DROID

A Large-Scale In-The-Wild Robot Manipulation Dataset

Khazatsky et al. · RSS 2024 · arXiv:2403.12945

The problem

- Robot data comes from a few labs and scenes
- Policies break in new rooms, with new objects
- Robot actions are hard to collect at web scale

so

The recipe

Same Franka design, 18 robots, 13 institutions

↓

50 collectors teleoperate with a Quest 2

↓

Prompts: move cameras, lights, objects

↓

76k demos · 350 hours

564 scenes in 52 buildings

86 tasks (verbs)

1,417 camera viewpoints

50 data collectors

Each episode

- 2 exterior + 1 wrist stereo camera
- Depth and camera calibration
- Crowdsourced instructions
- 16k failed episodes: released, not counted

then

The test

50–150 demos per task → + 40k DROID pool, 50/50 batches → 6 tasks · 4 places

+22 / +17

points vs OXE co-training (in-dist. / OOD)

Is it size or diversity?

7,362 demos, 20 scenes

- Many demos per scene
- Weaker out of distribution

vs

7,362 demos, diverse scenes

- Same size, more scenes
- Better out of distribution

Takeaway

- Scene diversity helps, even at equal size
- Shared hardware design across 13 institutions
- Not zero-shot: every result uses task demos

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Active listening · DROID

Write while you listen. One line per box is enough.

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Date _____ Presenter _____ Role _____

Their main claim, in my words

The evidence they show

What I would push on

My question for the room

How it connects to my work

Listen for

- ☐ What is diverse, and what is fixed (robot and gripper model)?
- ☐ How the protocol creates diversity on purpose
- ☐ The baselines: in-domain only, OXE co-training
- ☐ The test that separates diversity from size
- ☐ Is any result zero-shot (no in-domain demos)?

Ask the room

1. Scenes and viewpoints vs OXE's 22 embodiments: which trade, when?
2. What would a fair zero-shot test of DROID look like?
3. Do moving cameras buy viewpoint robustness? How to measure it?

Page, video and FAQ:
bushuyeu.com/read-along-droid