PorphIt: PPO Robot Manipulator Morphology Design

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Abstract—High costs, lack of tailorability, and lack of retrofitting are some of the most cited problems for the adoption of the robotics in industrial settings [1]. We want to address this problem by creating an automation pipeline through which a use case is identified and a robot optimized for that use case is created. By matching the robot to the task we can ensure that robot can perform that task and only the parts needed for that task are used, reducing cost. Here we describe the process by which robot manipulator morphologies are optimized to particular tasks using a PPO agent.

Index Terms—reinforcement learning, robot morphology, manipulator design

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References

[1] McKinsey & Company, "Industrial robotics: Insights into the sector's future growth dynamics," McKinsey & Company, Tech. Rep., 2019. [Online]. Available: https://www.mckinsey.com/business-functions/operations/our-insights/industrial-robotics-insights-into-the-sectors-future-growth-dynamics