

Reliable Multi-label Classification: Prediction with Partial Abstention

- Multilabel classification (MLC) has been studied extensively.
- MLC algorithms can be categorized as either
 - (i) an empirical utility maximization (EUM) approach which aims at learning a classifier that optimize the chosen evaluation criteria,
 - (ii) or, a decision-theoretic (DT) approach which seeks for the Bayes-optimal predictions optimizing the evaluation criteria in expectation.
- Classification with abstention is a common route when dealing with uncertainty.
- MLC with abstention:
 - Pillai et al., 2013 proposed an EUM approach.
 - We propose a formal DT approach and instantiate it to the case of Hamming and rank loss.