Machine Learning
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Problems Encountered

Every model is implemented using formula given and we need to check whether the value satisfies the given output by testing. The challenge here is to make the multiplication fast. I solved it by trying every possible solution I could think of and test if it's correct or not by the output and shape. Some of problem encounters I mentioned also at the third point of this report.

Structure

At basic part, sigmoid and cross-entropy combination is very suit for binary classifier. For every hidden layer, I use reLU since it's said that it performs well for small and big dataset. At advance layer, I use softmax + focal loss, since focal loss should be good for class imbalance. Iteration could be large as possible, but it's time consuming, so my iteration set to 300.

Effort to Improve

For basic part, since there is imbalance data, I try to add data for label 1 by some noise range (-0,1 to 0.1) and I think it improves quite well.

In the advance part, I tried data augmentation, which are: rotation and small transition. Since number 9.

I applied it to training data (no validation data). However, it does not work well compared without the augmentation by compare the F1 score. It might lead due to over-aggressive augmentation, It might be the case but seeing some sample input it seems nothing wrong. To play safe I just implemented without augmentation.