

Seunghwan Um

+82-10-9810-2715 | seunghwanum@gmail.com | rush@g.skku.edu | Website: [rush](http://rush.kr)

 [Seunghwan Um](#) |  [r-ush](#) |  [0009-0004-8466-6578](#) |

Gunpo, Gyeonggi-do - 15875, Republic of Korea

RESEARCH STATEMENT

Hi there! I'm a PhD student at Robotics Innovatory, Sungkyunkwan University, South Korea, under the supervision of Prof. Hyouk Ryeol Choi. My research focuses on designing a versatile robotic gripper for logistics. These days, I'm interested in developing a robotic system that can interact with the external environment for grasping or manipulation, so I'm considering various methods such as gripper design and imitation learning.

EDUCATION

- **Sungkyunkwan University (SKKU)** Mar. 2022 - Present
Ph.D in Mechanical Engineering Suwon, Republic of Korea
- **Hanyang University (ERICA)** Mar. 2018 - Feb. 2022
B.S in Mechanical Engineering Ansan, Republic of Korea

PUBLICATIONS

J=JOURNAL, C=CONFERENCE, S=IN SUBMISSION, P=PATENT, T=THESIS

- [J.3] **Corner-Grasp: Multi-Action Grasp Detection and Active Gripper Adaptation for Grasping in Cluttered Environments**
Yeong Gwang Son, [Seunghwan Um](#), Juyong Hong, Tat Hieu Bui, Hyouk Ryeol Choi*. *ArXiv*, 2025.
- [J.2] **Development of Adaptive Gripper Enhancing Power Grasp Range and Linearity**
Issac Rhee, Chun Soo Kim, Heeyeon Jeong, [Seunghwan Um](#), and Hyouk Ryeol Choi* et al. *IEEE Access*, 2024.
- [J.1] **ReC-Gripper: A Reconfigurable Combined Suction and Fingered Gripper for Various Logistics Picking and Stowing Tasks**
[Seunghwan Um](#), Heeyeon Jeong, Chun Soo Kim, Issac Rhee, and Hyouk Ryeol Choi*
IEEE Robotics and Automation Letters (RA-L), Presented in ICRA 2024.
- [C.1] **Overcoming Heavy Clutter: Utilizing the Hybrid Grasping Network and Gripper**
[Seunghwan Um](#), Yeong Gwang Son, Tat Hieu Bui, Ho Sang Jung, and Hyouk Ryeol Choi*
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024
Workshop: Benchmarking via Competitions in Robotic Grasping and Manipulation 🏆 [Best Extended Abstract]
- [S.2] **Toward Reliable Bin-Picking: Collision-Aware Robotic Design and Control Strategy for Heavily Cluttered Environment**
[Seunghwan Um](#), Yeong Gwang Son, Jaeyoon Shim, Hyouk Ryeol Choi*
The manuscript was invited to be published in *IEEE Robotics and Automation Practice (RA-P)*.
- [S.1] **Title: T.B.A.**
[Seunghwan Um](#), Yeong Gwang Son, Juyong Hong, Chun Soo Kim, et al. and Hyouk Ryeol Choi*.
Manuscript submitted for publication in *IEEE/ASME Transactions on Mechatronics (TMECH)*.

PATENTS

- [P.3] **Hybrid Gripper Capable of Bin Picking and Shelf Picking.**
[Seunghwan Um](#), Heeyeon Jeong, Chun Soo Kim, Issac Rhee, and Yoon Haeng Lee.
Korean Intellectual Property Office, Patent No. 10-2023-0076248. Publication Date: 2024.12.23.
- [P.2] **Adaptive Gripper Capable of Parallel Motion.**
Issac Rhee, Chun Soo Kim, [Seunghwan Um](#), Heeyeon Jeong, and Yoon Haeng Lee.
Korean Intellectual Property Office, Patent No. 10-2023-0077512. Registration Date: 2023.12.06.
- [P.1] **Suction Gripper Capable of Translational and Rotational Movements.**
Chun Soo Kim, Issac Rhee, [Seunghwan Um](#), Heeyeon Jeong, and Yoon Haeng Lee.
Korean Intellectual Property Office, Patent No. 10-2023-0093340. Registration Date: 2023.10.18.

EXPERIENCE

- **AIDIN ROBOTICS - Cobot Solution Team** May 2022 - Present
Researcher Anyang-si, Gyeonggi-do, Republic of Korea
 - Designed grippers for shelf-picking solutions, contributing to efficient logistics automation.
- **Korea Institute of Industrial Technology (KITECH)** October 2021 - December 2021
Research Student Ansan-si, Gyeonggi-do, Republic of Korea
 - Designed and developed control systems for a 2-DoF manipulator, enhancing its performance and accuracy.
- **Wall Climbing Car (WCC) [Undergraduate Project]** December 2020 - October 2021
Team Leader Ansan-si, Gyeonggi-do, Republic of Korea
 - Designed a wall-climbing car's propeller frame and control system.

PROJECTS

- **Development of Smart Vision System and All-in-One Universal Gripper for Multi-Variou Random Piece Picking** May 2022 - Present
Participating organizations: AIDIN ROBOTICS, SKKU, KITECH, CJ Logistics Republic of Korea
 - **Research Objective:** Developing robotic picking system including a gripper and vision system for piece picking in a logistics environment.
 - Designing an integrated gripper capable of various grasping strategy for a shelf environment among logistics environments
 - Researching grasping strategy that can pick objects while avoiding external constraints in a shelf environment

HONORS AND AWARDS

- 🏆 **Samsung Humantech Paper Award** Feb. 2025
Samsung Electronics Co., Ltd. [[Samsung Humantech](#) 🌐]
- 🏆 **9th Robotic Grasping of Manipulation Competition - Picking in Clutter** May. 2024
IEEE, IEEE RAS [[RGMC 2024](#) 🌐]
- 🏆 **KSME Student Creative Design Competition** Oct. 2021
The Korean Society of Mechanical Engineers (KSME) [[YouTube](#) 🌐]
- 🏆 **Creative and Intelligent Robot Contest** Sep. 2021
Daejeon Metropolitan City, Chungnam National University [[YouTube](#) 🌐]

GRANT

- **BK21 Research Encouragement Scholarship**  Fall. 2024
- **Brain Hanyang, Academic Excellence Scholarship** Spring. 2018