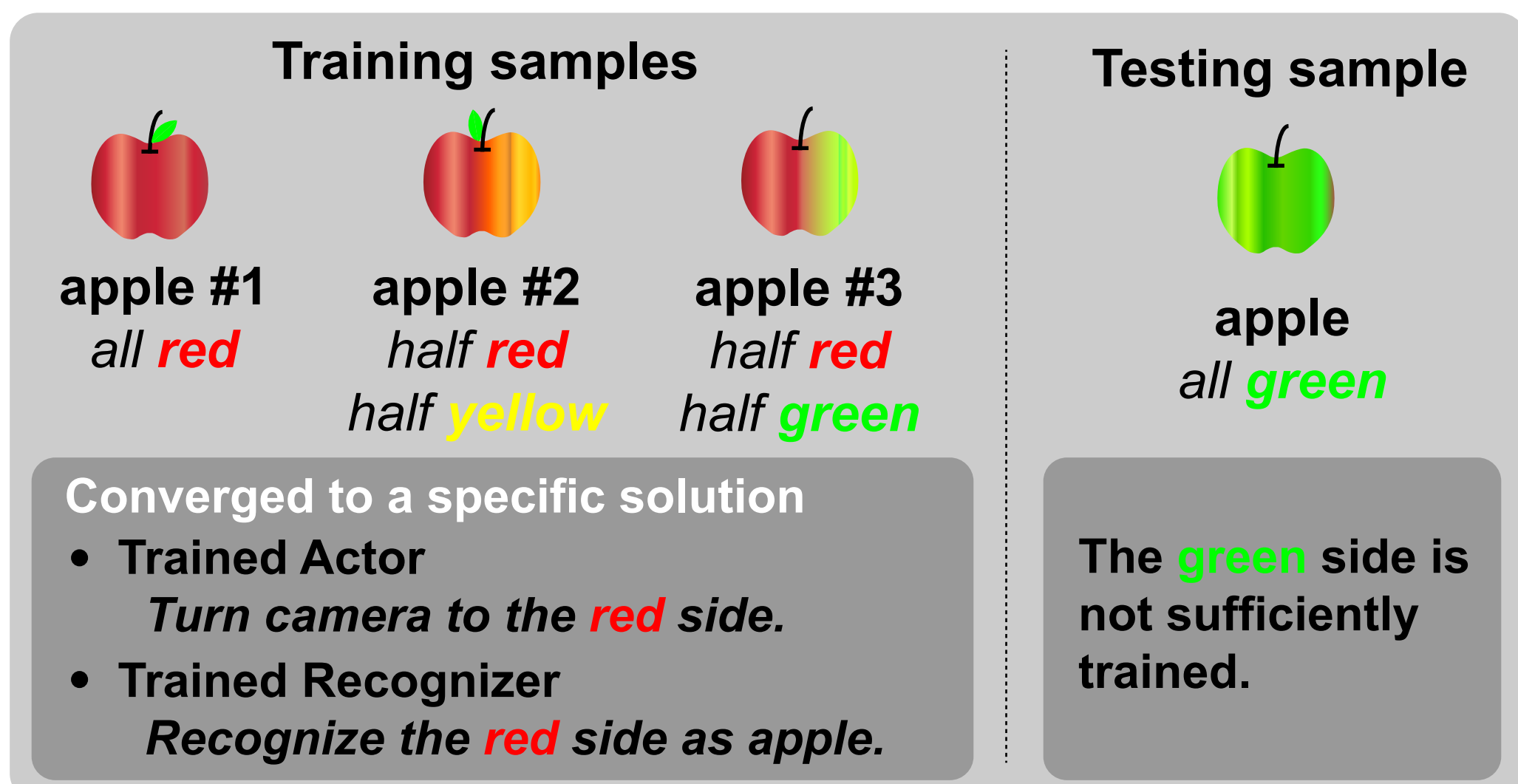


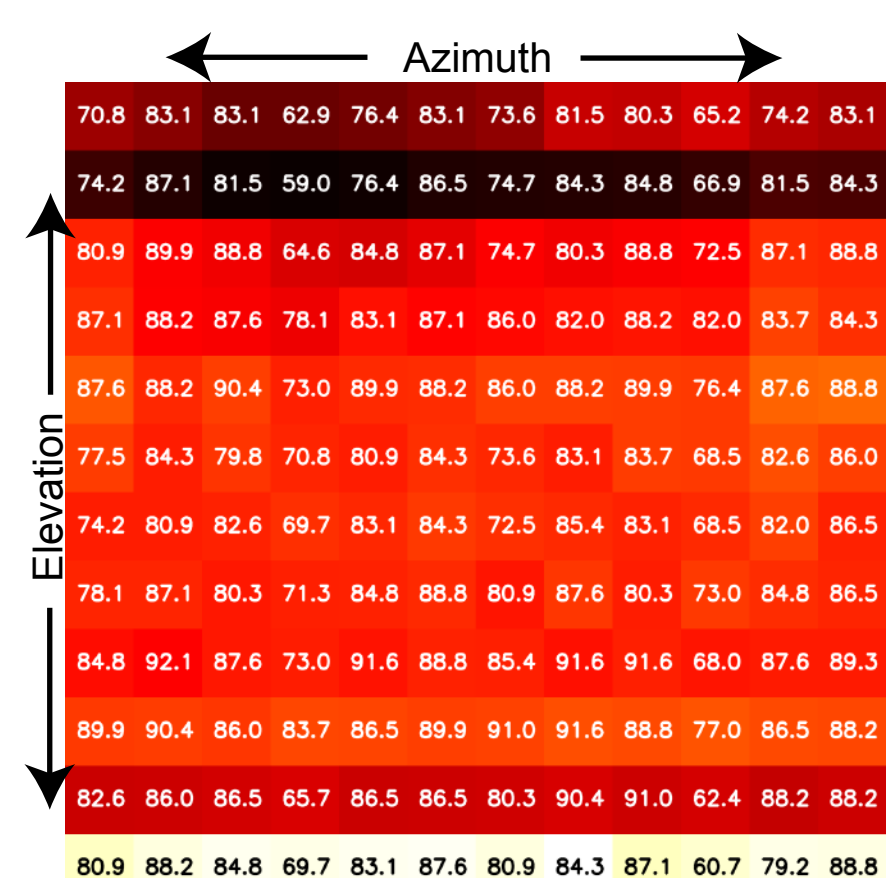
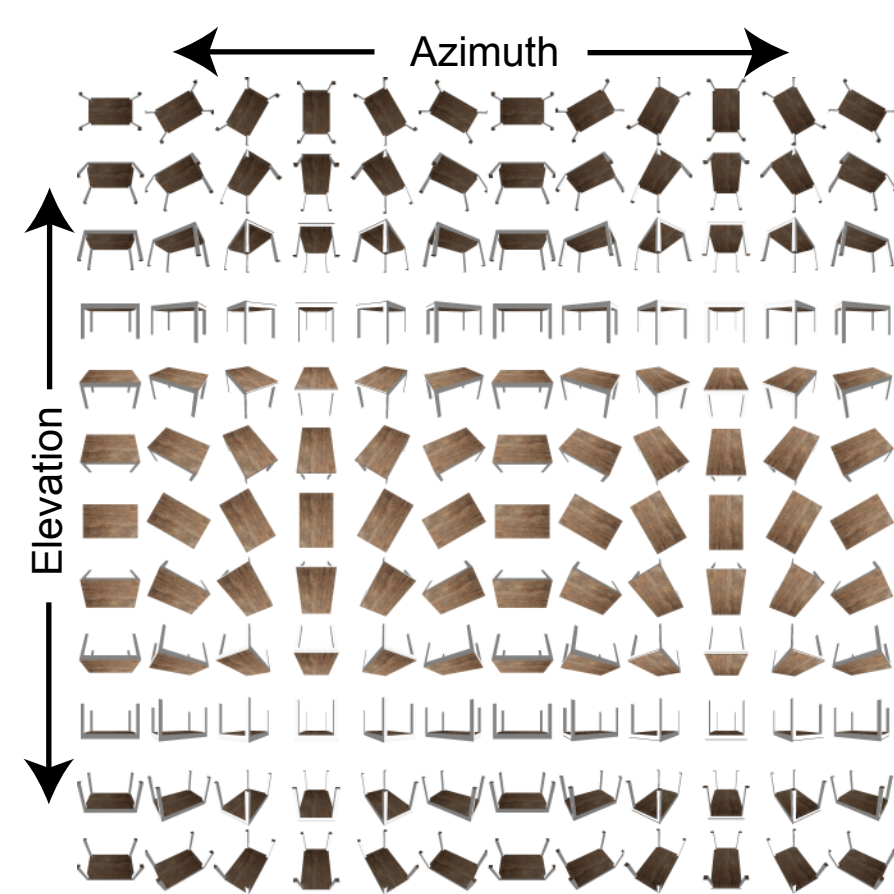
Motivation

In active recognition, **joint learning** of two modules, i.e., the policy and the recognizer, could **collapse to an unintended solution** while hurting the generalization ability.

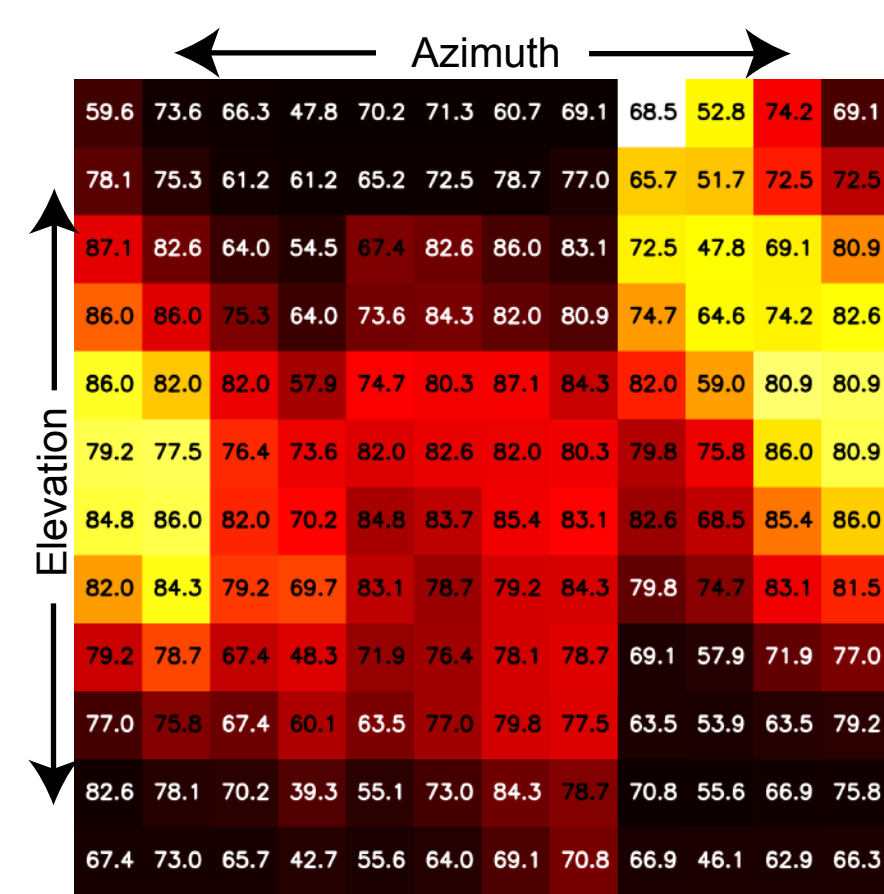


An example of drawbacks if not resolving the **lingering** issue.

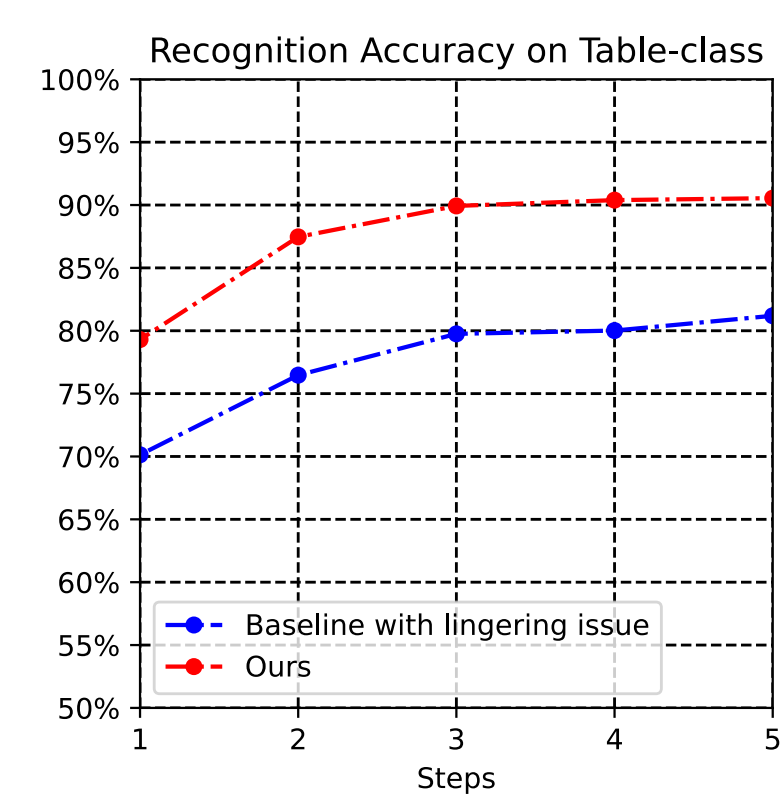
We call this phenomenon happen during training as **lingering** to depict the agent being reluctant to explore challenging views.



Our view visiting heatmaps (*train*) and accuracies (*testing*) without **lingering**.



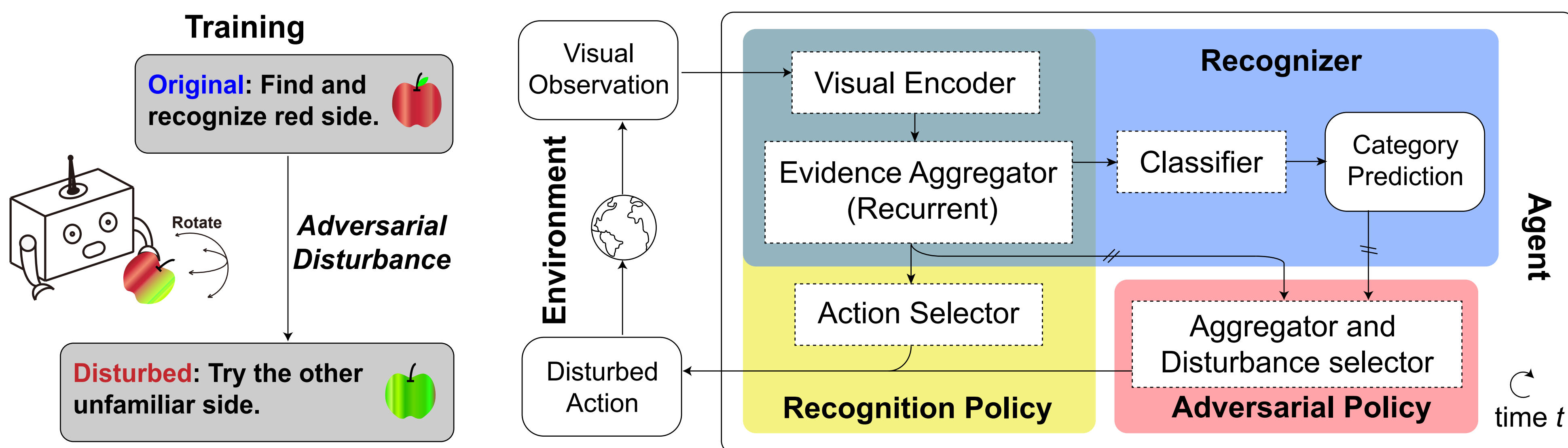
View visiting heatmaps (*train*) and accuracies (*testing*) with **lingering**.



The comparison on the final active recognition performance.

Main Idea

Our intuition to avoid lingering during training is to introduce a **perturbation term** into the policy part. As the disturbance varies during training, we prevent the active recognition agent from falling into a specific combination. **The perturbation term is modeled with an additional adversarial policy.**

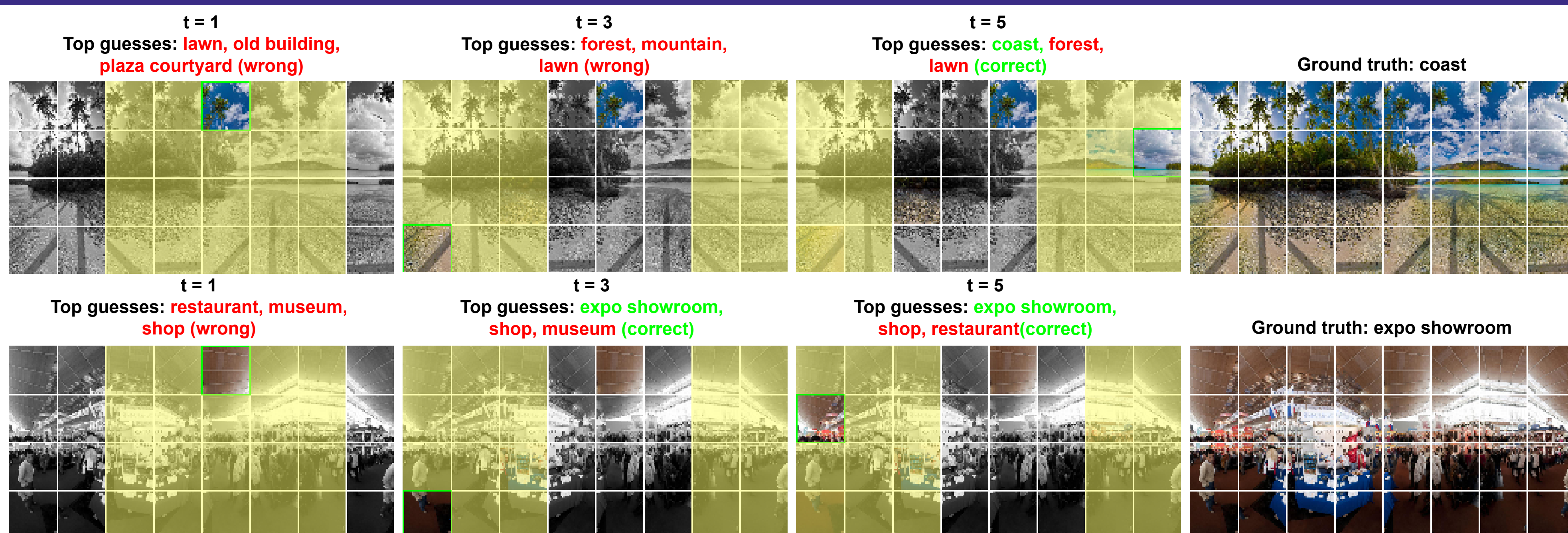


Quantitative Results

Method	ShapeNet Dataset						SUN360 Dataset					
	t=1 acc.		t=3 acc.		t=5 acc.		t=1 acc.		t=3 acc.		t=5 acc.	
	w/ c_t	w/o c_t	w/ c_t	w/o c_t	w/ c_t	w/o c_t	w/ c_t	w/o c_t	w/ c_t	w/o c_t	w/ c_t	w/o c_t
Single view	-	37.9	-	-	-	-	-	51.6	-	-	-	-
Random views	-	37.9	-	38.6	-	39.5	-	52.1	-	62.8	-	65.9
Largest step	-	37.9	-	38.2	-	39.0	-	51.1	-	57.0	-	58.3
Look-Ahead[23]	46.1±.2	44.9±.2	60.9±.3	58.0±.2	63.4±.3	60.3±.3	51.9±.2	51.8±.1	66.8±.1	66.4±.1	70.0±.2	69.5±.2
FLAR[18]	45.9±.2	45.6±.2	59.7±.3	56.8±.2	58.9±.2	59.3±.2	52.15±.1	51.7±.1	65.6±.1	64.6±.2	68.3±.2	67.6±.2
Ours	61.9±.1	62.0±.2	74.8±.1	74.0±.2	76.9±.3	76.4±.3	53.6±.1	54.6±.1	68.0±.2	67.4±.2	71.5±.2	69.6±.2

Active recognition accuracy on both the ShapeNet dataset and the SUN360 dataset.

Qualitative Results



Our method performs active scene recognition. Each row contains results at 3 steps. The current view is marked with a green box, while the next available movement is the light yellow area.