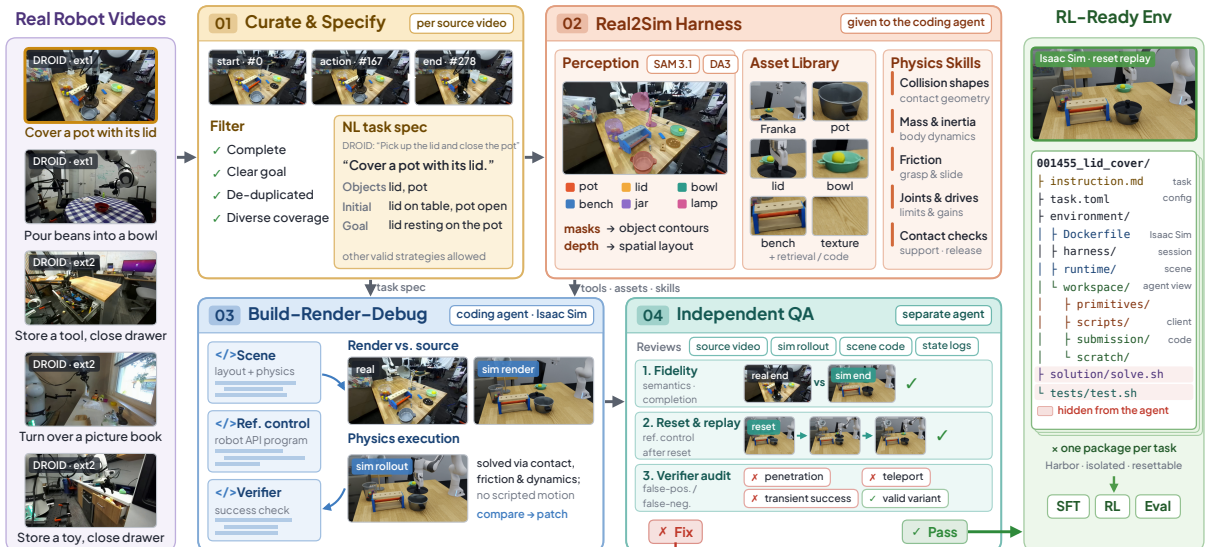
Real Robot Videos
DROID · ext1
Cover a pot with its lid
DROID · ext1
Pour beans into a bowl
DROID · ext2
Store a tool, close drawer
DROID · ext2
Turn over a picture book
DROID · ext2
Store a toy, close drawer
01 Curate & Specify
per source video
start · #0
action · #167
end · #278
Filter
✓ Complete
✓ Clear goal
✓ De-duplicated
✓ Diverse coverage
NL task spec
DROID: "Pick up the lid and close the pot"
"Cover a pot with its lid."
Objects lid, pot
Initial lid on table, pot open
Goal lid resting on the pot
other valid strategies allowed
task spec
02 Real2Sim Harness
given to the coding agent
Perception
SAM 3.1
DA3
pot
lid
bowl
bench
jar
lamp
masks → object contours
depth → spatial layout
Asset Library
Franka
pot
lid
bowl
bench
texture
+ retrieval / code
Physics Skills
Collision shapes
contact geometry
Mass & inertia
body dynamics
Friction
grasp & slide
Joints & drives
limits & gains
Contact checks
support · release
tools · assets · skills
03 Build–Render–Debug
coding agent · Isaac Sim
</>Scene
layout + physics
</>Ref. control
robot API program
</>Verifier
success check
Render vs. source
real
sim render
Physics execution
sim rollout
solved via contact, friction & dynamics; no scripted motion
compare → patch
04 Independent QA
separate agent
Reviews
source video
sim rollout
scene code
state logs
1. Fidelity
semantics · completion
real end
vs
sim end
2. Reset & replay
ref. control after reset
reset
3. Verifier audit
false-pos. / false-neg.
✗ penetration
✗ teleport
✗ transient success
✓ valid variant
✗ Fix
✓ Pass
feedback → revise & re-audit
RL-Ready Env
Isaac Sim · reset replay
001455_lid_cover/
instruction.md task
task.toml config
environment/
Dockerfile Isaac Sim
harness/ session
runtime/ scene
workspace/ agent view
primitives/
scripts/ client
submission/ code
scratch/
solution/solve.sh
tests/test.sh
hidden from the agent
× one package per task
Harbor · isolated · resettable
SFT
RL
Eval