 / 4.5 (Expected graduation : <i>Aug.2025</i>)	<i>Aug.2023 - Present</i>
	Sungkyunkwan University, South Korea Bachelor of Engineering in Mechanical Engineering GPA : 4.28 / 4.5 (Summa Cum Laude)	<i>Mar.2017 - Aug.2023</i>
RESEARCH EXPERIENCE	Graduate Research Assistant Helper lab, Sungkyunkwan University, Suwon, South Korea	<i>Jan.2024 - Present</i>
	<ul style="list-style-type: none">• Transitional research of exoskeleton robot for gait rehabilitation based on AI for hemiplegia patients<ul style="list-style-type: none">– This research is supported by the National Research Foundation of Korea funded by the Ministry of Science and ICT of Korea (NRF-2017M3A9G5083566) and Technology Innovation Program (20003762) funded by the Ministry of Trade, Industry & Energy (MOTIE, Korea).– Developing an AI-based ground-walking exoskeleton robot for rehabilitation of post-stroke hemiplegic patients who have the motor disorder at lower limb.– Participation in analyzing joint-level gait trajectories and clustering their patterns based on deep learning.	
	Undergraduate Research Assistant Helper lab, Sungkyunkwan University, Suwon, South Korea	<i>Mar.2023 - Dec.2023</i>
	<ul style="list-style-type: none">• Transitional research of exoskeleton robot for gait rehabilitation based on AI for hemiplegia patients<ul style="list-style-type: none">– This research is supported by the National Research Foundation of Korea funded by the Ministry of Science and ICT of Korea (NRF-2017M3A9G5083566) and Technology Innovation Program (20003762) funded by the Ministry of Trade, Industry & Energy (MOTIE, Korea).– Developing an AI-based ground-walking exoskeleton robot for rehabilitation of post-stroke hemiplegic patients who have the motor disorder at lower limb.– Participation in analyzing joint-level gait trajectories and clustering their patterns based on deep learning.	

PUBLICATIONS

Journals

1. **Gyeongmin Kim**, Hyungtai Kim, Yun-Hee Kim, Seung-Jong Kim, and Mun-Taek Choi, "Deep Temporal Clustering of Pathological Gait Patterns in Post-Stroke Patients Using Joint Angle Trajectories: A Cross-Sectional Study", *Computer Methods in Biomechanics and Biomedical Engineering*, 2024. (Under Review)

Preprint

1. **Gyeongmin Kim**, Taehyeon Kim, Shyam Sundar Kannan, Vishnunandan L. N. Venkatesh, Donghan Kim, and Byung-Cheol Min, "DynaCon: Dynamic Robot Planner with Contextual Awareness via LLMs.", *arXiv preprint arXiv:2309.16031*, 2023.

Online Repositories

1. Rotary Pendulum with PPO and Domain Randomization (2024)
 - *Site* : https://github.com/gmkim97/rotary_pendulum_ppo.git
 - *Description* : This repository is to control rotary pendulum (Furuta pendulum) using PPO from Stable-baselines3 and Domain Randomization which randomizes the physical properties of the pendulum.
2. DynaCon (2023)
 - *Site* : <https://github.com/gmkim97/DynaCon.git>
 - *Description* : The DynaCon is for providing mobile robots with contextual awareness and dynamic adaptability during navigation without pre-existing maps using ChatGPT from OpenAI and ROS.
3. ArUco marker detection (2022)
 - *Site* : https://github.com/gmkim97/ArUco_marker_detection.git
 - *Description* : This package is to detect one or more ArUco markers using Intel Realsense camera and broadcast each recognized marker into TFs.
4. Object Tracker (2022)
 - *Site* : https://github.com/gmkim97/object_tracker.git
 - *Description* : This package enables to recognize objects, publish TF topic, and display distances for each recognized object using Intel Realsense depth camera.

PRESENTATIONS

1. **Gyeongmin Kim**, Hyungtai Kim, and Mun-Taek Choi, "Gait Pattern Clustering in Post-Stroke Patients via Deep Learning Using Time-Series Joint-Level Angular Trajectory Data", *2024 6th International Conference on BioMedical Technology (ICBMT 2024)*, Feb. 2024. **[Best Oral Presentation Award]**

TEACHING EXPERIENCE

Teaching Assistant

Aug.2024 - Present

Sungkyunkwan University, Suwon, South Korea

Fundamental Mathematics in Engineering2 (ERC2011-43), Fall Semester, 2024.

Teaching Assistant

Mar.2024 - June.2024

Sungkyunkwan University, Suwon, South Korea

Fundamental Mathematics in Engineering1 (ERC2010-44), Spring Semester, 2024.

	Teaching Assistant Sungkyunkwan University, Suwon, South Korea Fundamental Mathematics in Engineering2 (ERC2011-44), Fall Semester, 2023.	<i>Aug.2023 - Dec.2023</i>
ACTIVITIES	Capstone Design Contest Sungkyunkwan University, Suwon, South Korea <ul style="list-style-type: none"> • Design of autonomous vision-based navigation using monocular camera, Jetson Nano, and toy car • Participation in hardware design and partially in post-processing of visual data 	<i>Aug.2022 - Dec.2022</i>
	AI-ICT Creative Idea Contest Sungkyunkwan University, Suwon, South Korea <ul style="list-style-type: none"> • Design and production of mobile robot for last-mile delivery which can detect nearby pedestrians • Participation in object recognition, tracking, partially in hardware design and assembly • In conjunction with Engineering Research Project courses 	<i>Mar.2022 - Dec.2022</i>
HONORS AND AWARDS	Best Oral Presentation Award 2024 6th International Conference on BioMedical Technology (ICBMT 2024) Helper lab, Sungkyunkwan University, Suwon, South Korea	<i>Feb.2024</i>
	Graduate Student Scholarship (Full) Sungkyunkwan University, Suwon, South Korea	<i>Aug.2023 - Present</i>
	Summa Cum Laude Sungkyunkwan University, Suwon, South Korea	<i>Aug.2023</i>
	1st Place Award of Capstone Design Contest Sungkyunkwan University, Suwon, South Korea	<i>Dec.2022</i>
	3rd Place Award of AI-ICT Creative Idea Contest Sungkyunkwan University, Suwon, South Korea	<i>Dec.2022</i>
	Academic Excellence Scholarship Awarded to the undergraduate student for outstanding GPA Sungkyunkwan University, Suwon, South Korea <ul style="list-style-type: none"> • Spring Semester, 2023 (Partial scholarship) • Fall Semester, 2022 (Partial scholarship) • Fall Semester, 2021 (Partial scholarship) • Spring Semester, 2018 (Full scholarship) 	<i>Mar.2018 - Aug.2023</i>
SKILLS	Coding : Python, MATLAB, C/C++ Libraries : Pytorch, Tensorflow, ROS1/2, Isaac Sim/Lab Modelings : Autodesk Inventor, ANSYS Fluent Operating Systems : Linux, Windows, MacOS	