

Supplementary Materials for: Unsupervised Object Class Discovery via Saliency-Guided Multiple Class Learning

1. More Experimental Results

We show more experimental results, which cannot be included in the TPAMI paper[6] due to the space limit.

1.1. Detecting novel objects using learned detectors

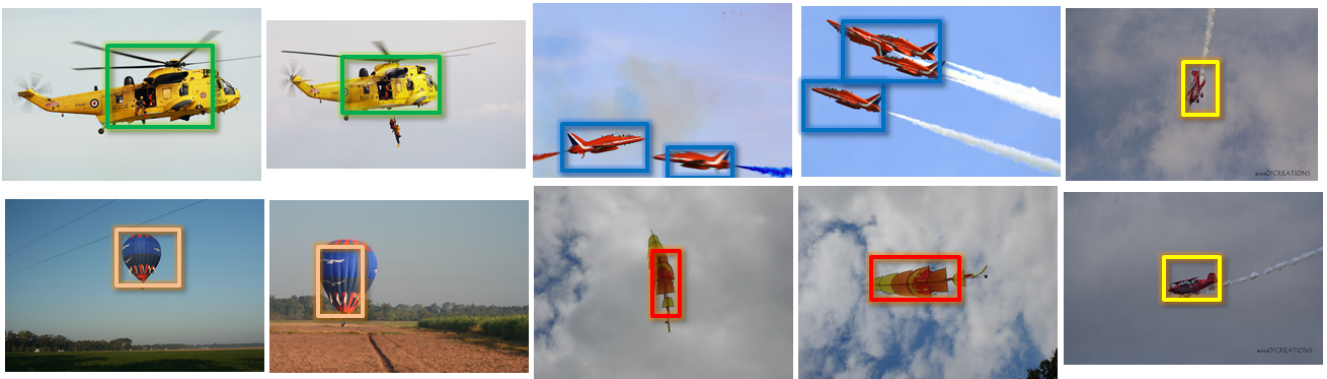
Figure 1 shows object detection results using learned object detectors in bMCL.



(a) SIVAL dataset



(b) 3D object category dataset



(c) CMU-Cornell iCoseg dataset

Figure 1: Object detection results using learned object detectors. Each color represents an object class.

1.2. Weakly supervised learning with a single object class

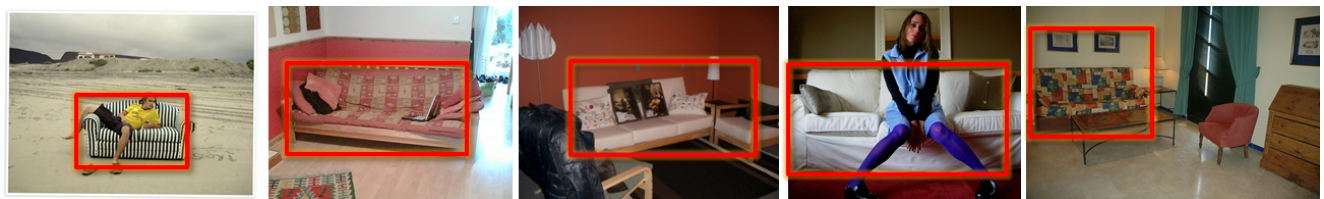
Figure 2 and 3 show the localization results on PASCAL VOC 07[2] and PASCAL VOC 06[3] classes:



(a) aeroplane



(b) horse



(c) sofa



(d) train



(e) motorbike

Figure 2: Red rectangles: object localization results of bMCL with a single object class on challenging PASCAL VOC 07[2].



(a) cow



(b) car

Figure 3: Red rectangles: object localization results of bMCL with a single object class on challenging PASCAL VOC 06[3].

2. Datasets

We used the SIVAL dataset[4], CMU-Cornell iCoseg dataset [1], and 3D object category dataset [5] in the multi-class object discovery experiment. Table 1 shows the details of each dataset.

Table 1: Experiment names, dataset names, used categories, and the numbers of images.

Exp	Dataset	Classes	Size
SIVAL1	SIVAL	ajaxorange	60
		checkeredscarf	60
		bluescrunge	60
		glazedwoodpot	60
		juliespot	60
SIVAL2	SIVAL	dirtyworkgloves	60
		greenteabox	60
		goldmedal	60
		smileyfacedoll	60
		spritecan	60
SIVAL3	SIVAL	cardboardbox	60
		feltflowerrug	60
		stripednotebook	60
		wd40can	60
		woodrollingpin	60
SIVAL4	SIVAL	apple	60
		candlewithholder	60
		fabricsoftenerbox	60
		rapbook	60
		translucentbowl	60
SIVAL5	SIVAL	banana	60
		cokecan	60
		dataminingbook	60
		dirtyrunningshoe	60
		largespoon	60
CC	CMU-Cornell iCoseg	025_1	12
		025_2	39
		026	22
		032	19
		041	25
3D1	3D Object Category	cellphone_91	24
		head_9	24
		iron_7	24
		monitor_4	15
		shoe_1	24
3D2	3D Object Category	bicycle_9	24
		car_8	16
		mouse_8	23
		stapler_5	24
		toaster_10	24

References

- [1] D. Batra, A. Kowdle, D. Parikh, J. Luo, and T. Chen. icoseg: Interactive co-segmentation with intelligent scribble guidance. In *CVPR*, 2010. 5
- [2] M. Everingham, L. Van Gool, C. K. I. Williams, J. Winn, and A. Zisserman. The PASCAL Visual Object Classes Challenge 2007 (VOC2007) Results. <http://www.pascal-network.org/challenges/VOC/voc2007/workshop/index.html>. 3
- [3] M. Everingham, A. Zisserman, C. K. I. Williams, and L. Van Gool. The PASCAL Visual Object Classes Challenge 2006 (VOC2006) Results. <http://www.pascal-network.org/challenges/VOC/voc2006/results.pdf>. 3, 4
- [4] R. Rahmani, S. A. Goldman, H. Zhang, J. Krettek, and J. E. Fritts. Localized content based image retrieval. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 30(11), 2008. 5
- [5] S. Savarese and L. Fei-Fei. 3d generic object categorization, localization and pose estimation. In *ICCV*, 2007. 5
- [6] J.-Y. Zhu, J. Wu, Y. Wei, E. Chang, and Z. Tu. Unsupervised object class discovery via saliency-guided multiple class learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2014. 1