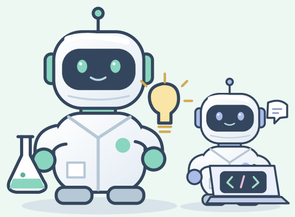
RoboMetaHarness

A growing mechanism library, a stronger harness for each task.

Frozen weights



Loop 1

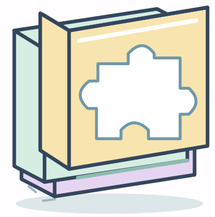
Continual Mechanism Discovery

HarnessStudio

Perception

Discover + review

Control

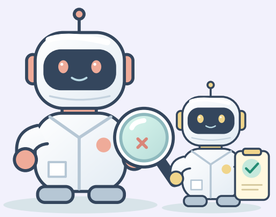


Reusable mechanisms

Planning

Retrieve + compose

Recovery



Loop 2

Task-Conditioned Harness Discovery

RoboMetaHarness

Return code + DEV lessons for review

Find + lift the cube

Find the hidden cube and lift it.

Guava-4B · GUAVA

Mid-run Final

Complete both subgoals

Turn on the stove; put the moka pot on it.

π_0-FAST · LIBERO-10

Mid-run Final

Stove + moka pot

Turn on the stove; put the moka pot on it.

$\pi_{0.5}$ · L-Pro swap

Mid-run Final

Recover unseen scenes

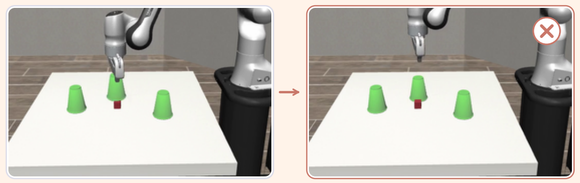
Move the bowl from the top drawer to the plate.

OpenVLA · L-Pro spatial subset

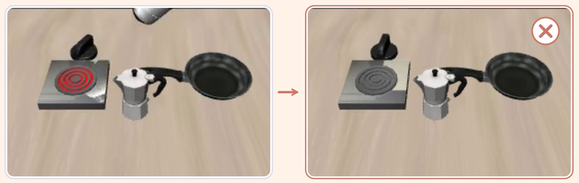
Mid-run Final

Baseline / reference failures

GUAVA · FAIL



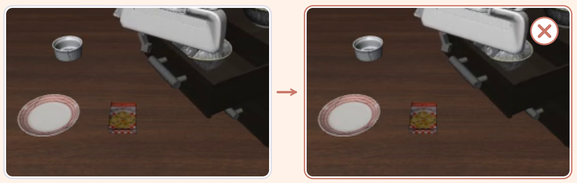
Plain policy · FAIL



Meta-Harness · FAIL

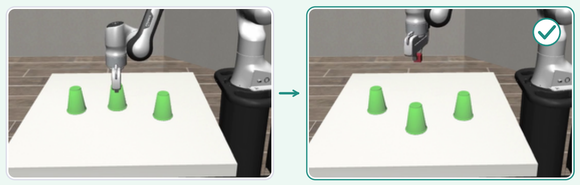


Plain policy · FAIL

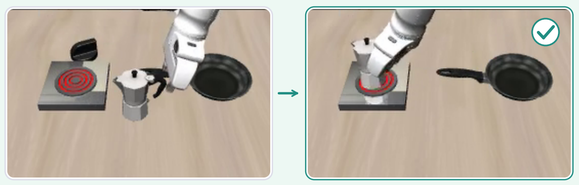


Discovered harness successes

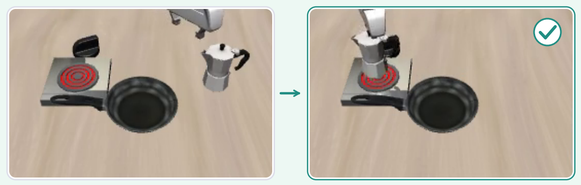
GUAVA++ · SUCCESS



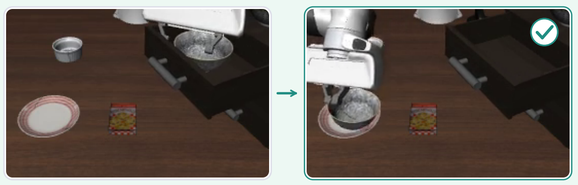
U5+Z · SUCCESS



RoboMetaHarness · SUCCESS

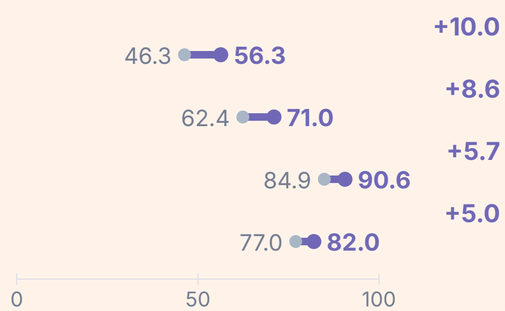


+ PGD-Ground D1 · SUCCESS



Improve existing harnesses

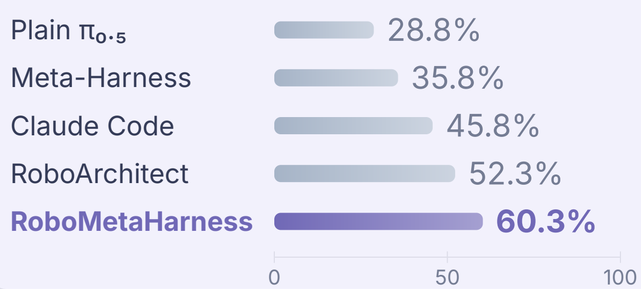
Success (%) · reference → ours



Discover stronger harnesses

+31.5 pp vs plain

$\pi_{0.5}$ · L-Pro swap · 400 paired episodes



Transfer across frozen policies

L-Pro spatial subset · 100 fresh starts / policy

