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Covariate Shift Adaptation by Metric Learning

A common assumption in most predictive models is that training data and test data are drawn from the same underlying distribution. In many applications, however, this assumption may not be correct. We propose a novel algorithm to address this problem. The proposed method computes a transformation that projects the data to a new space with two properties. First, the distribution of training and test data are as close as possible in the transformed space, and second, dependency between predictors and response variable is maximized. This method can also reduce the dimensionality of the data while it preserves the aforementioned properties.