

Shallow Domain Adaptation

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I. INTRODUCTION

[?]. The performance of a supervised model is validated on test examples that are drawn from the same distribution as that of training examples. However, when the learned model is evaluated on examples from a different domain, the performance suffers due to the distribution differences between the domain data. Shai et al. stated that the performance of a classifier in a new domain (the target domain) depends on two factors: (1) the performance in its own domain (the source domain) and (2) the discrepancy between the domains. Given identical labels $Y_s = Y_t$ and the same feature space $X_s = X_t$, Domain Adaptation (DA) deals with minimizing the discrepancy between two domains. The domain discrepancy can be in terms of the differences in the marginal distributions $P_s(x_s) \neq P_t(x_t)$ or the conditional distributions $P(y_s|x_s) \neq P(y_t|x_t)$.

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