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Adapted Intersection over Union: A Generalized Metric for Evaluating Unsupervised Classification Models

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Abstract : In a supervised machine learning approach, metrics such as precision, accuracy, and coverage can be calculated using ground truth labels to help in model tuning, evaluation, and selection. In an unsupervised setting, however, where the data has no ground truth, there are few interpretable metrics that can guide us to do the same. Our approach creates a framework to adapt the Intersection over Union metric, referred to as Adapted IoU, usually used to evaluate supervised learning models, into the unsupervised domain, which solves the problem by factoring in subject matter expertise and intuition about the ideal output from the model. This metric essentially provides a scale that allows us to compare the performance across numerous unsupervised models or tune hyper-parameters and compare different versions of the same model.

Keywords : general metric, unsupervised learning, classification, intersection over union
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