Adaptive Few-Shot Deep Metric Learning

Authors : Wentian Shi, Daming Shi, Maysam Orouskhani, Feng Tian

Abstract : Whereas currently the most prevalent deep learning methods require a large amount of data for training, few-shot learning tries to learn a model from limited data without extensive retraining. In this paper, we present a loss function based on triplet loss for solving few-shot problem using metric based learning. Instead of setting the margin distance in triplet loss as a constant number empirically, we propose an adaptive margin distance strategy to obtain the appropriate margin distance automatically. We implement the strategy in the deep siamese network for deep metric embedding, by utilizing an optimization approach by penalizing the worst case and rewarding the best. Our experiments on image recognition and co-segmentation model demonstrate that using our proposed triplet loss with adaptive margin distance can significantly improve the performance.