Modified Deep Learning Models to Handle Noisy Labels

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Deep neural networks have excellent performance in image classifications tasks, but they are in need of large sets of training data with correct labels. This is a drawback, since labeling is either difficult or too expensive in many cases. The available datasets are often contaminated by label noise, that is why the challenge of learning with noisy labels has become an important research topic with several directions [1], [2]. Even though deep neural networks tend to learn the simple, consistent patterns first, they can easily overfit to noisy labels. If we are able to prevent this overfitting and treat the label noise during the training process, we can obtain models with better generalization ability.

To address this problem, several methods were proposed using a broad range of ideas from the field of machine learning, such as label refurbishment, bootstrapping, regularization or using a noise adaptation layer.

In our work, we have investigated the possibilities of the improvement of a recent technique in the topic of learning with label noise. We have applied some modifications to various points of the training process, evaluated those adjusted models and drawn conclusions from the results.

References

[1] G. Algan, I, Ulusoy, Image Classification with Deep Learning in the Presence of Noisy Labels: A Survey, *Knowledge-Based Systems* **215**, 106771, 2021.

[2] H. Song, M. Kim, D. Park, Y. Shin, J. Lee Learning from Noisy Labels with Deep Neural Networks: A Survey *IEEE Transactions on Neural Networks and Learning Systems*, 2022.