



Jeonghan Kim

ROBOTICS RESEARCHER

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Education

Hanyang University

B.S. IN ROBOT ENGINEERING, MINOR IN ELECTRONIC ENGINEERING

- GPA: 3.91 / 4.5

Ansan, South Korea

Mar. 2018 - Feb. 2023

Experience

Roboe Technologies

SOFTWARE ENGINEER, MOTION ALGORITHM TEAM

Seoul, South Korea

Mar. 2024 - Present

- Trajectory Generator for Virtual Controllers**

- Implemented motion planning algorithms for moveL and moveJ paths using C++

- Motion Task Framework Development**

- Reconstructed Behavior Tree into a graph-based architecture for better flexibility
- Solved Python GIL limitations using Ray-based multiprocessing
- Implemented shared process communication between main and child processes for efficient data exchange

- Predictive Collision Shield System**

- Implemented a velocity-based Predictive Collision Shield using MoveIt2's FCL collision detection module

- Jamming detection system**

- Developed an algorithm to detect conveyor jamming using robot geometric information.
- Optimized the PointCloud2 filtering algorithm to operate within 0.05 Hz.

- Conveyor Workspace Optimization for Mobile Robots**

- Developed a workspace analysis framework for a conveyor-mounted mobile robot on reachability area.
- Constructed a system model and cost-function optimization to minimize uncovered workspace regions based on reachability data.

Gole Robotics

INTERN, AUTONOMOUS DRIVING SOFTWARE

Seoul, South Korea

Aug. 2023 - Oct. 2023

- Developed a serial communication library

- Selected and tested sensors for autonomous driving

- Built a ROS2-based Docker development environment

- Recipient of the CES Innovation Award Honoree (2024).

Undergraduate Researcher, RAISE Lab(Prof. Youngmoon Lee)

RESEARCHED ROBOT PLANNING AND CONTROL SYSTEM FOR MOBILE ROBOT AND MANIPULATOR

Ansan, South Korea

Jan. 2023 - Feb. 2024

- Developed autonomous driving software architecture and ROS2-based development environment.

- Designed and implemented a serial communication library and conducted sensor evaluation for autonomous driving.

- Published two research papers at international and domestic conferences:

- C. Choi, J. Kim, Y. Nam, Y. Lee, **Snapshot: Enabling Dynamic Human–Robot Interactions for Real-Time Computational Photography**, ACM/IEEE HRI 2024, Boulder, USA.

- J. Kim, J. Park, H. Lee, S. Park, Y. Nam, G. Kwon, W. Jung, Y. Lee, **Separable Integrated Drone–Mobile Robot System for Unmanned Patrol**, ICROS 2023, Samcheok, South Korea.

- Recipient of the **ICROS 2023 Undergraduate Best Paper Award**.

Publications

Snapshot: Enabling Dynamic Human–Robot Interactions for Real-Time Computational Photography

ACM/IEEE HRI 2024

Boulder, USA

Chanyeok Choi, Jeonghan Kim, Yunjae Nam, Youngmoon Lee

2024

- Developed an end-to-end HRI system integrating perception, control, and computational photography for dynamic camera composition.
- Designed a control loop that minimizes the angular difference between human head pose and the robot TCP direction using head pose estimation.
- Implemented manipulator velocity control based on pseudo-inverse Jacobian formulation for real-time smooth camera motion.

Separable Integrated Drone–Mobile Robot System for Unmanned Patrol

ICROS 2023

Samcheok, South Korea

Jeonghan Kim, Jongchan Park, Hayeon Lee, Suhwan Park, Yunjae Nam, Gihyeon Kwon, Woohyeon Jung, youngmoon Lee

2023

- Proposed a cooperative drone–mobile robot platform enabling energy-efficient patrol and terrain coverage.
- ICROS 2023 Undergraduate Best Paper Award

Extracurricular Activity

IEEP Tanzania International Science Volunteer

Arusha, Tanzania

VOLUNTEER

Jan. 2024

- Participated in international science volunteer program
- Contributed to science education and cultural exchange

HYMEC – Robot Making Club

Ansan, South Korea

CLUB CHAIRMAN

Jan. 2020 - Dec. 2021

- Served as club chairman for one year
- Organized the 4th and 5th Hackathon for mobile robot missions

Tutoring Mentor

Ansan, South Korea

- Git
- ROS & ROS2
- Docker

Honors & Awards

INTERNATIONAL AWARDS

Feb. 2024 **Innovation Award Honoree**, CES Innovation Awards

USA

DOMESTIC AWARDS

Nov. 2023 **Minister of Science and ICT Award**, SW Talent Festival (National Capstone Competition)

South Korea

Aug. 2022 **2nd Place**, Ansan Young Innovators Design Thinking Workshop

South Korea

Jul. 2022 **1st Prize**, Cancer Patient Care and Health Product Idea Competition

South Korea

Aug. 2021 **1st Prize**, ODA Idea Competition

South Korea

Skills

Programming Language C/C++, Python

Frameworks & Tools ROS2, ROS1, Git, Docker

Used Robots UR e-Series, RB20, TM20, mobile robot