Supplementary Material for One-bit Active Query with Contrastive Pairs

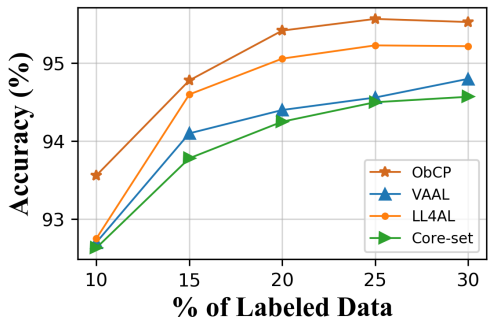

Figure 1. The comparison results of image classification on the SVHN dataset.

1. SVHN

We conduct ObCP on another image classification benchmark SVHN [2] to further demonstrate its effectiveness. The SVHN dataset is a real-world image dataset which is obtained from house numbers in Google Street View images. Specifically, it contains 10 classes and has 73257 images used for training while 26032 for testing.

Baseline Methods. We compare ObCP against several well-known methods, which including VAAL [4], LL4AL [5] and Core-set [3]. All methods are performed under the same Res-18 architecture.

Implementation Detail. We did not carefully choose the hyper-parameters for this experiment, all parameters are just follow what we used for CIFAR10/100 experiments, and we employ ResNet-18 [1] as the backbone for fair comparison.

Results. The comparison results of performance are shown in Figure 1. It can be observed that our method outperforms other baselines at each active cycles by a clear margin. Specifically, we obtain an accuracy of 94.78% with 15% labels, even better than the VAAL and Core-set with 30% labels. Besides, the accuracy will be improved to 95.53% when using 30% labels, which surpass the previous best baseline LL4AL by $\sim 0.3\%$.

References

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[3] Ozan Sener and Silvio Savarese. Active learning for convolutional neural networks: A core-set approach. In *ICLR*, 2018. 1

[4] Samarth Sinha, Sayna Ebrahimi, and Trevor Darrell. Variational adversarial active learning. In *ICCV*, October 2019. 1

[5] Donggeun Yoo and In So Kweon. Learning loss for active learning. In *CVPR*, June 2019. 1