MSSE 277B: Machine Learning Algorithms
Homework assignment #11 (extra credit) VAE
Assigned Apr. 20 and Due May 2.

1. **Variational Autoencoder(VAE) applied to MNIST dataset.**(10 pt)
   Train an VAE model for the MNIST dataset. The encoder and decoder of the VAE model are multilayer perceptron. Encoder have hidden layer size of (256,128) and the decoder is the reverse of that. In the bottleneck region, the encoder output is mapped to two latent vector μ and σ each represented with 32 hidden neurons. Then the latent state z with 32 hidden neurons is formulated by applying reparameterization with addition of noise ε, which is then passed to decoder. Use binary cross entropy plus KL divergence as your loss function. Train this model with the MNIST dataset and use the provided reconstruction code to show that your model is able to reproduce the images.