

Minjun Chang

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Research Interest | *Robotics, Locomotion, Motion Planning, Marine, Autonomous Driving, RL, Connectivity*

Education

Yonsei University, Seoul, Republic of Korea

Mar 2019 – Feb 2025(Expected)

- B.S., Mechanical Engineering (GPA: 3.33/4.3)
- **Senior thesis:** Adaptive control with State-Estimator for Bipedal Locomotion

Selected Honors and Awards

- Next Generation Engineer**, *Institute for Promotion of Engineering and Science of Korea (IPESK)* Nov 2024
- Selected as a **Next Generation Engineer** by IPESK funded by Korea Institute for Advanced Studies.
- 1st place, National ICT Smart Device Competition**, *Ministry of Science and ICT, Republic of Korea* Aug 2024
- Award by **the Minister of Science and ICT of Republic of Korea**
 - Led a team of 5 in developing an *Autonomous Manufacture Assistant CARTRASCHE*
 - Designed a mobile robot with rotating shelf system using SLAM for navigation in ROS
 - Implemented custom RC filter and encoder-less motor control algorithm for activation
 - Operated based on: Linux OS, ROS1, Python and C++ [[News](#), [Project Page](#), [Video](#)]
- 1st place, 2022 Autonomous Driving Robot Racing Contest**, *Korean Robotics Society (KRoS)* Nov 2022
- Developed a control algorithm with ROS, utilizing LiDAR, IMU, and GPS for collision avoidance
 - Implemented sensor fusion algorithm on ROS platform for localization
 - Operated based on: Linux OS, ROS1, ROS2, Python and C/C++ [[News](#), [Contest Video](#)]
- Selection, Hanium Contest**, *Federation of Korea Information Industries* Nov 2021
- Led a team of 4 in developing *Personalized Content Literacy program EYE-TUNER*
 - Implemented pupil tracking algorithm for the program [[Project Page](#)]
- 2nd place, Medical Hack 2021**, *Busan City* Nov 2021
- Implemented posture prediction algorithm with multiple load-cell sensors
- 2nd place, Yonsei IHEI Workstation**, *Yonsei University* Jul 2020
- Designed an autonomous urine analysis apparatus and its actuator system [[Video](#)]

Research Experiences

Dynamic Robotic System Laboratory, Seoul National University

Jul 2024 – Dec 2024

Undergraduate Intern. Supervisor: Prof. Jaeheung Park

- Developing a reinforcement learning framework with simultaneous state estimator training for locomotion

Machine Learning and Control System Laboratory, Yonsei University

Jul 2022 – Jan 2023

Undergraduate Intern. Supervisor: Prof. Jongeun Choi

- Developed an enhanced localization algorithm with control input delay compensation

Mechanobiology and Soft Materials Laboratory, Yonsei University

Jul 2020 – Jun 2021

Undergraduate Intern. Supervisor: Prof. Hyungseok Lee

- Developed Handheld Standing Surface Acoustic Wave (SSAW) Cell Alignment Device
- Proposed "bridged hold design" for SSAW cell alignment and simultaneous UV reactive angiogenesis

Publications and Conferences

1. **Minjun Chang**, J.Y. Shin, Jaehung Park[†], “Robust Symmetric Bipedal Locomotion Development via Simultaneous State Estimator Neural Network Training”, *The 20th Korea Robotics Society Annual Conference (KRoC 2025, Feb. 12-14, 2025, Poster Presentation)* **[1st author]**
2. H.W. Nam*, S.Y. Choi*, **Minjun Chang***, J.H. Yang*, J.H. Lim, Jongeun Choi[†], “State prediction-based control input delay compensation for autonomous driving systems”, *The 18th Korea Robotics Society Annual Conference (KRoC 2023, Feb. 15-18, 2023)* ***equal contribution [1st author]**
 - Oral presentation in a special session, “Autonomous Driving Robot Racing Technics”

Work Experiences

- Hanwha Systems (Defense)** *Jan 2025 – Present*
- Working as software engineer for Small Synthetic Aperture Radar Satellite
- GOLE Robotics (Robotics Engineer, Path Planning & SLAM)** *Apr 2024 – Jun 2024*
- Implemented A* for global path planning and sMPC for local path planning on ROS2 and robot (WeRo)
 - Developed actuator controller package with C++/Python binding
- DRIMAES (Embedded Software Engineer, Research Engineer)** *Oct 2022 – Mar 2024*
- Linux, ARM MCU software/firmware programming
 - Developed various communication protocols (Serial, MQTT, REST, CAN)
 - Implemented multiple virtual container management technique on cross-platform systems
- ToysMyth (Embedded Software Engineer, Research Engineer)** *Feb 2022 – Oct 2022*
- Developed embedded software for Mediatek, ESP chipsets and enhanced custom OpenWRT OS kernel
- Alsemy (AI Lab Intern, Intern)** *Jun 2021 – Aug 2021*
- Implemented prediction data smoothness verification metric

Selected Projects

- Development of Fleet Management System for multi-robot cluster, Hyundai Robotics** *Aug 2023 – Dec 2023*
- Implemented task scheduling and allocation algorithm based on order status for multi-robot network
 - Operated based on: Linux OS, Python, Custom MQTT Protocol on Hyundai Robotics serving robots
- Leafeon Cluster: Indoor Atmospheric Environment Observer, Personal Project** *Feb 2023 – Sep 2023*
- Developed an atmosphere observer with remote data collecting server and visualizing dashboard [[github](#)]
- FennecBot: Industrial Anomaly Detection Mobile Robot, SM Instruments** *Mar 2023 – Aug 2023*
- Developed multi-modal [deep learning network](#) for pipeline anomaly detection and the classification of pipeline leakage using RGB camera, and ultrasonic/acoustic sound camera
 - Operated on Scout mini with line-tracing algorithm detecting pipe leakage within Hyundai HI. factory
- SAJOGI: Boston Dynamics Spot Micro project, RoboIn** *May 2022 – Nov 2022*
- Built a small scaled four-legged robot based on *Boston Dynamics SPOT* morphology [[github](#)]

Extracurricular Activities and Leadership

- YAI, Artificial Intelligence Club, Yonsei University** *Mar 2022 – Present*
- Studied open courses and papers about robot learning and wrote [review articles](#)
- RoboIn, Robotics Club, Yonsei University** *May 2020 – Present*
- President (2021-2022), Vice President (2021), Executive Staff (2020 - 2023)
 - Robot Projects: quadruped robot (based on SPOT of Boston Dynamics), quadrotor drone, hexapod
 - Conducted Seminars: [basics of CNN](#), [basics of reinforcement learning](#), serial communication

Patents and Copyrights

The Urine Examination Apparatus and Controlling Method of the Same (KR10-2020-0176792, under prosecution)	Dec 2020
Autonomous Driving Auxillary Cart Robot for Manufacture (KR10-2024-0177135, under prosecution)	Aug 2024
Eye Tuner: Media Literacy Program based on Pupil Tracking by Computer Vision (Korea Copyright Commission, C-2024-039138)	Nov 2021

Skills Summary

Programming Languages: Python, C, C++, MATLAB
Frameworks/Tools: ROS, Docker, MPLab, PyTorch, FastAPI, IsaacGym, AWS, Solidworks, CREO, ANSYS
Hardware: ARM M7, Jetson Xavier, Jetson Nano, RaspberryPi, Arduino, STM32, ESP32, Bolt10, Scout Mini, ERP42
Languages: Korean (Native), English (Fluent, iBT TOEFL 109)