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# **Contrastive Learning with Corrupt Labels**

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# Abstract

Though machine learning has become increasingly popular these days, it requires high-quality and large-scale datasets for its methodology to work. However, in many practical situations, collecting such data will be costly or even impossible. Contrary to that, weak supervision, such as noisy labels and complementary labels, is way more accessible.

Recently self-supervised learning has been developing fast and proved its ability to learn valuable representations even without labels. The new paradigm of contrastive learning delivered promising performance without external supervision and gained much attention. The nature of contrastive learning makes it promising with weak supervision.

In this thesis, we try to transfer the successful paradigm of contrastive learning to the field of weakly-supervised learning. Specifically, we focus on the problems of learning with noisy labels and learning with complementary labels. First, we showed that, without any external data, there would be instant improvement with noisy-label learning methods by using contrastive pretraining. This improvement is more significant with more straightforward methods and can be easily applied to the existing noisy-label learning methods. Following that idea, we further make use of the weak supervision in the setting of learning with complementary labels. More specifically, we proposed an approach where we train the classifier and the contrastive networks at the same time. We employ prototype vectors and pseudo targets for better representations. We also fix the update of pseudo targets during the early stage of training for the stability of representations. We experimentally show the effectiveness of our method and show the results of related ablation studies.