Gyeongmin Kim

Contact Information

Department of Intelligent Robotics
Helper lab (*Advisor : Mun-Taek Choi*)
Sungkyunkwan University, Suwon 16419, South Korea

+82 10-3516-1968
hn04008@skku.edu
gmkim97.github.io

Research Interests

Human-Robot Interaction, Robot Learning, Data-driven Control, Deep Learning, Computer Vision

Education

Sungkyunkwan University, South Korea
Masters student in Intelligent Robotics — *Aug.2023 - Present*
GPA : 4.5 / 4.5
(Expected graduation : *Aug.2025*)

Sungkyunkwan University, South Korea
Bachelor of Engineering in Mechanical Engineering — *Mar.2017 - Aug.2023*
GPA : 4.28 / 4.5 (**Summa Cum Laude)**

Research Experience

Graduate Research Assistant — *Jan.2024 - Present*
Helper lab, Sungkyunkwan University, Suwon, South Korea

- Transitional research of exoskeleton robot for gait rehabilitation based on AI for hemiplegia patients
  - This study was supported by the Translational Research Program for Rehabilitation Robots (NRCTR-EX23002), National Rehabilitation Center, Ministry of Health and Welfare, 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 — *Mar.2023 - Dec.2023*
Helper lab, Sungkyunkwan University, Suwon, South Korea

- Transitional research of exoskeleton robot for gait rehabilitation based on AI for hemiplegia patients
  - This study was supported by the Translational Research Program for Rehabilitation Robots (NRCTR-EX23002), National Rehabilitation Center, Ministry of Health and Welfare, 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", *Bioengineering* 2025, 12(1), 55.

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.

Conferences

1. Teh-Hao Teng, **Gyeongmin Kim**, Hyungtai Kim, and Mun-Taek Choi, "Deep Temporal Clustering for Long-Term Gait Recovery Patterns of Post-Stroke Patients using Joint Kinematic Data", *2025 11th International Conference on Computing and Artificial Intelligence (ICCAI 2025)*, Mar. 2025.

2. **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.2023 - Present*
Sungkyunkwan University, Suwon, South Korea

- Fundamental Mathematics in Engineering1 (ERC2010-45), Spring Semester, 2025.
- Fundamental Mathematics in Engineering2 (ERC2011-43), Fall Semester, 2024.
- Fundamental Mathematics in Engineering1 (ERC2010-44), Spring Semester, 2024.
- Fundamental Mathematics in Engineering2 (ERC2011-44), Fall Semester, 2023.

Activities

Capstone Design Contest *Aug.2022 - Dec.2022*
Sungkyunkwan University, Suwon, South Korea

- 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

AI-ICT Creative Idea Contest *Mar.2022 - Dec.2022*
Sungkyunkwan University, Suwon, South Korea

- 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

Honors and Awards

Best Oral Presentation Award *Feb.2024*
2024 6th International Conference on BioMedical Technology (ICBMT 2024)
Helper lab, Sungkyunkwan University, Suwon, South Korea

Graduate Student Scholarship (Full) *Aug.2023 - Present*
Sungkyunkwan University, Suwon, South Korea

Summa Cum Laude *Aug.2023*
Sungkyunkwan University, Suwon, South Korea

1st Place Award of Capstone Design Contest *Dec.2022*
Sungkyunkwan University, Suwon, South Korea

3rd Place Award of AI-ICT Creative Idea Contest *Dec.2022*
Sungkyunkwan University, Suwon, South Korea

Academic Excellence Scholarship *Mar.2018 - Aug.2023*
Awarded to the undergraduate student for outstanding GPA
Sungkyunkwan University, Suwon, South Korea

- Spring Semester, 2023 (Partial scholarship)
- Fall Semester, 2022 (Partial scholarship)
- Fall Semester, 2021 (Partial scholarship)
- Spring Semester, 2018 (Full scholarship)

Skills

Coding : Python, MATLAB, C/C++
Libraries : Pytorch, Tensorflow, ROS1/2, Isaac Sim/Lab
Modelings : Autodesk Inventor, ANSYS Fluent
Operating Systems : Linux, Windows, MacOS
Languages : Korean, English, Japanese