Unit 9 - Week 7

Assignment 7
Due on 2020-03-19, 23:59 GMT

1. What are the advantages of having a fully connected autoencoder weight matrix? (5 points)
   a. Faster convergence
   b. Avoid overfitting
   c. Higher interpretability
   d. Better reconstruction accuracy
   e. None of these

2. A fully connected autoencoder consists of 50 input neurons, 50 hidden neurons, and 50 output neurons. If the network's weight matrices are numerically identified with accuracy, the total number of weights will be of size
   a. 50,000 weights
   b. 100,000 weights
   c. 150,000 weights
   d. 200,000 weights

3. A variational autoencoder has 10 input neurons, 5 hidden neurons, and 10 output neurons. If the network's parameters trained using an accuracy of 99%, what would be the value of encoder and decoder weights respectively?
   a. $D_1, D_2, D_3, D_4, D_5$
   b. $E_1, E_2, E_3, E_4, E_5$
   c. $E_1, D_2, E_3, D_4, E_5$
   d. $D_1, E_2, D_3, E_4, D_5$

4. Identify the algorithm which can be used for training autoencoders.
   a. Batch training
   b. Stochastic gradient descent
   c. Validation set
   d. Work queue

5. Which of the following autoencoder is not a regulation autoencoder?
   a. Sparse autoencoder
   b. Denoising autoencoder
   c. Multi-task
   d. Work queue

6. Regularization for Convolutional Autoencoders is implemented as
   a. Activation
   b. Regularization
   c. Weight distribution
   d. None of these

7. Which of the following is not a form of autoencoder in training autoencoders?
   a. Deterministic
   b. Stochastic
   c. Weighted
   d. Image embedding

8. What is the Disparity between two equal distributions?
   a. 0
   b. 1
   c. 2
   d. None of these

9. When a test set for a deep convolutional neural network, whose weights of convolution kernels across the layers are $\theta_1 = \theta_2 = \ldots = \theta_n$, improves obtained on validation at each layer are $\theta_1, \theta_2, \ldots, \theta_n$ (with no classification tuning), which of the following is the update the weights described in the best configuration during backpropagation?
   a. $\theta_1, \theta_2, \ldots, \theta_n$
   b. $\theta_1, \theta_2, \ldots, \theta_n$
   c. $\theta_1, \theta_2, \ldots, \theta_n$
   d. $\theta_1, \theta_2, \ldots, \theta_n$

10. What is the role of locality constraint in a sparse autoencoder?
    a. Control the number of action units in a hidden layer
    b. Control the error as a minimum term
    c. Control the hidden layer length
    d. Not applicable in sparse autoencoder