FewSOL: A Dataset for Few-Shot Object Learning in Robotic Environments

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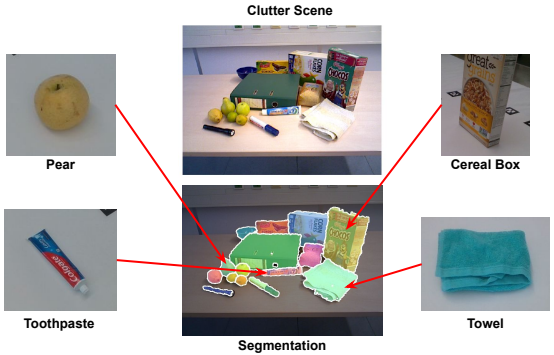


Goal: A robot should identity various (daily) objects in clutter scenes
Our approach: Object Classification using Few-Shot Learning

Internet images, not suitable for indoor robotic settings!!!

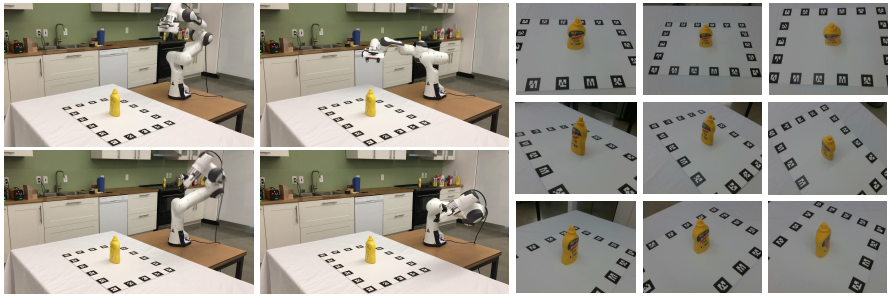
Hence, 1. We introduce the FewSOL Dataset

- 336 objects
- 198 object categories
- 9 images per object

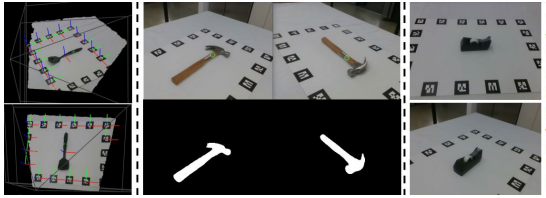
Annotations

RGB-D images, Segmentation Masks
Object Poses,Object Attributes

2. Benchmark FewSOL using Meta-Dataset Framework and Few-Shot CLIP methods

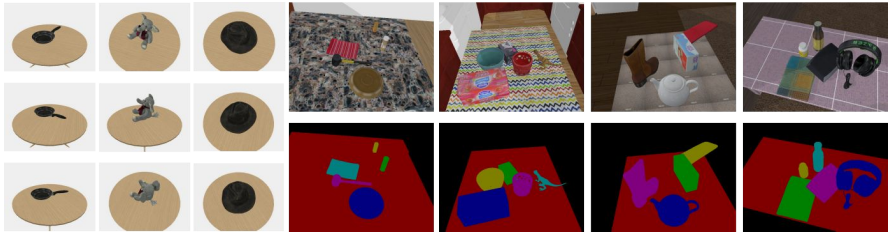


Segmentation Masks, Object Poses, Object Attributes



1. What is the name of the object in these images?
tape and tape holder, tape, support and adhesive tape
2. What is the category of the object in these images?
stationary, stationery / adhesive tape
3. What is the object in these images made of?
plastic, paper, metal
4. What can be the object in these images used for?
placing the tape, stick, wrap, separate
5. What is the color of the object in these images?
black, transparent, white, yellow

Augmented with Synthetic data



Few-Shot Object Recognition in Unstructured Robotics Environments (Dataset+Benchmark)