

Hanbin Jang

· ROBOTICS/CONTROL/PLANNING/LEARNING

Seoul National University, Seoul, South Korea

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Education

Seoul National University (SNU)

B.S. IN MECHANICAL ENGINEERING, MINOR IN ELECTRICAL & COMPUTER ENGINEERING

Seoul, South Korea

Mar. 2019 - Feb. 2026

North Carolina State University (NCSU)

EXCHANGE STUDENT IN THE DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

Raleigh, NC, US

Jan. 2025 - Aug. 2025

Research Interests

Planning & Control	Whole-body Planning/Control, Hierarchical Architecture, Hybrid Control Methods (model-based + data-driven)
AI & ML	Deep Learning, Data-driven System Identification, Reinforcement Learning, Sim-to-Real Transfer
Systems	Legged Robots, Wearable Robots, Autonomous Systems, Nonlinear Systems
Hardware	Quadrupeds, Robotic End-effectors, Wearable Robots

Experiences

Sequoia Robotics

Seoul, South Korea

INTERNSHIP EMPLOYEE

Dec. 2025 - Now

- Data collection and Performance Evaluation of NeRF

Hybrid Intelligent Experimental Robotics (HIER) Lab at NCSU

Raleigh, NC, USA

INSTRUCTED BY DR. JAEMIN LEE

Jan. 2025 - Aug. 2025

UNDERGRADUATE RESEARCH ASSISTANT

- Implemented data-driven learning pipeline for adaptive quadrupedal locomotion over challenging terrains
- Designed hybrid control architecture by blending model-based control and data-driven learning
- Developed API for data acquisition from Mujoco and for deep neural network training (C++/Python)

Wearable Robotics Lab (WRL) at SNU

Seoul, South Korea

INSTRUCTED BY ASSISTANT PROF. JINSOO KIM

Jul. 2024 - Dec. 2024

UNDERGRADUATE RESEARCH ASSISTANT

- Designed hardware parts of a soft hip-flexion exo-suit to mitigate the freezing symptoms of Parkinson's disease patients.
- Designed CAD models for motor casing and tendon-pulley system, and fabricated coupling parts between load-cell and fabric components.
- Developed adjustable textile components for human wearability, ensuring applicability across diverse body sizes and conditions.

Soft Robotics and Bionics Lab (SRBL) at SNU

Seoul, South Korea

INSTRUCTED BY PROF. YONGLAE PARK

Jun. 2023 - Jan. 2024

UNDERGRADUATE RESEARCH ASSISTANT

- Designed a soft end-effector for fabric gripping using an air-suction mechanism

Skills

Prototyping	CAD (Solidworks, Fusion360), 3D Printing (FDM, SLA, SLS), Textile Fabrication
Programming	Python, MATLAB, C++
Simulation & Control	Mujoco, OSQP
Image Editing	Adobe Photoshop, Lightroom (technical illustration, experiment documentation)
Languages	Korean (Native), English (Fluent)
Others	Linux OS (Ubuntu), Windows OS

Honors & Awards

12/20/24 **3rd Prize at Mechatronics Contest**, Seoul National University

Seoul, South Korea

12/06/24 **Outstanding B.S. Thesis Presentation Award**, Seoul National University

Seoul, South Korea

Publications

Data-driven Whole-Body Locomotion Control: Adaptive Quadrupedal Locomotion over Multiple Terrains

1ST AUTHOR

- Proposed hybrid approaches that combine model-based and data-driven methods to implement adaptive locomotion control under varying friction conditions (in preparation)

IEEE Robotics and Automation

Letters

Now

Projects & Activities

Summer Symposium by Office of Undergraduate Research at NCSU

Raleigh, NC

PRESENTER FOR <REACTIVE LOCOMOTION OF QUADRUPED ROBOTS OVER VARIOUS TERRAINS: DATA-DRIVEN LEARNING FOR

MODEL-BASED PLANNING AND CONTROL>

Jul. 2025

- Proposed a novel control architecture combining model-based and data-driven approaches

B.S. Graduation Thesis Poster Presentation Contest at SNU

Seoul, South Korea

PRESENTER FOR <A STUDY ON HOW STROKE PLANE ANGLE DIFFERENCE AFFECTS THE HOVERING OF DAMSELFLY>

Dec. 2024

- Analyzed the vorticity induced by the difference between fore-wing and hind-wing pairs of damselflies using CFD
- Specified that the re-attachment location of Leading Edge Vortex is important in determining aerodynamical performance

Mechatronics Contest

Seoul, South Korea

STATE ESTIMATION ALGORITHM DESIGN, COMMUNICATION SYSTEM CONSTRUCTION

Dec. 2024

- Designed a ball tracking system using vision and 3D location estimator
- Proposed the concept of an automated referee system for commercial purpose

Design a Zero-Velocity-Update point prediction model

Seoul, South Korea

DATA COLLECTION SETUP & DATA PROCESSING ALGORITHM DESIGN

Dec. 2024

- Trained a Deep learning model to predict ZUPT point for wearable robots using IMU signals

Training Program for Future Automobile Designers

Si-heung, South Korea

SCHOLARSHIP STUDENT

Dec. 2023 - Jan. 2024

- Being trained on the latest technologies
- Designed a mini size autonomous car system

Design of a malfunction detector for rotational machine

Seoul, South Korea

FEATURE SELECTION METHOD DESIGN

Dec. 2023

- Designed a detection algorithm to recognize the malfunction of machines with rotating parts using conventional machine learning methods

ROBOCON 2019

Seoul, South Korea

HARDWARE/END-EFFECTOR DESIGN

Dec. 2019

- Designed a wheeled robot that picks up, stores, and unloads items

Services & Volunteers

Fabrication Equipment Manager & Instructor

Seoul, South Korea

STUDENT EMPLOYEE AT PARK'S CREATIVE SPACE, THE DEPARTMENT OF MECHANICAL ENGINEERING, SNU

Feb. 2023 - Dec. 2024

- Managed shared FDM/SLA/SLS 3D printers for prototyping and instructed beginners how to use the equipments

Volunteer for Angel's Nest Shelter

Goyang, South Korea

STUDENT VOLUNTEER OF 'Kkori (Tail)' (CAMPUS ANIMAL WELFARE VOLUNTEER CLUB), SNU

2022 - 2024

- Provided care and support for rescued dogs and cats, including feeding, cleaning, and enrichment activities
- Served as team leader for designing and producing fundraising items (postcards and eco-bags) and donated all proceeds to animal welfare initiatives

Republic of Korea Army

South Korea

MANDATORY MILITARY SERVICE

Sep. 2020 - Mar. 2022

- Served full term of mandatory military service and discharged as Sergeant

Volunteer for Group Project Instructor

Daegu, South Korea

STUDENT MENTOR OF P.I. (*Progress for Ideal*), MAECHEON HIGH SCHOOL

2019 - 2023

- Organized and managed interdisciplinary research-like summer camp 'Consilience'

Volunteer for Dream Camp Mentor

Gwangju, South Korea

ONE-OFF STUDENT VOLUNTEER

Aug. 2020

- Guidance in college admissions and career path exploration

Scholarships

Cohort 2 Scholar, Korea-U.S. Special Exchange Program for STEM Students

KOREA INSTITUTE FOR ADVANCEMENTS OF TECHNOLOGY (KIAT)

- Awarded the Youth STEM Scholarships for robotics field

Seoul, South Korea

Nov. 2024