Clustering via Kernel Decomposition

Methods for spectral clustering have been proposed recently which rely on the eigenvalue decomposition of an affinity matrix. In this work it is proposed that the affinity matrix is created based on the elements of a non-parametric density estimator. This matrix is then decomposed to obtain posterior probabilities of class membership using an appropriate form of nonnegative matrix factorization. The troublesome selection of hyperparameters such as kernel width and number of clusters can be obtained using standard cross-validation methods as is demonstrated on a number of diverse data sets.

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