Identifying well-annotated examples using multiple networks for robust training

Jisoo Lee and Sae-Young Chung

Abstract— In reality, we have more access to poorly-annotated datasets rather than well-annotated datasets. However, on poorly-annotated datasets, deep neural networks optimized with a gradient-descent method often fit poorly-annotated examples at the end of the training. Generally, well-annotated examples are more associated with other examples than poorly-annotated examples are. From this, we first find that it is more probable to commonly learn features related to well-annotated examples across multiple networks at the beginning of training, compared to poorly-annotated examples. We then propose how to identify well-annotated examples from the entire training set by employing multiple networks for robust training. Experimentally, we demonstrate the effectiveness of our proposed method in finding well-annotated examples, leading to impressive results on a variety of poorly-annotated datasets.

The authors are with the School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon 34141, South Korea `jisoolee@kaist.ac.kr; schung@kaist.ac.kr`