Principles of Data Science Project 4
Domain Adaptation

Hongzhou Liu
517030910214
deanlhz@sjtu.edu.cn

Xuanrui Hong
517030910227
hongxuanrui.1999@sjtu.edu.cn

Qilin Chen
517030910155
1017856853@sjtu.edu.cn

***Abstract*—In this project, we tried different domain adaptation methods on the Office-Home dataset, which contains 65 categories of things from 4 domains. The four domains are Art, Clipart, Product and Real-World. In our experiments, we take Art, Clipart and Product as source domains and Real-World as target domain. For traditional methods, we tried KMM, CORAL, GFK, TCA, and EasyTL. For deep learning methods, we only tried DAN due to the scarce of computation resources and time limitation. We compared performances among those methods and discussed the difference among them.**

***Index Terms*—Domain Adaptation, Transfer Learning**

I. Introduction

In this project, we tried different unsupervised domain adaptation methods on the Office-Home dataset, which contains 65 categories of things from 4 domains. The four domains are Art, Clipart, Product and Real-World. There are two parts in this section. Firstly, we will introduce several traditional transfer learning methods we used in our project, including KMM, CORAL, GFK TCA and EasyTL. Then we will introduce deep transfer learning method DAN to compare with the traditional transfer learning methods.

A. Traditional Transfer Learning Methods

1) Transfer Component Analysis (TCA):

2) Easy Transfer Learning (EasyTL):

B. Deep Transfer Learning Methods

1) Deep Adaptation Network (DAN):

II. Experiments

In this part, we will show the experimental results and comparative analysis of the results through two types of traditional transfer learning methods and deep transfer learning methods.

A. Traditional Transfer Learning Methods

1) Transfer Component Analysis (TCA):

2) Easy Transfer Learning (EasyTL):

B. Deep Transfer Learning Methods

1) Deep Adaptation Network (DAN):

III. Conclusion

[1]

References

[1] D. G. Lowe, "Object recognition from local scale-invariant features," in *Proceedings of the seventh IEEE international conference on computer vision*, vol. 2. Ieee, 1999, pp. 1150–1157.