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Computer Vision

HW 2, Part 1

1. What are the contributions of the paper?

   According to the paper, there are three major contributions: (1) the creation and application of A-Softmax as a loss function for CNN models tasked with Facial Recognition to learn discriminative features, (2) they determine the lower bounds for m, a parameter in the A-Softmax function which determines the size of the angular margin and lastly, (3) according to the authors this is the first paper which shows the effectiveness of angular margins on facial recognition tasks

2. Illustrate three properties of A-softmax

   1) A-Softmax is flexible, the size of m determines the size of the angular margin. The constrained region on the manifold becomes smaller, and the corresponding learning task also becomes more difficult.

   2) The lower bound of m is knowable, in binary class cases m is at minimum $2+\sqrt{3}$

   3) In multi-class cases, m is at minimum 3, assuming that the weights are roughly symmetrical in space

3. What is the evaluative metric for LFW?

   The authors use SphereFace on 6000 face pairs for a face verification and find an accuracy result of 99.42% for the LFW dataset which makes it the best performant model on publicly available face image datasets at the time of publishing.