ChanHui Jung

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ladianchad [1] | ch-ladi [2] | robotics-study [3]

Research Focus

- **Multi-Robot Navigation & Multi-Agent Path Finding**
- **System Architecture & Fleet Management**
- **Perception & Control**

Education

University of Michigan **Aug 2026 – Present**
M.S. in Robotics Ann Arbor, MI, United States

Hanyang University ERICA **Mar 2016 – Feb 2023**
B.S. in Robotics Engineering | GPA: 3.39 / 4.0 Ansan, Republic of Korea
Graduation Project: Unmanned Marine Rescue-Assist Robot

Research Experience

AIRO Lab, Hanyang University ERICA **2019 – 2021**
Undergraduate Student Researcher | Advisor: Prof. Min-Sung Kang
Vision research for the Item Assembly AI Robot Challenge; teaching assistant for the lab's undergraduate robotics courses.

Work Experience

Metafarmers Co. site [4]

Sep 2025 – Apr 2026
Seoul, Republic of Korea

MetaFarmers automates repetitive, skilled tasks using AI and robotics for sustainable agriculture.

Robotics Software Team Lead

- Built and led a 7-person Robotics AI team.
- Developed autonomous robot navigation in smart farms.
- Architected a multi-robot management system and its infrastructure.

Floatic Co.

Jul 2022 – Sep 2024
Seoul, Republic of Korea

A warehouse automation solutions provider developing AMRs and a real-time management platform.

Robotics Software & Platform Engineer

- Designed multi-robot navigation systems for logistics warehouses.
- Built a system architecture for robot software.
- Developed middleware connecting robots with backend and frontend applications.

Publications

"A Study on Improving Multi-agent Path Finding in Congested Environments Using Agent Merging and Splitting", *Journal of the Korean Society for Precision Engineering*, co-author, vol. 43, no. 2, pp. 123–131, 2026.
"A Study on Improving Conflict Based Search with Continuous Time Using Space Utilization", *Journal of the Korean Society for Precision Engineering*, co-author, vol. 43, no. 4, pp. 317–324, 2026.

Research & Development Projects

Omni Farmer **2025 – 2026**
Autonomous Multi-Robot System for Agricultural Operations. **Metafarmers Co.**

- Led the Robotics AI team and defined the ROS 2 software architecture spanning embedded control, perception, and navigation.

- Designed a UART packet protocol and the embedded development platform bridging low-level motor and sensor boards with the ROS 2 stack, implementing wheel-speed PID control on the motor controllers.
- Built the perception stack: multi-object tracking, 3D reconstruction through colored voxelization, and long-term SLAM fusing 3D LiDAR odometry with 2D mapping (FAST-LIO + Cartographer), holding stable localization across a 100 × 200 m site.
- Delivered autonomous navigation on ROS 2 Nav2 and migrated task execution to a C++ behavior tree.

Flody youtube [5] **2022 – 2024**

Autonomous Mobile Robot for Warehouse Logistics. **Floatic Co.**

- Built a DDS-style middleware layer that abstracted robot–backend communication behind one interface, letting Kafka and AWS IoT be swapped without touching robot software.
- Developed the multi-robot navigation system on ROS 2 Nav2 — cost functions for custom costmap layers, a Kalman filter correcting wheel odometry, and planner/controller tuning for reliable motion in dense warehouse aisles.
- Implemented behavior-tree task execution backed by an edge database server that tracked each robot's allocated tasks.
- Implemented peer-to-peer sharing of robot poses and planned paths over a site-local Redis pub/sub bus, injecting neighboring robots into each robot's local costmap for decentralized collision and congestion avoidance.
- Deployed and operated an autonomous robot fleet in live warehouses with fleet management software integrating task allocation, routing, and monitoring.

Capstone Design **2020 – 2022**

Unmanned Marine Rescue-Assist Robot. **Capstone, Hanyang University ERICA**

- Built, in a team of six, an unmanned robot that detects capsizing from IMU tilt, raises the alarm over a LoRa relay chain, finds people in the water with RGB and thermal cameras, and reports their GPS position on a live map.
- Worked on the system design, motor control, data server, communication, sensor control, and electrical system; the project won the Special Prize at the 2022 National Capstone Design Competition.

Churo **2021**

Dog-care Robot for Behavior Recognition. **Contract, ROBOI Co.**

- Built, with a partner, behavior recognition for a dog-care robot: YOLOv5 and SORT track the dog, and a ResNet-CRNN classifier sorts 20-frame clips into five behaviors at 90.4–96.8% test accuracy.

LattePanda **2020**

Donation & Recycling Robot. **Course Work, Intelligent Robot Crash Lab**

- Designed a mobile service robot integrating perception, navigation, and human–robot interaction to promote public recycling.
- Implemented obstacle avoidance on a 3×5 depth grid and YOLOv5 detection of people, cups, and hand signs, run with TensorRT on a Jetson TX2.

Item Assembly AI Robot Challenge article [6] **2020**

Government-Funded Multi-Lab Project Developing Robots for Furniture Assembly Automation. **AIRO Lab**

- Worked as a vision researcher in a nationally funded multi-institution project developing perception modules for high-precision robotic assembly.
- Implemented a pose estimation pipeline for screw insertion using stereo triangulation and camera calibration, reaching a high insertion success rate within millimeter-level tolerance.

Open Source Contributions

ROS 2 & Navigation2 **2022 – 2023**

- Proposed the plugin-oriented architecture for Navigation2's Behavior Tree Navigator; the lead maintainer adopted the design and reimplemented it upstream, where it now ships as `nav2_core::NavigatorBase`. [#3068]
- Merged fixes to the MPPI controller build and to launch-file YAML rewriting. [#3927] [#3141]

Teaching Experiences

Tutoring Mentor, Computer Architecture **Spring 2021**

Provided academic support to undergraduates (5 students) in Computer Architecture. Hanyang University ERICA

Instructor, Intelligent Robotics Education for the General Public, Sangmoon High School — **Spring 2021**
Hanyang University ERICA
Conducted a session (30 students) of introductory robotics concepts and supervised hands-on labs.

Instructor, C++ Programming Study Group at Hy-Mec (Departmental Student Society) — **Spring 2021**
Delivered weekly sessions (40 students) on C++ programming. Hanyang University ERICA

Teaching Assistant, Collaborative Robot Design (Department of Robotics Engineering) — **Fall 2020**
Hanyang University ERICA
Prepared lectures (20 students) on manipulators and human–robot collaboration concepts.

Teaching Assistant, Introduction to Robotics Design (Department of Robotics Engineering) — **Spring 2020**
Hanyang University ERICA
Conducted laboratory instruction (30 students) on robotics fundamentals using Arduino and sensors.

Outreach

Educational Support Volunteer – Inae Community Welfare Center — **2012 – 2017**
Provided mathematics tutoring for elementary and middle school students in the local community.

Awards & Honors

- National Capstone Design Competition, Special Prize, South Korea — **2022**
- Creative Engineering Design Competition, Silver Award — **2021**
- CARE Innovation Idea Contest (GIG-Education Program), Grand Prize — **2021**
- Hanyang Rainbow Scholarship, Hanyang University ERICA — **2016 – 2023**

Student Leadership

Deputy Chair, Executive Committee — **2019**
Undergraduate Student Council of Robotics Engineering Hanyang University ERICA

Skills

- **Languages** C, C++, Python, Java, Kotlin, SQL
- **Frameworks & Libraries** ROS 2, ROS 1, Nav2, Gazebo, Isaac Sim, Qt, PyQt, PyTorch
- **DevOps & Databases** MySQL, Docker, Kubernetes, AWS, Anaconda
- **Tools** Arduino, MATLAB, Simulink, SolidWorks

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[2] [Contact] linkedin : https://www.linkedin.com/in/ch-ladi
[3] [Contact] website : https://robotics-study.github.io
[4] [Work Experience] metafarmers : https://metafarmers.ai
[5] [Project] flody : https://www.youtube.com/watch?v=0acR1xwGQf8
[6] [Project] item assembly : https://www.newshyu.com/news/articleView.html?idxno=1001038