

# Evaluation of domain adaptation techniques for classification tasks

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**Abstract**—It has been well proved that deep networks are efficient at extracting features from a given (source) labeled dataset. However, it is not always the case that they can generalize well to other (target) datasets which very often have a different underlying distribution. In this report, we discuss about different domain adaptation techniques that are implemented for classification task. Selected domain adaptation techniques are unsupervised techniques where target dataset will not carry any labels during training phase. Experiments are conducted on office-31 dataset for all the selected domain adaptation techniques.

**Index Terms**—domain adaptation, source data, target data,

## INTRODUCTION

Brief introduction to the problem and the methods we have chosen.

## DOMAIN ADAPTATION METHODS

### *DeepCORAL*

*CORAL loss:*

### *Deep Domain Confusion*

### *Conditional Adversarial Domain Adaptation*

### *Conditional Adversarial Domain Adaptation with Entropy Conditioning*

## EXPERIMENTS

### *Experimental Setup*

- Office dataset
- Pytorch framework

### *DeepCORAL*

- Detail training procedure, hyperparams

### *Deep Domain Confusion*

- Detail training procedure, hyperparams

### *Conditional Adversarial Domain Adaptation*

- Detail training procedure, hyperparams

Identify applicable funding agency here. If none, delete this.

### *Problems encountered*

- Detail training procedure, hyperparams
- Add object recognition accuracies in table - Add subplot with 4 graphs for accuracies (4 methods, same transfer domain) - Add subplot with 4 graphs for losses (4 methods, same transfer domain)

## CONCLUSIONS

## REFERENCES

- [1] X. Xu, X. Zhou, R. Venkatesan, G. Swaminathan, and O. Majumder, "d-sne: Domain adaptation using stochastic neighborhood embedding," in *2019 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019, pp. 2492–2501.

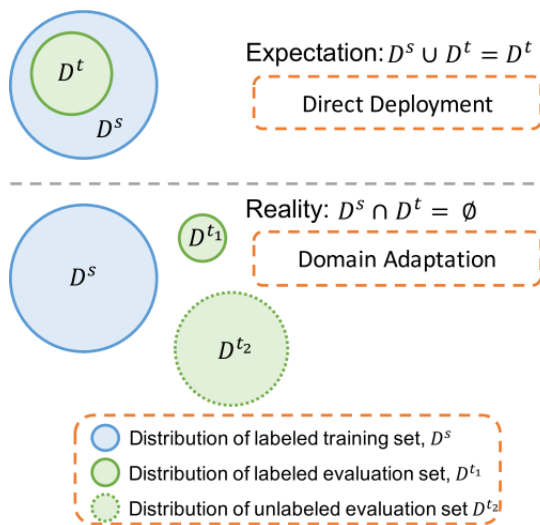


Fig. 1. Domain adaptation in the true data space: Expectation vs. Reality. [1]