YOUNGJIN HONG

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RESEARCH INTERESTS

Vision-Language-Action Models, Multimodal Representation Learning, Generative Policies for Robotic Manipulation.

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*

- Conduct research on multimodal reasoning and generative refinement models for large-scale robot manipulation.
- Train and evaluate multimodal robotics models on University of Minnesota's high-performance GPU clusters, using SLURM for large-scale experimentation, job scheduling, and resource management.
- Developing a VLM-based multi-person attribute-conditioned tracking system for real-time visual monitoring.

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

- Built Unmanned Ground Vehicle (UGV) simulation environments with Isaac Sim for vision-based autonomy.
- Contributed to a defense proposal for next-generation unmanned ground vehicle technologies.
- Performed field testing and piloting of an unmanned ground vehicle autonomy prototype.

SELECTED PROJECTS

Generative Residual Action Refinement for Manipulation (Ongoing Research) *Oct. 2025 – Present*

- Building a Flow Matching–based generative refinement model that learns residual corrections to improve general-purpose manipulation policies.
- Benchmarking refinement architectures (Mamba-driven Flow Matching, CVAE) across diverse manipulation tasks.
- Preliminary results show improved success rates over base policies.

Language–Action Cycles for Learning Manipulation Tasks *Jun. 2025 – Oct.2025*

- Proposed a bidirectional language–action cycle that jointly learns action-to-language and language-to-action mappings for scalable behavior acquisition.
- Designed a semantic consistency verifier for filtering self-generated samples, enabling reliable self-improvement.

Vision-Based Planar Pushing for Service Robotics (SKKU) *Jul. 2022 – Dec.2024*

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

SELECTED PUBLICATIONS / PRESENTATIONS

Tian Xie*, **Youngjin Hong*** (*equal contribution) et al., "LIBERO-LQ: A Latency- and Quality-Aware Benchmark for Vision-Language-Action Models", Under review at ***ICML** 2026* [Website]

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

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

SKILLS

Programming: **Python (proficient)**, MATLAB, C++ (familiar) | **Tools/Infrastructure**: Docker, Git, Linux, SLURM, GPU Clusters
Deep Learning:
PyTorch, HuggingFace, Generative Models, **Vision-Language Models (VLMs), Vision-Language-Action (VLA) Models**
Robotics: ROS, Issac Gym, Issac Gym, MuJoCo, Coppeliasim
Courses: **Robot Vision**, **Deep Learning**, Reinforcement Learning, **Advanced Topics in Generative AI,** Optimization Theory