Week 6 Update

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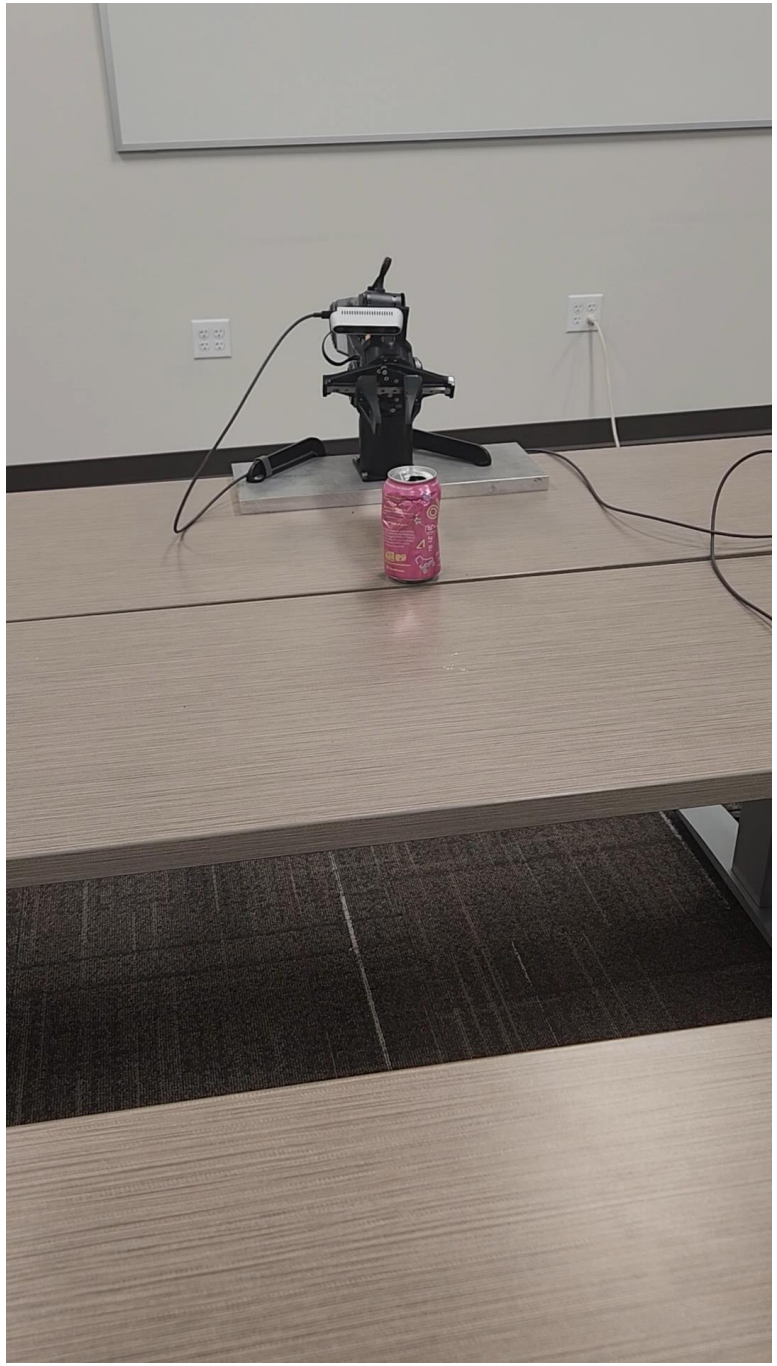
Project Overview

- Project Title: Efficient and Robust VLAs for Real-Time Robotic Manipulation
- Problem: Current VLA models are
  - Slow
  - Computationally Expensive
- Goal: Compress Pi0.5



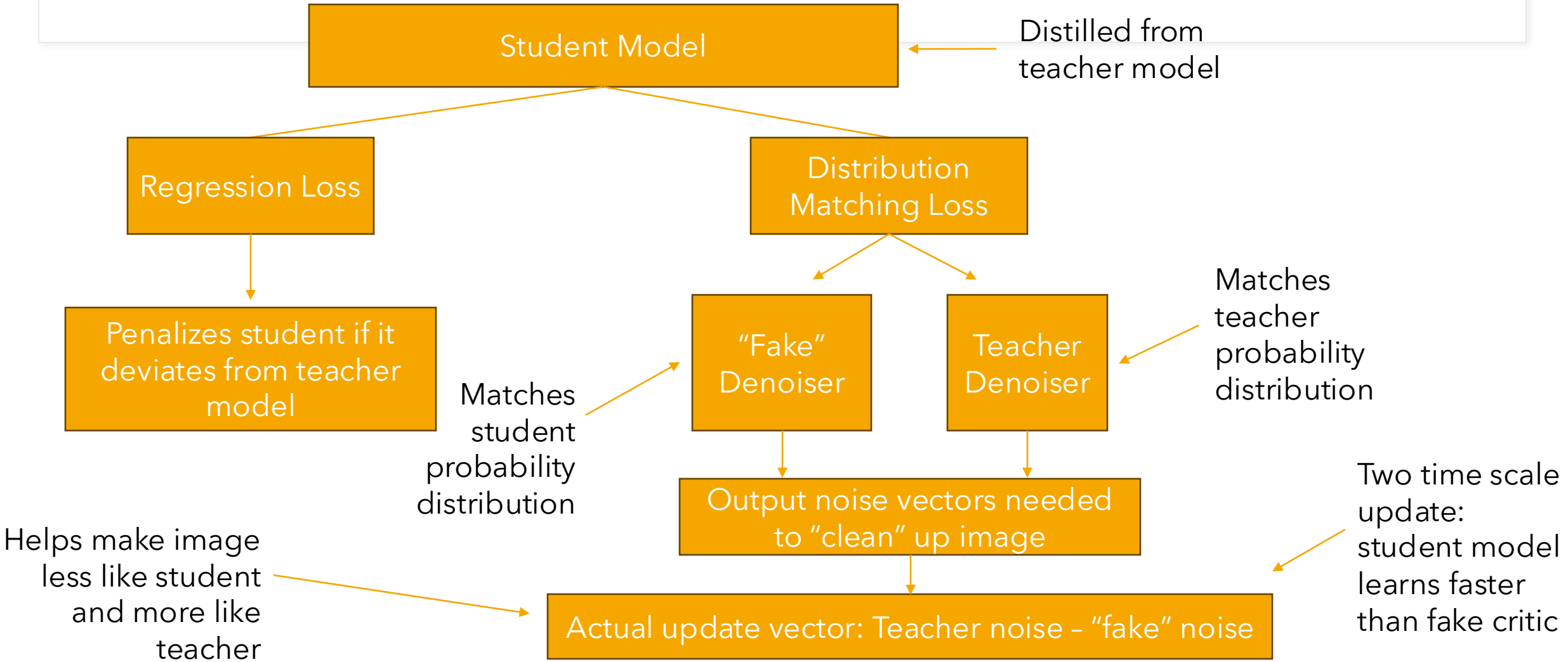


Robot Update

- Retrained model with new data
  - 15k training steps
  - Did horribly
- Retrained model with 25k training steps
  - Also did horribly
  - Why?

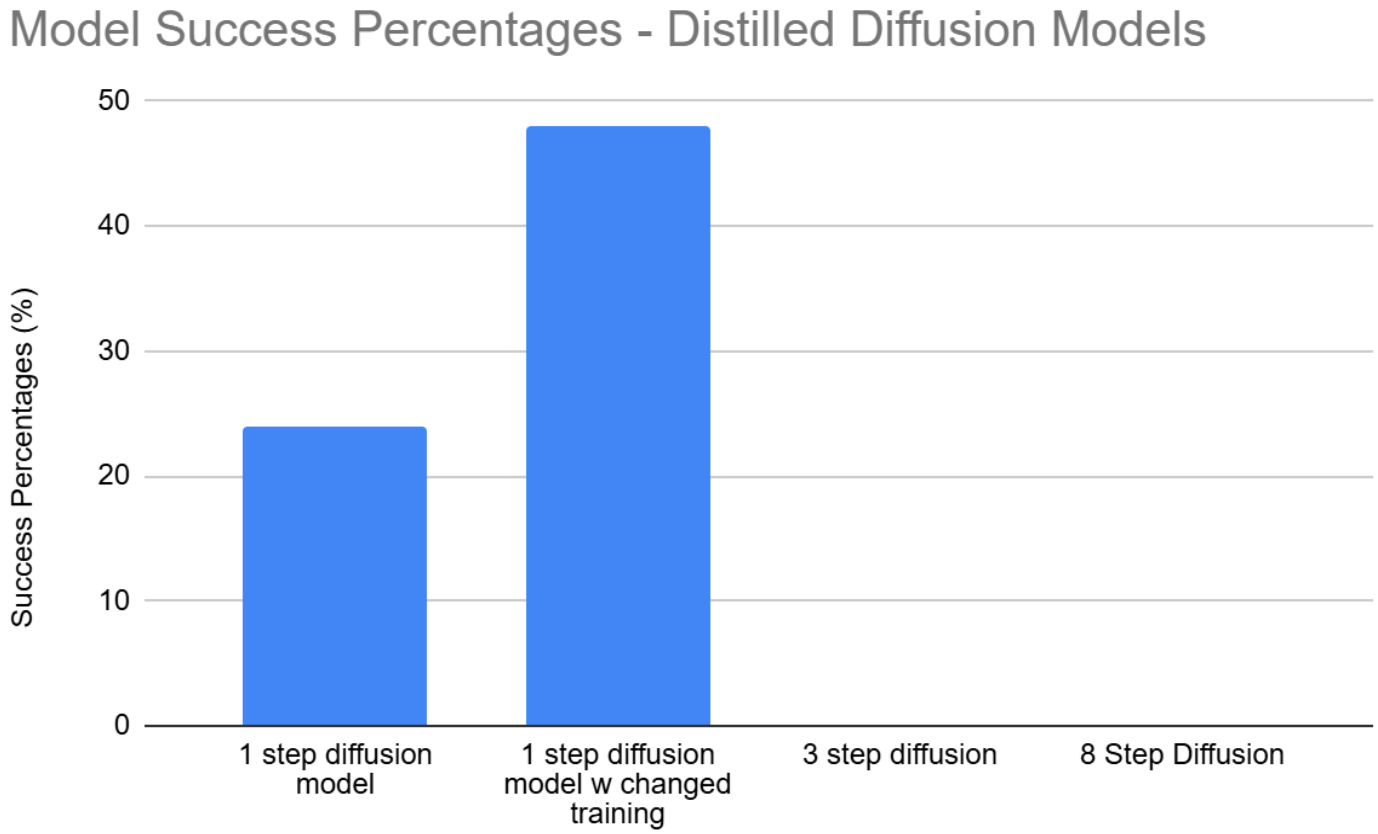
Yin et al. MIT
2023, CVPR 2024

Recap: Distribution Matching Distillation



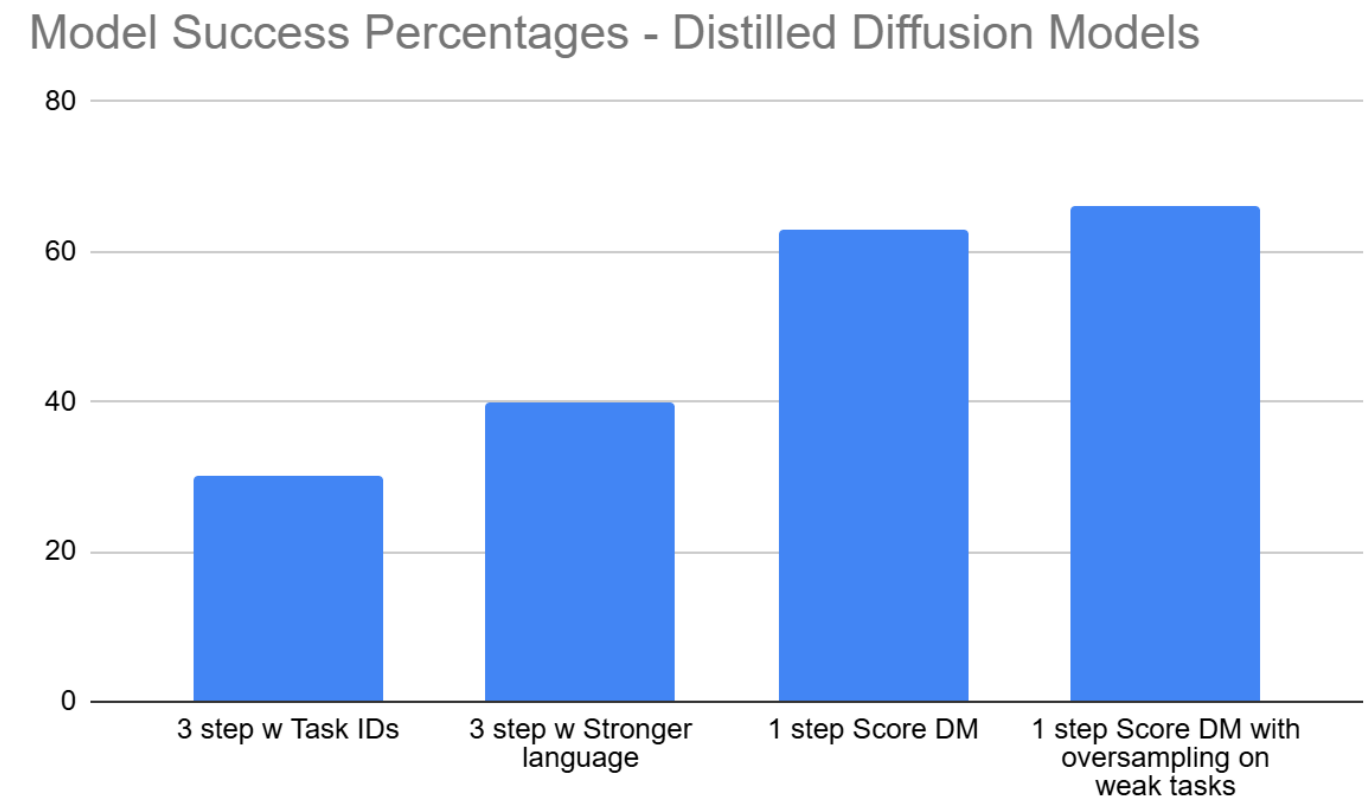
Last Week's Diffusion Distillation

- 1 step diffusion model – 24%
- 1 step diffusion model w changed training – 48%
- 3 step Diffusion - ~0%
- 8 Step Diffusion -~0%



Diffusion Distillation

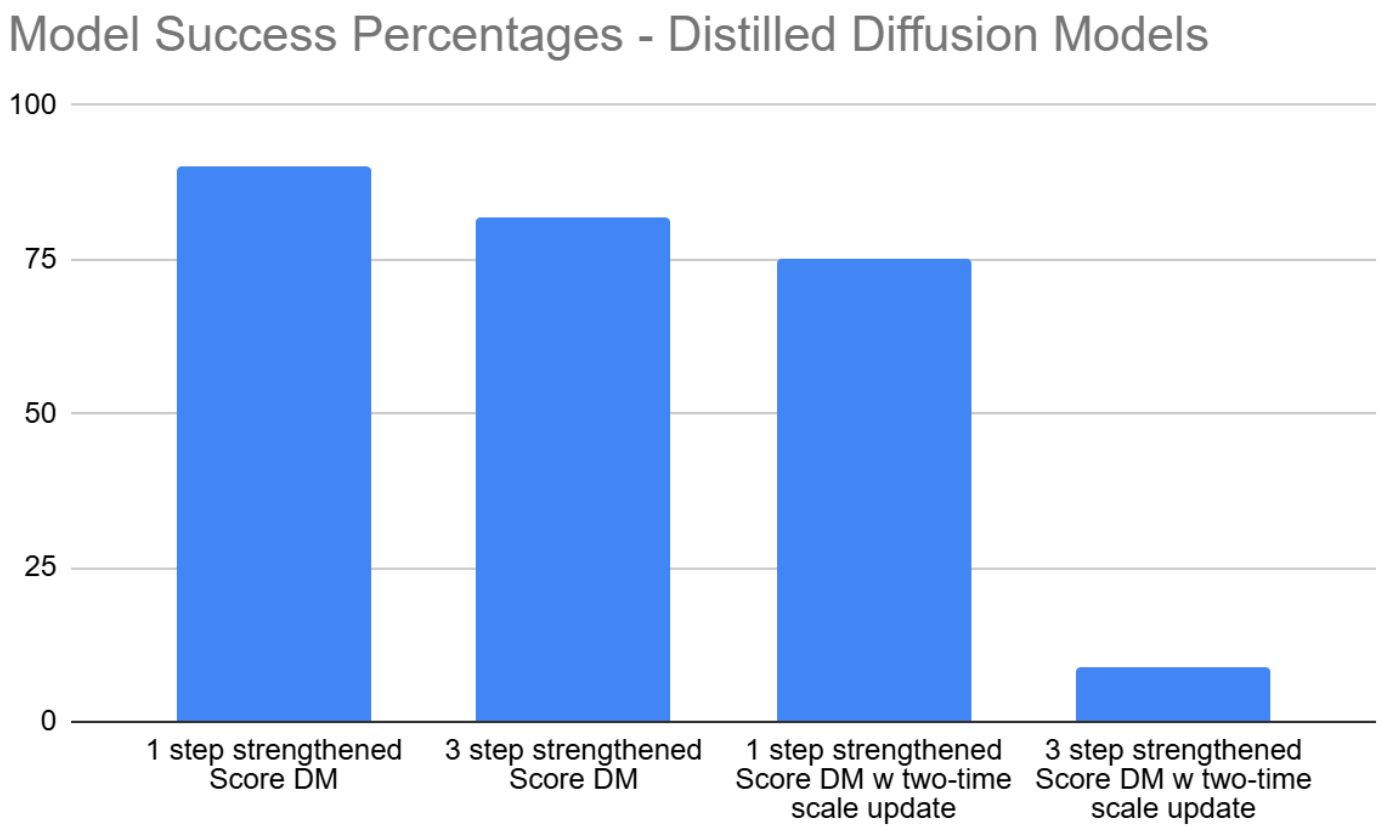
- 3 step w Task IDs – 30%
- 3 step w Stronger language – 40%
- 1 step Score DM - 63%
- 1 step Score DM with oversampling on weak tasks – 66%



Diffusion Distillation

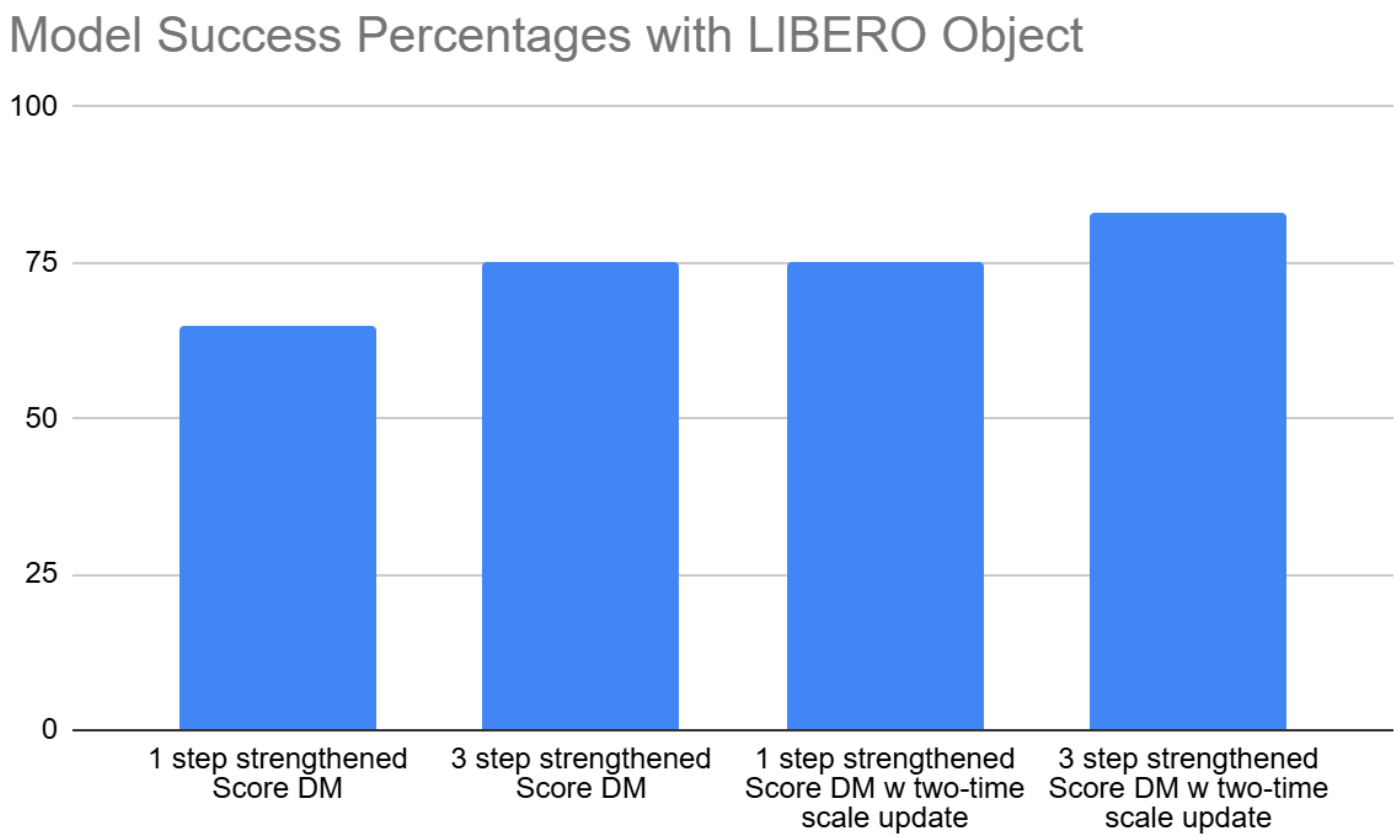
- 1 step strengthened Score DM – 90%
- 3 step strengthened Score DM – 82%
- 1 step strengthened Score DM w two-time scale update – 75%
- 3 step strengthened Score DM w two-time scale update – 9%

*Done with LIBERO Spatial

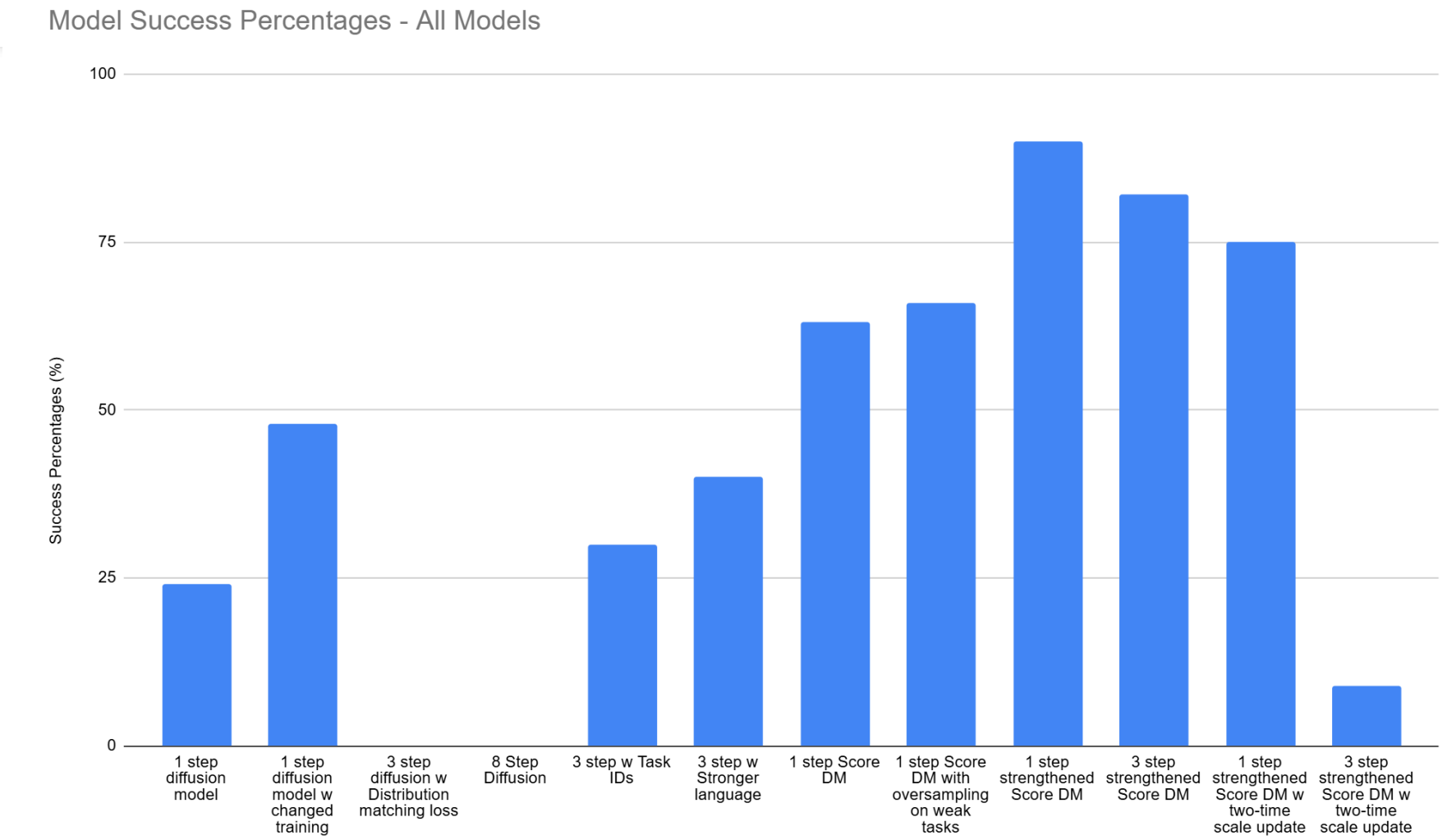


Diffusion Distillation w LIBERO Object

- 1 step strengthened Score DM – 65%
- 3 step strengthened Score DM – 75%
- 1 step strengthened Score DM w two-time scale update – 75%
- 3 step strengthened Score DM w two-time scale update – 83%



Diffusion Distillation – All Models (Spatial Only)



Next Steps

- Collect data from all LIBERO suites to see trends
- Improve distilled models
- Continue working on getting arm working
- New Idea