Weekly Report

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1 Progress

- Visualize feature mapping
- (Set up the assigned server)

2 Feature Mapping

Below are images of the feature mapping at the final stage of training. (Animations showing the mapping changes is attached to the e-mail.) The extracted features were dimensionally reduced using t-SNE. The plots with the same color are the same class, and the plots with different colors are different classes. The number of classes is 15.

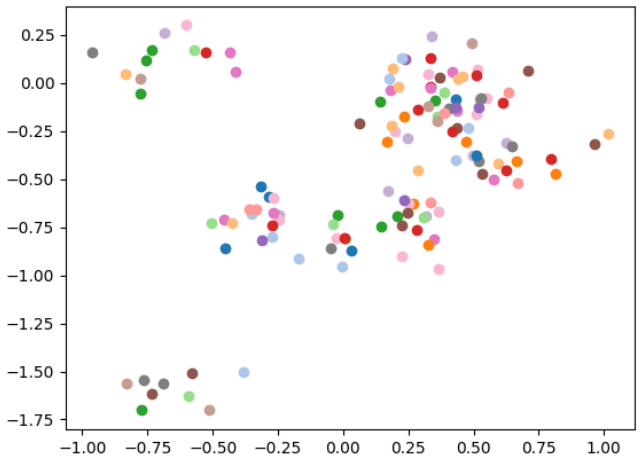

Figure 1: Feature mapping for CrossEntropy Loss(Conventional method)

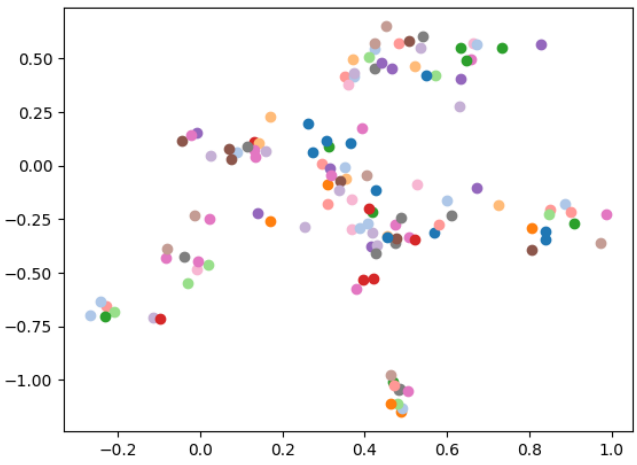

Figure 2: Feature mapping for Center Loss + Softmax Loss(Most accurate method)

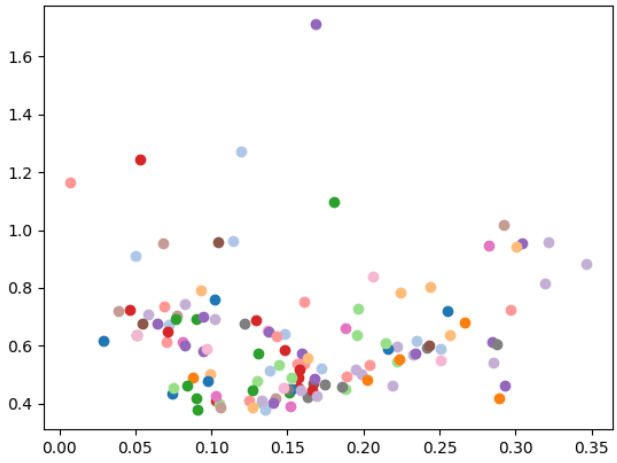

Figure 3: Feature mapping for Cosine Loss + Center Loss + Softmax Loss (=Triple Joint Loss)

Although there is some variation in CenterLoss and CrossEntropyLoss, we could not observe clusters in each class. There are several possible reasons for this.

1. Loss of information due to compression of the 15-dimensional features to two dimensions.
2. The code is incorrect.
3. The model includes a batch normalization layer, which makes it difficult to observe the separation of features.

3 Next Plan

- Verify the visualization code
- Check the noisy dataset
- Consider methods for noisy dataset
  - Survey preprocessing methods
  - Discuss preprocessing methods with Xing-San and Kai-San
  - Implement Openmax and Proportional Similarity-based Openmax