YOUNGJIN HONG

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TECHNICAL FOCUS

Robotics, Deep Learning, and Vision-Language Systems: Developing scalable frameworks for multimodal perception and control.

EDUCATION

University of Minnesota (UMN) — **Minneapolis, MN, USA**
Ph.D. Electrical Engineering — *Sep. 2024 – Present*

Sungkyunkwan University (SKKU) — **Suwon, Korea**
M.S. in Mechanical Engineering — *Mar. 2022 – Feb.2024*
B.S. in Mechanical Engineering — *Mar. 2016 – Feb. 2022*

WORK EXPERIENCE

Robot Research Assistant [Website] — **Minneapolis, MN**
***Choice Robotics Lab**, University of Minnesota* — *Sep. 2024 – Present*

- Developed vision- and language-guided robotic manipulation pipelines integrating action and spatial reasoning.
- Designed a self-learning framework enabling robots to autonomously generate and refine training data.

Robot Research Engineer [Website] — **Seoul, Korea**
***Hanwha Aerospace**, Manned-Unmanned Teaming (MUM-T) Research Center* — *Jan. 2024 – Jul. 2024*

- Built UGV simulation environments with Isaac Sim for vision-based autonomy.
- Contributed to a defense proposal for next-generation unmanned ground vehicle technologies.

SELECTED PROJECTS

Learning to Describe Manipulation Tasks from Human Demonstrations — *Jun. 2025 – Oct.2025*

- Proposed and implemented a self-improving Vision-Language-Action model integrating action-to-language cycles.
- Optimized multimodal fine-tuning pipelines to enhance robot task understanding and action grounding.

Development of Service Robot Technologies for Cleaning a Table — *Jul. 2022 – Dec.2024*

- Developed a learning-based 2D dish push planner for dishware with unknown physical properties.
- Automated synthetic train data using Isaac Gym simulator to train the push planning network.

Development of Cloud Robot Intelligence Augmentation, Sharing, and Framework — *Feb. 2022– Dec.2022*

- Designed a cloud-based robot learning framework with ROS-SSH and Docker. [Website].

SELECTED PUBLICATIONS / PRESENTATIONS

Youngjin Hong*, Houjian Yu* (*equal contribution) et al., "LACY: A Vision-Language Model-based Language-Action Cycle for Self-Improving Robotic Manipulation", *under review (ICRA 2026)* [Website].

Mingen Li, Houjian Yu, Yixuan Huang, **Youngjin Hong**, Hantao Ye, Changhyun Choi. "Hierarchical DLO Routing with Reinforcement Learning and In-Context Vision-language Models", *under review (ICRA 2026)* [Website].

Youngjin Hong et al**,** "Vision-based Stable 2D Planar Pushing of Dishware with 6-DOF Manipulator," *ECCOMAS Thematic Conference on Multibody Dynamics,* **2023.** [Website] [Paper][Demo]

Youngjin Hong et al**,** "Stable Dishware Pushing via Convolutional Neural Networks," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),* **2023.** (*Late Breaking Results)* [Website] [Paper][Demo]

SKILLS

Programming: **Python**, MATLAB, C++
Deep Learning and Robotics: **PyTorch, OpenCV, ROS**, **HuggingFace**, Issac (Gym & Sim), Gym, MuJoCo, Coppeliasim
Courses: Intelligent Robotics, **Robot Vision**, **Deep Learning**, Reinforcement Learning, Image Processing, **Advanced Topics in Generative AI and Conditional Generation**, Optimization Theory

ADDITIONAL INFORMATION

Patent: Multi-Modal Gripper with Foldable Suction Cup (KR 10-2023-0169750, published 2025)
Teaching: Teaching Assistant for **Robot Vision** (Fall 2025)