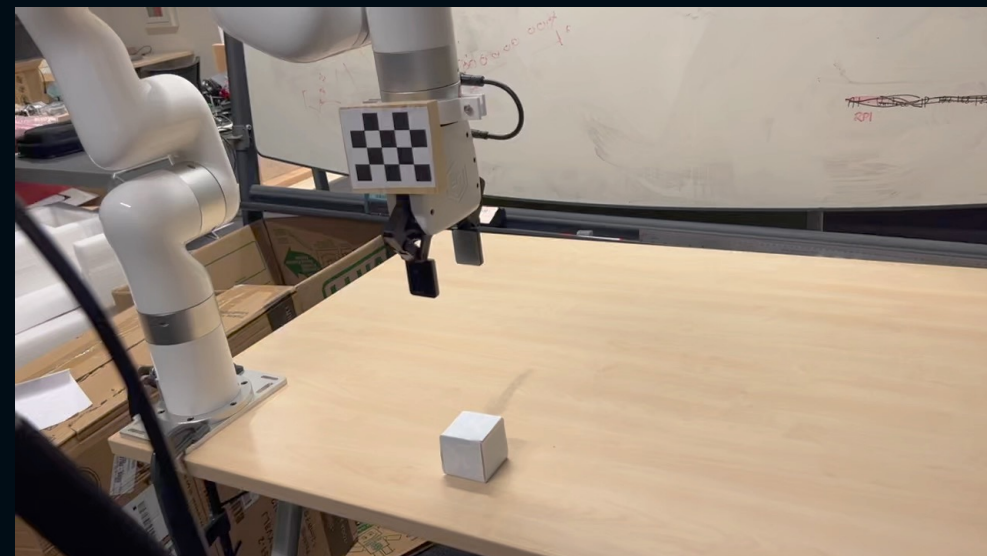
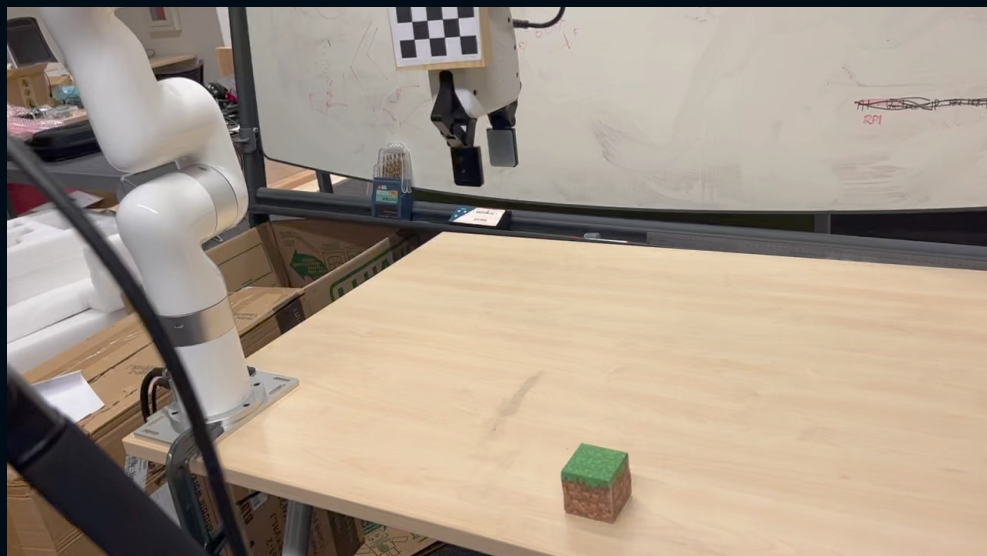
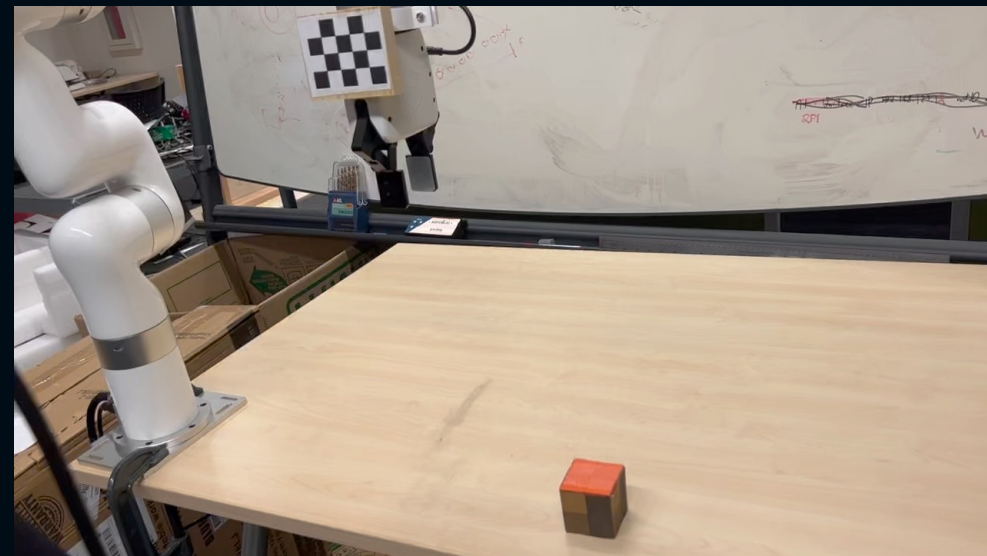
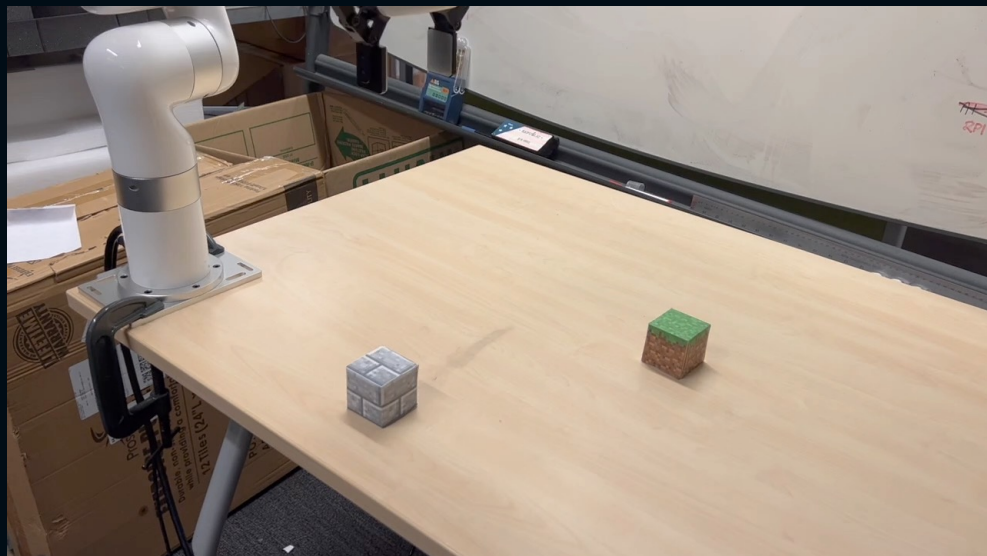


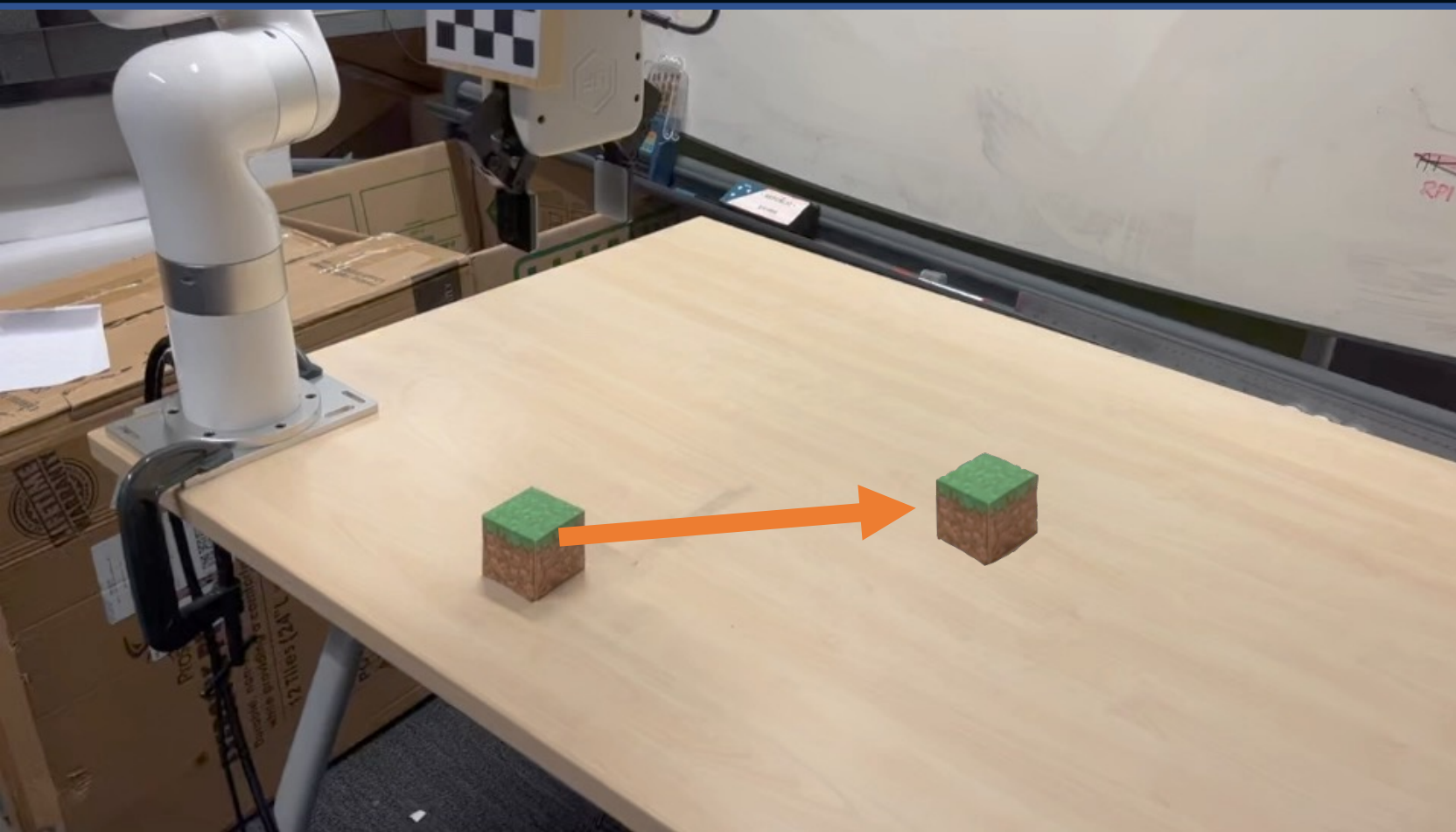
Abstract-to-Executable Trajectory Translation for One-Shot Task Generalization

Stone Tao, Xiaochen Li, Tongzhou Mu, Zhiao
Huang, Yuzhe Qin, Hao Su

UC San Diego





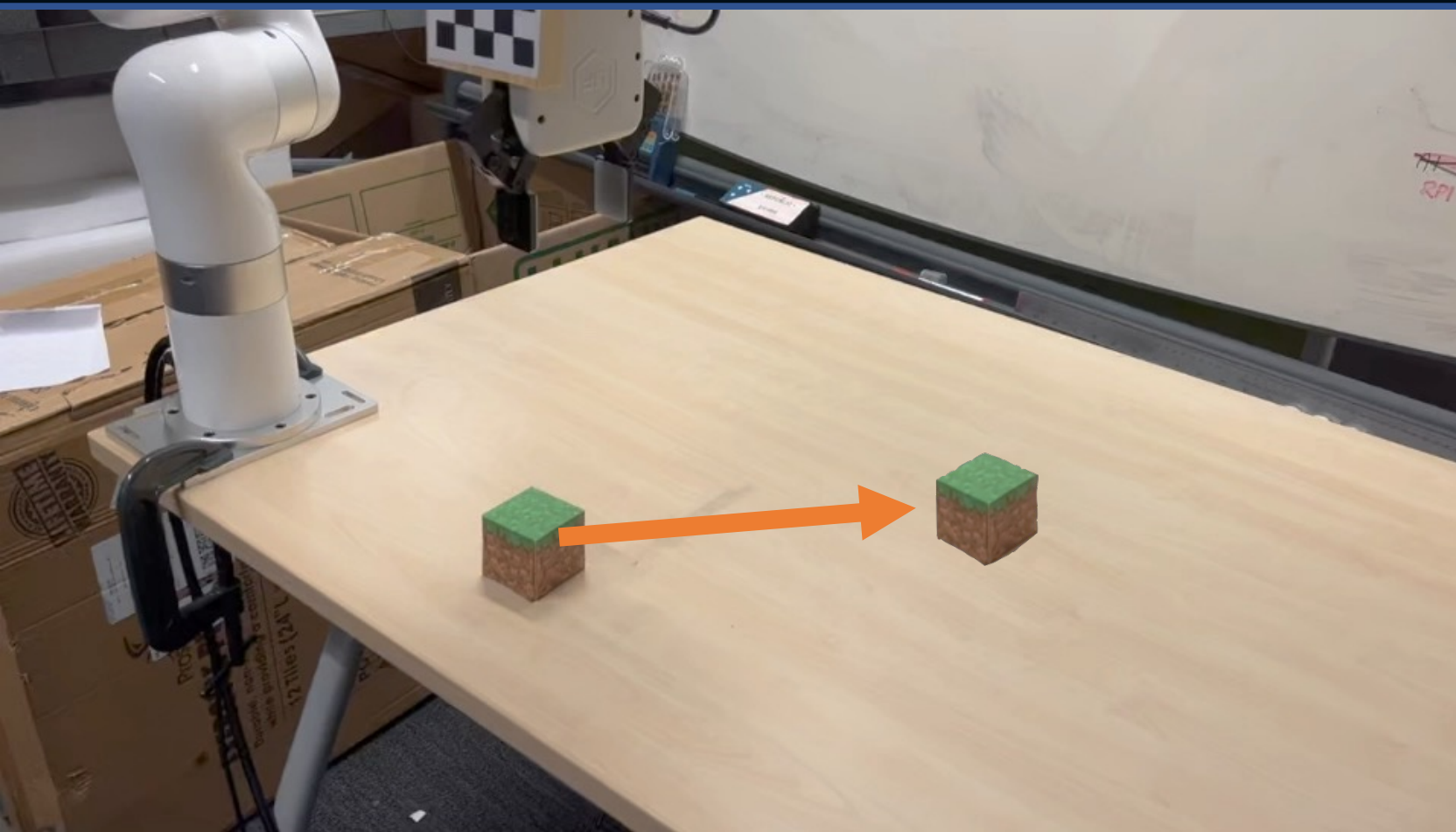


We abstract an environment into simplified pointmasses

Remove low-level details like physical dynamics

Let policy focus on low-level control only



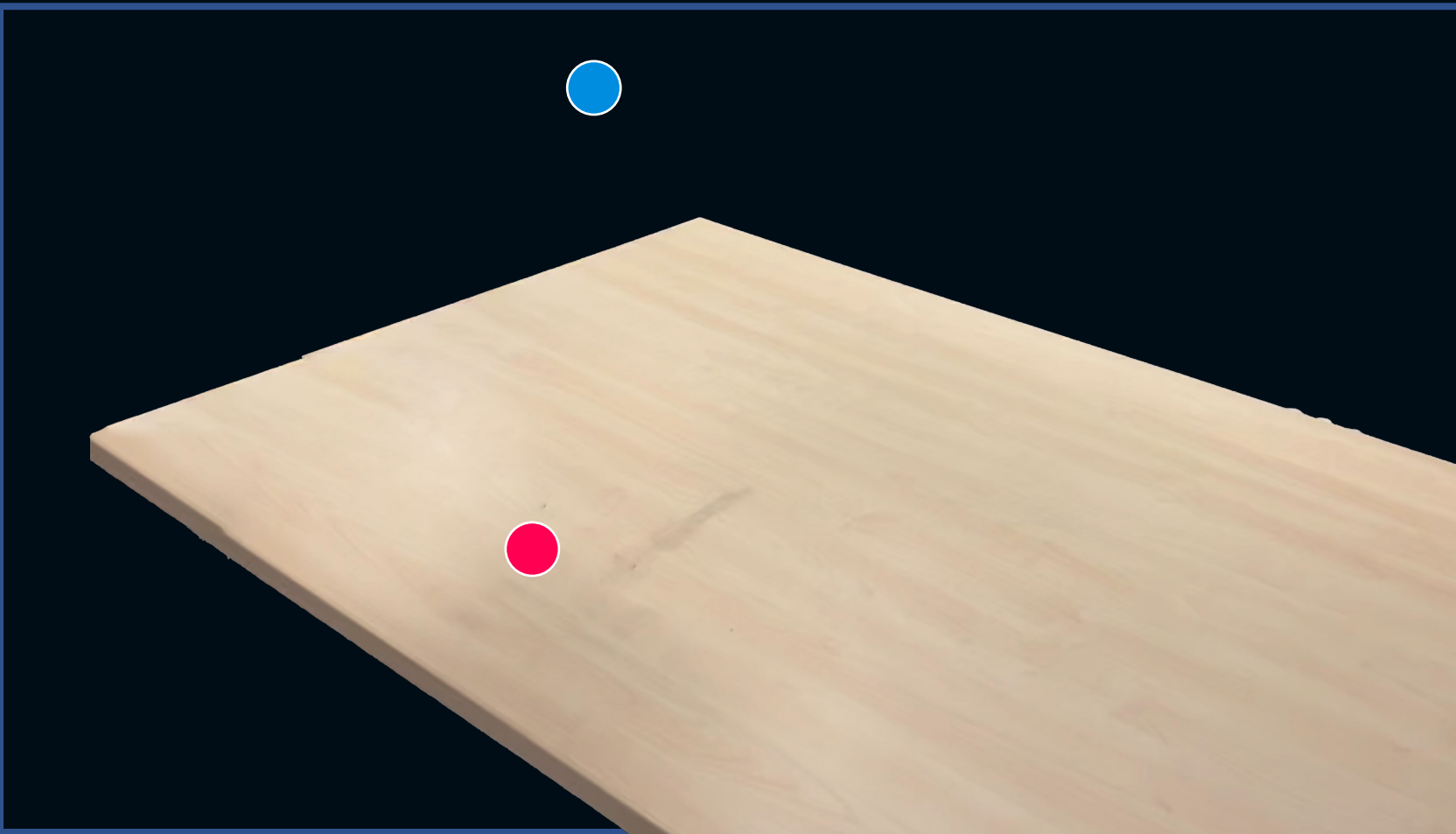


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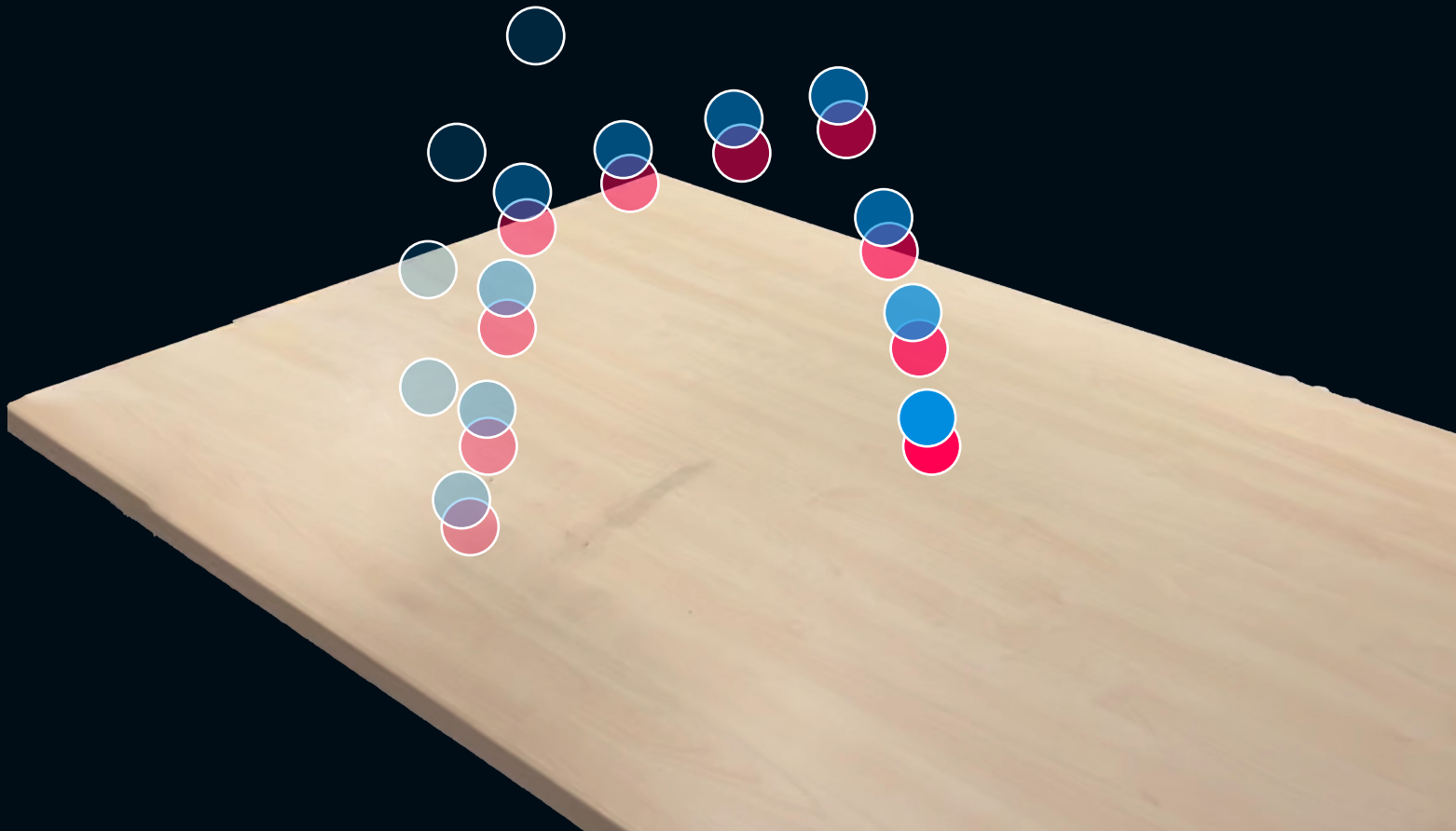
Easily solve in abstract environment

Abstract trajectories are feasible

Human video demos or low-level demos are infeasible

● Robot Pointmass ● Object Pointmass





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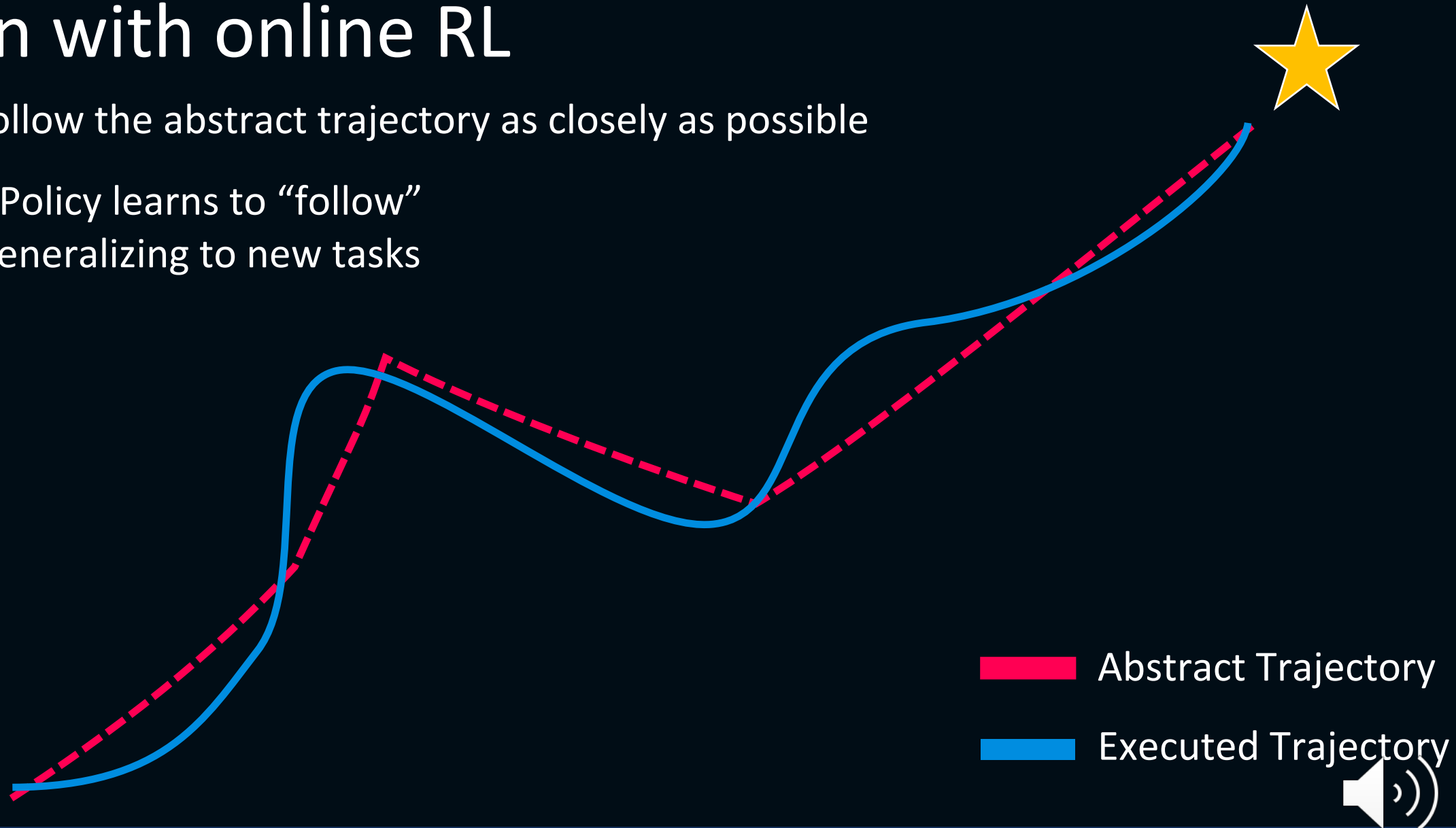
● Robot Pointmass ● Object Pointmass



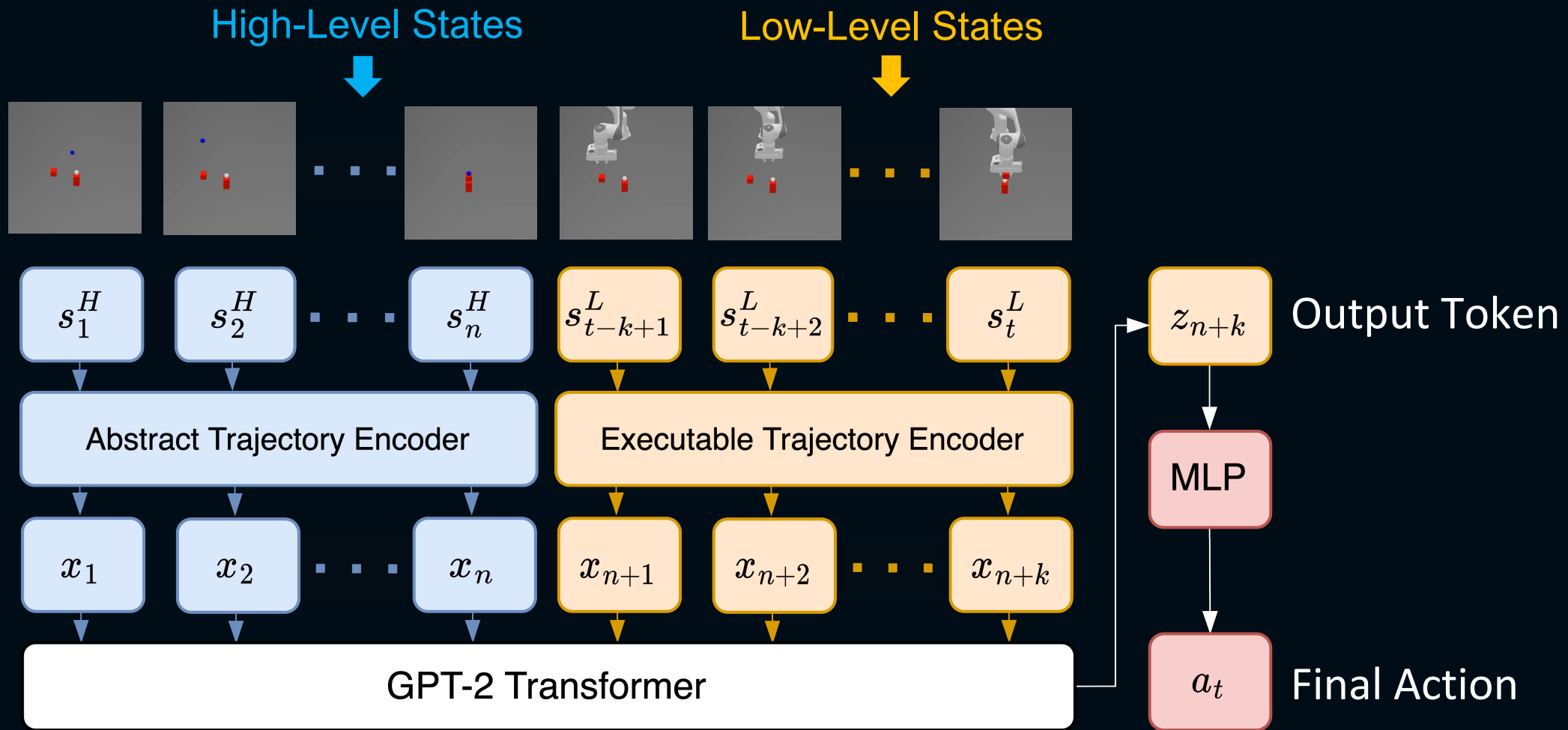
Train with online RL

Task: Follow the abstract trajectory as closely as possible

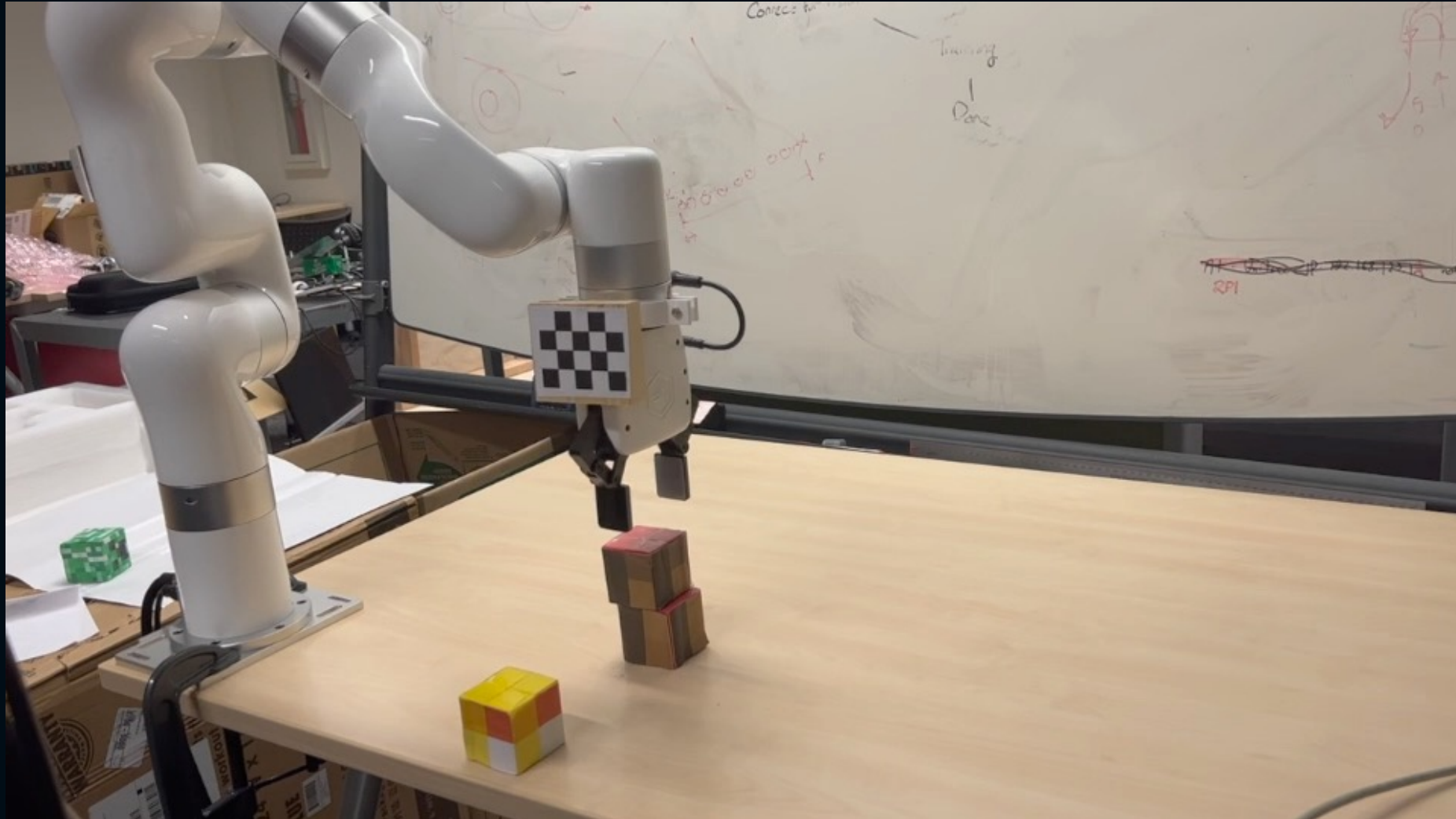
Result: Policy learns to “follow”
Easily generalizing to new tasks



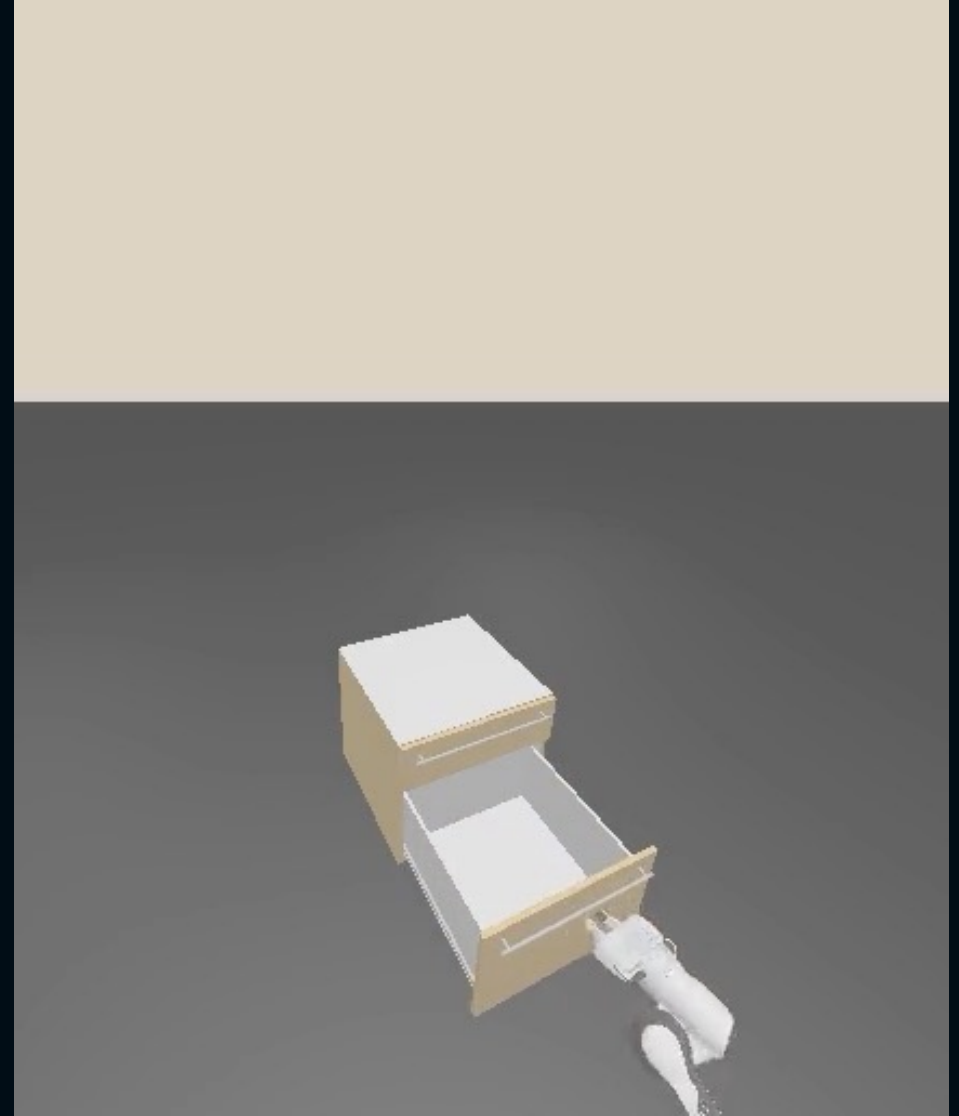
TR²: Trajectory Translation



One-shot Novel Behaviors



Re-planning



Key Takeaways

- Abstract Trajectories
 - Easy to generate for many tasks
 - Transformers discover sub-goals
- More Feasible than human/low-level demos
- Long-horizon task generalization
- Re-planning

More Information on Website



<https://trajectorytranslation.github.io/>

