Unsupervised Domain Adaptation for Extra Features Using Optimal Transport

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Abstract

Domain adaptation aims to transfer knowledge of labeled instances obtained from a source domain to a target domain to fill the gap between the domains. Most domain adaptation methods assume that the source and target domains have the same dimensionality. Methods that are applicable when the number of features is different in each domain have rarely been studied, especially when no label information is given for the test data obtained from the target domain. In this paper, it is assumed that common features exist in both domains and that extra (new additional) features are observed in the target domain; hence, the dimensionality of the target domain is higher than that of the source domain. To leverage the homogeneity of the common features, the adaptation between these source and target domains is formulated as an optimal transport (OT) problem. This is a joint work with Hideitsu Hino.