HIERARCHY OF ROBOTS

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1 Objective

Transfer knowledge learnt by a primitive robot morphology to a more complex robot morphology. Dense reward

2 Background

The current approaches setup the problem as multi-task RL objective or Emboidiment aware architecutes. In the former case, the policy cannot be easily extrapolated to unseen emboidiments. [1] In the latter case, controllers or action knowledge is not carried over to the new morphology. [2]

3 Approach

Instead of passing the morphology information to a fixed architecture to meet a diversity of morphologies, an alternative approach could be to let the architecture grow with the complexity of the morphology.

References

[1] M. Parakh, A. Kirchmeyer, B. Han, and J. Deng, "AnyBody: A Benchmark Suite for Cross-Embodiment Manipulation," May 2025.

[2] M. Naya-Varela, A. Faíña, and R. J. Duro, "Morphological Development in Robotic Learning: A Survey," *IEEE Transactions on Cognitive and Developmental Systems*, vol. 13, no. 4, pp. 750–768, Dec. 2021.