AI Course

Chapter 9. Quiz

For students

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1. The MNIST dataset consists of numeric pictures written cursively from 0 to 9. If you want to create a neural network that classifies the data, what is the activation function of the last fully connected (=Dense) layer?
2. Blood pressure, height, and weight form the feature vectors. The training set is given as follows.

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1. Assuming that the weight vector of the perceptron is and the bias is 0, explain the scale problem with the training set.
2. Write the training set that results after the application of the preprocessing formula below.

(5.9)

1. Explain your observation whether this data preprocessing alleviates the scale problem.
2. Neural networks, convolution layers are repeated multiple times in deep learning and it causes some nodes get omitted to a great degree. What technique can you use to prevent this problem?
3. Weight initialization should generate random numbers in the range [-r,r]. Please provide the Python code that does this function.
4. You want to train a classifier when you have many unlabeled training data but only a few thousand labeled data. Describe how the autoencoder can be helpful and how to work.