***Categorization of the multi-label classification algorythms based on the degree of correlations among labels***

Following Alazaidah R. (2016), algorithms for multi-label classification may be categorized by the degree of correlation among labels – the categorization is presented in the Table 1.9.

**Table 1.9.** Categorization of the multi-label classification algorythms based on the degree of correlations among labels

|  |  |  |
| --- | --- | --- |
| **Correlation between labels** | **Description of the task of multi-label learning** | **Algorythms** |
| No correlation | The task of multi-label learning considers each label separately ignoring correlations between labels. Simple and efficient. Results are usually suboptimal because of ignoring correlations among labels. | Binary relevance  ML-kNN  ML-C4.5 |
| Pairwise | The task of multi-label learning considers the pairwise relationships between labels like classifying labels into relevant and irrelevant labels. Correlations between labels is exploited to a limited degree. | Ranking by Pairwise Comparison  Calibrated Label Ranking  Back Propagation for Multi-Label Learning (an adaptation of the traditional feed-forward neural networks) |
| Higher order correlations | The task of multi-label learning considers the influence of every label on all other labels and finds a higher order correlation among all labels or among random subsets of labels. Demands more computations. | Label Powerset  Pruned set  Ensemble of Pruned Sets  Classifier Chains  Ensemble of classifier chains  RAndom k-labELsets method |