Experiment 1 In Experiment 1 we compare our method to the state-of-the-art results in Dinu et al. (2023). Table shows the results for each domain adaptation method (rows) averaged over 12 domain adaptation tasks and three seeds. Iterated KuLSIF improves the state of the art classification accuracy of 0.788 to 0.790 while KuLSIF without our proposed iteration only achieves 0.787.

Domain Adaptation: Amazon Reviews			
DA-Method	Dinu	KuLSIF	Iterated KuLSIF (ours)
HoMM	0.788(±0.010)	0.777(±0.009)	0.777(±0.010)
AdvSKM	0.780(±0.009)	0.779(±0.011)	0.780(±0.008)
DIRT	0.787(±0.008)	0.787(±0.011)	0.794(±0.011)
DDC	0.780(±0.010)	0.780(±0.010)	0.780(±0.010)
CMD	0.794(±0.009)	0.790(±0.010)	0.794(±0.008)
MMDA	0.787(±0.011)	0.786(±0.011)	0.789(±0.010)
CoDATS	0.796(±0.009)	0.795(±0.012)	0.798(±0.011)
Deep-Coral	0.785(±0.009)	0.784(±0.009)	0.784(±0.009)
CDAN	0.788(±0.010)	0.787(±0.010)	0.790(±0.010)
DANN	0.797(±0.009)	0.794(±0.013)	0.800(±0.009)
DSAN	0.795(±0.009)	0.794(±0.011)	0.800(±0.009)
Avg.	0.788(±0.009)	0.787(±0.011)	0.790(±0.010)

Table 1: Mean and standard deviation (after ±) of target classification accuracy on Amazon Reviews over three different random initialization of model weights and 12 domain adaptation tasks.

Experiment 2 In Experiment 2 we follow Section 4.1 of Rhodes et al. (2020) to analyze the sample efficiency for challenging (different) densities. More precisely, we sample from an extremely peaked Gaussian $p \sim \mathcal{N}(0, 10^{-6})$ and a broad Gaussian $q \sim \mathcal{N}(0, 1)$. The density ratio estimators are based on both standard logistic regression and multi-layer networks. In Figure 1 (left) we can see that our iteration method improves sample efficiency for logistic regression. Additionally, it can be seen that our approach can be extended to neural network based models for which sample efficiency is improved as well.

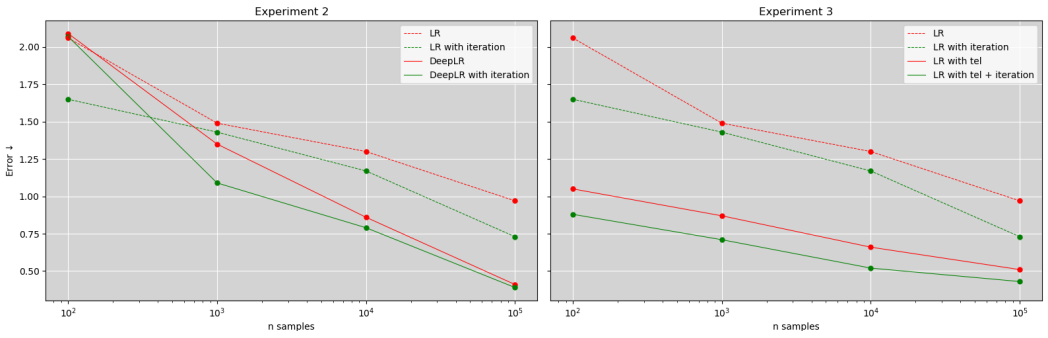

Figure 1: Sample efficiency curves for various density ratio estimators and approaches, the error is measured by L1-norm. Left: Comparison logistic regression and multi-layer network logistic regression density ratio estimators both without and with iteration. Right: Comparison of logistic regression with its iterated version. Additional comparison with the telescoping approach from Rhodes et al. (2020) and the telescoping approach combined with our iterative method.

Experiment 3 Experiment 3 is an extension of Experiment 2 where we sample from the same respective distributions and combine the telescoping framework of Rhodes et al. (2020) with our iteration method. In Figure 1 (right) it can be seen that telescoping improves the non-iterated density ratio estimator as in Rhodes et al. (2020). Additionally, the combination of telescoping and our iteration method further improves sample efficiency of both approaches.