Gyeongmin Kim

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CONTACT INFORMATION

Mechanical Engineering Researcher
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RESEARCH INTERESTS

System Control, Data Analysis, Data-driven Control, Physics-guided Learning, Time-series Data Processing

EDUCATION

Sungkyunkwan University, South Korea *Aug.2023 - Aug.2025*
Master of Science in Engineering
Intelligent Robotics (Advisor : Prof. Mun-Taek Choi)
GPA : 4.5 / 4.5

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

RESEARCH EXPERIENCE

Graduate Research Assistant *Aug.2023 - Aug.2025*
Helper lab, Sungkyunkwan University, Suwon, South Korea

- Transitional research of exoskeleton for gait rehabilitation based on data-driven kinematic analysis 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 advanced control system for a ground-walking exoskeleton 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 time-series data analysis and deep learning.

Undergraduate Research Assistant *Mar.2023 - Aug.2023*
Helper lab, Sungkyunkwan University, Suwon, South Korea

- Transitional research of exoskeleton for gait rehabilitation based on data-driven kinematic analysis 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 advanced control system for a ground-walking exoskeleton 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 time-series data analysis and 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**†, and Jonghoek Kim, "Neural Network-Assisted AUV Navigation in Complete DVL-Denied Environments Using a Physics-Based Dynamic Model", In Submitted to *IEEE Transactions on Neural Networks and Learning Systems*, 2026. (Under Review)
2. Taehyeon Kim†, **Gyeongmin Kim**†, Eunsun Smith, and Byung-Cheol Min, "HERON: Human-robot collaboration with Efficient and Resilient OptimizatioN for Long-horizon planning", *OpenReview preprint*, 2026.
3. **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.

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 - Aug.2025*
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 Excellence Scholarship (Full) *Sep.2023*
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, OpenCV
Modelings : Autodesk Inventor, ANSYS Fluent
Operating Systems : Linux, Windows, MacOS
Languages : Korean, English, Japanese