Semi-supervised Learning Project

Week 5 - Session 2

Semi-supervised Learning Programming

In this project, you will build a deep semi-supervised learning model on MNIST dataset. Similar to any other semi-supervised learning task, we select 100 labeled sample for each digit from the training data (L), and use the rest of the training set as the unlabeled data (U).

Model An auto-encoders is a type of deep neural network that learns the latent representation of data in an unsupervised manner. In this project, you will train an unsupervised auto-encoder on the whole training data ($L + U$). Then, use the latent representations extracted from this auto-encoder to train a softmax classifier on labeled proportion of data. Test this classifier for predictions on the test set.

Evaluation To assess your semi-supervised model, create a fully connected network only using the labeled data in the training set (L). Then compare the classification performance of your auto-encoder-based semi-supervised learning model with the fully supervised deep model and report your observation.