ADAPTIVE SKILL COORDINATION

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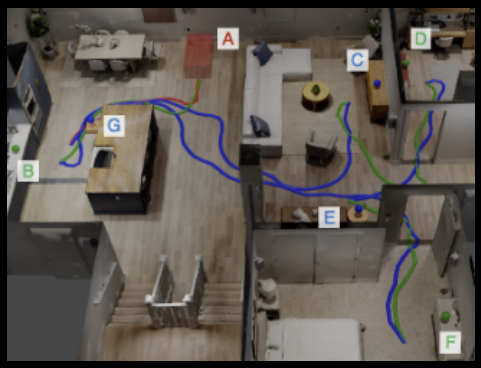
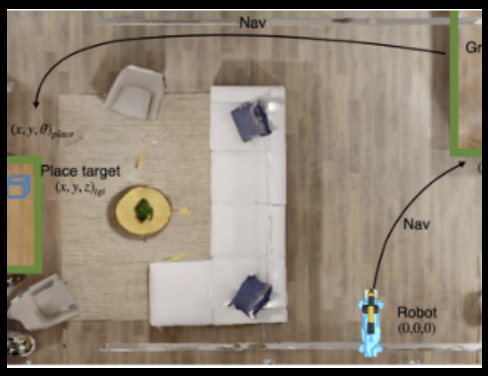
INTRODUCTION

- Long-Horizon Tasks
- Pick-and-Place
- ASC
  - Basic Visuomotor Skills
  - Skill Coordination Policy
  - Corrective Policy
- Spot
- How does this fit in the AI landscape?



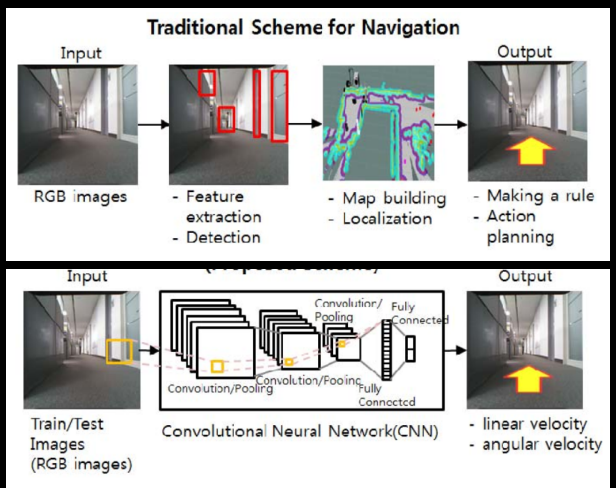
SUMMARY – PICK-AND-PLACE

- No Exact Location
- Receptacles (Approximate Locations)
- Episodic Coordinate System
  - (x, y, θ)



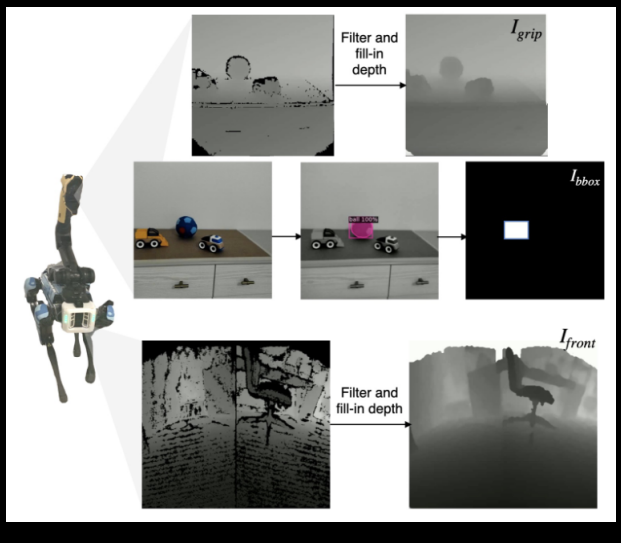
RELATED WORKS

- Seq-Skills
- Modular training
- End-to-end
- Hierarchical RL and options



SUMMARY - SPOT

- Front
- Gripper
- Bounding Box Image
- Joint Angles
- Egomotion Sensor

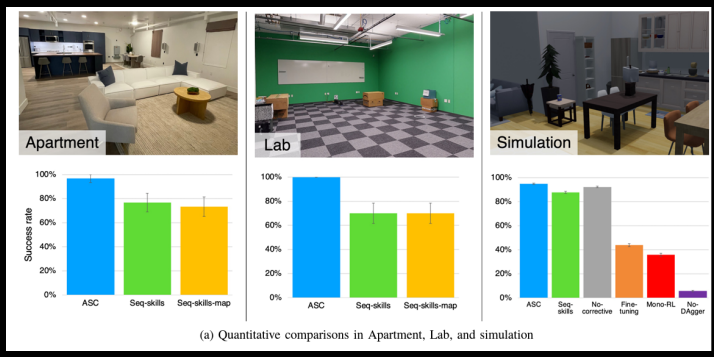


SUMMARY - TRAINING

- Basic Skills
  - Navigation
  - Pick
  - Place
- Skill Coordination Policy/Corrective Policy
  - Probability (Learned Gating Network)
  - Superset of Observations
  - TAMP
- Simulations
- Reward
- Convolutional Neural Network, Multi-Layer Perceptron, GRU Layer, Gaussian

RESULTS

- Outperformed previous systems
- >90% accuracy in real world
- No privileged information
- Robustness to changes



(a) Quantitative comparisons in Apartment, Lab, and simulation

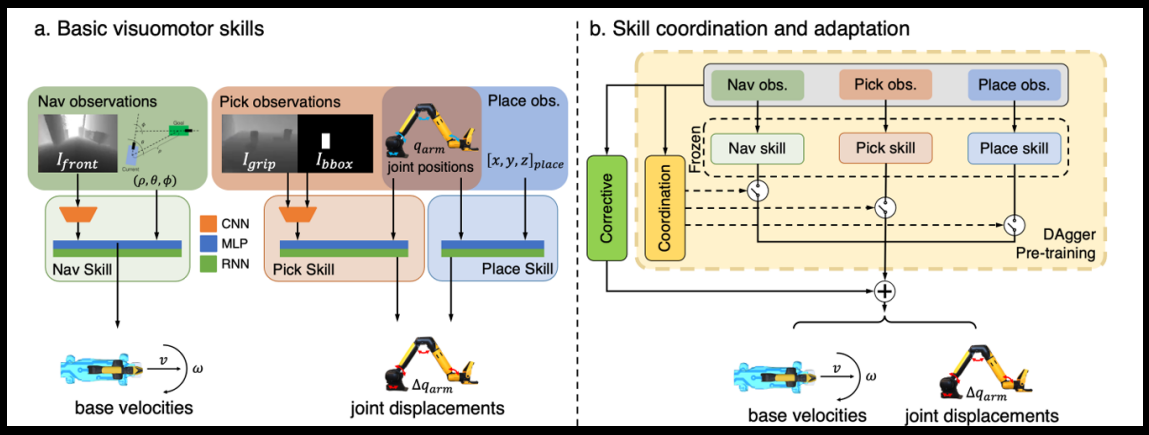
EVALUATION

- Adaptation to new situations
- No privileged information
- Zero-shot deployment

REFERENCES

- https://ai.meta.com/research/publications/adaptive-skill-coordination-for-robotic-mobile-manipulation/
- https://www.semanticscholar.org/paper/End-to-end-deep-learning-for-autonomous-navigation-Kim-Jang/15d06ada56c0431b9fd71041391325523ef5c203

ADDITIONAL SLIDES



ADDITIONAL SLIDES

- Trained on COCO and videos for object detection