RoboMetaHarness

Failure-guided discovery and composition of harnesses for specific frozen policies and deployment settings.

Training-free · frozen weights

Loop 2 — Task-Conditioned Harness Discovery

Analyst · Scientist · Coder · Evaluator · Critic

New task — policy · tools · budget

→ **Diagnose** — public failure evidence

→ **Author / compose** — retrieve · compose · code

→ **Development tests** — paired probes · review

→ **Unseen tasks & scenes** — Held-out validation / test

Development feedback

Pinned mechanisms & interfaces

Code + development counterexamples

HarnessStudio | Loop 1 — Continual Mechanism Discovery

Research agents

Code, prompts & interfaces evolve

A self-evolving research substrate for discovering, implementing, evaluating, and accumulating reusable robot harness mechanisms.

Mechanism space

12 families + open research

Vision · Language · Sampling

Steering · Uncertainty · Recovery

Retrieval · Evolution · Planning

Skills · Verification · Contact

+ Open research
Invent beyond the library

Harness programs

Retrieve · invent · implement · review

Propose → Code → Review

Accumulate code + counterexamples

Grow mechanisms + interfaces

Implemented harnesses

- GUAVA
- RoboHarness
- Harness VLA (RPent)
- SCALE

+30 more packages

- Components
- Whole controllers

Compose · code · extend

Models & execution

Policy catalog

+16 more

- OpenVLA
- GR00T N1.6
- $\pi_{0.5}$
- CogACT
- π_0-FAST
- OFT

Toolbox

Frozen models

SAM · LLM · VLM · Depth (plug-in) · Detector

optional calls

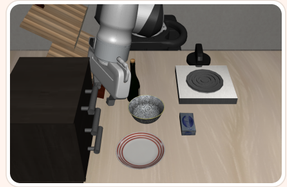
Execute harness

Capability-aware composition

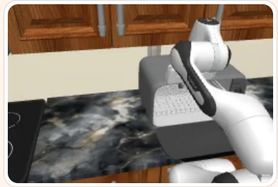
Observe · policy/tools as needed · act

Tasks & scenes

Representative observations



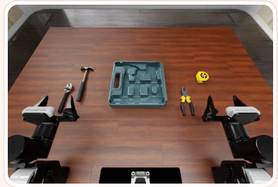
LIBERO / LIBERO-Pro



RoboCasa365



SIMPLER



RoboDojo

+15 more benchmarks

Public observations · frozen policies and tools · compatible interfaces

Held-out traces stay outside discovery