Semi-supervised training of CNNs

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- After speaking to Dr. Gong and Yang, we have decided to expand the original “Image compression using deep learning” project
- We will use the auto-encoder that I have built for semi-supervised training of CNNs that classify images

What I have accomplished

- I finished training the auto-encoder on the cifar10 dataset
- I tested the auto-encoder on the cifar10 test dataset, the cifar100 test dataset, and a subset of the cifar100 test dataset that were categorically different from the cifar10 images
  - Results shown in the graph on the left:
- The results show that the auto-encoder successfully obtains features that are unique to the cifar10 categories

Dataset	Loss
Cifar10 test dataset	1.6459
Entire cifar100 test dataset	1.8595
Subset of cifar100 test dataset	2.0332

Current work

- I have begun creating a CNN, with the same structure as my auto-encoder's encoder, that can classify images in the cifar10 dataset
  - This is currently training on the cluster

Coming Weeks

- Once I have completed making this CNN, I will train it with randomly initialized weights, and weights learned from the autoencoder
- The goal is to have a classification CNN that is trained on a large set of unlabeled data and a small set of labeled data, but has the accuracy of a CNN that is trained on a large set of labeled data