

1 Heller 2007

A Nonparametric Bayesian Approach to Modeling Overlapping Clusters, Aistats '07. Read 12/22/2008.

Clustering techniques traditionally assign each datum to a single cluster; in this paper, the authors formulate a model that assigns each datum to arbitrarily many the clusters.

They use a mixture model:

$$p(x_i|\Theta) = \sum_{j=1}^K \pi_j p_j(x_i|\theta_j) \quad (1)$$

$$= \sum_{\mathbf{z}_i} p(\mathbf{z}_i) \prod_{j=1}^K p_j(x_i|\theta_j)^{z_{ij}} \quad (2)$$

where $\mathbf{z}_i = [z_{i1}, \dots, z_{iK}]$, and all $z_{ij} \in \{0, 1\}$.

The obvious approach uses