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Multilabel Classification with Neural Network Ensemble Method

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Abstract : Multilabel classification has a huge importance for several applications, it is also a challenging research topic. It is a kind of supervised learning that contains binary targets. The distance between multilabel and binary classification is having more than one class in multilabel classification problems. Features can belong to one class or many classes. There exists a wide range of applications for multi label prediction such as image labeling, text categorization, gene functionality. Even though features are classified in many classes, they may not always be properly classified. There are many ensemble methods for the classification. However, most of the researchers have been concerned about better multilabel methods. Especially little ones focus on both efficiency of classifiers and pairwise relationships at the same time in order to implement better multilabel classification. In this paper, we worked on modified ensemble methods by getting benefit from k-Nearest Neighbors and neural network structure to address issues within a beneficial way and to get better impacts from the multilabel classification. Publicly available datasets (yeast, emotion, scene and birds) are performed to demonstrate the developed algorithm efficiency and the technique is measured by accuracy, F1 score and hamming loss metrics. Our algorithm boosts benchmarks for each datasets with different metrics.

Keywords : multilabel, classification, neural network, KNN
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