Data Science Quiz Day 3

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| Instructor: | Stuart Whipp, Ben Whalley | Name: |  |
|  |  | Date: |  |

Try your best to answer these questions based on topics discussed thus far. Expected to take 15-30 minutes with discussion.

1. Which is the purpose of ‘learning rate’?
   1. To control the rate of gradient descent
   2. To select the number of neurons our model needs
   3. To control the rate that network connection weights are updated during training
2. How are the weights in a neural network often decided?
   1. Outer Loop Optimisation
   2. Gradient Descent
   3. Number of Epochs
3. Which does the word Epoch mean?
   1. Number of outputs of a model
   2. Number of layers in network
   3. Number of times the model has iterated through the entire dataset
4. Which of the following describes ReLU?
   1. Y = max(0,X)
   2. Y = X + bias
   3. Y = abs( X² )
5. Which of the following are commonly called activation functions?
   1. Sigmoid
   2. Tanh
   3. ReLU
   4. Convolution
6. Given an input image of size 200 width and height, what size will it become with max-pooling in [2x2] grids?
   1. Half the size, 100x100 width and height
   2. No difference
   3. 100x100
7. Given an input image of size 200 width and height, what size will it become with convolutional layer with 1 kernel filter, in [3x3] grids? Suppose same padding is applied, and a stride of 2 is taken.
   1. Half the size, 100x100
   2. No difference
   3. 100x100
8. Given an input image of size 200 width and height, how many weight are needed for every convolution filter kernel, if its size is [3x3]
   1. 9 weights x 200
   2. 9 weights, shared across all inputs. Input size is irrelevant
   3. 9 weights x 40.000
9. Which of the following are examples of Outer Loop Optimising?
   1. Bayesian Optimisation
   2. GeneticSelectionCV
   3. GridsearchCV
   4. Gradient Descent
10. What is a common pitfall and solution relating to gradient descent?
    1. Use on classification only tasks
    2. Does not like negative numbers
    3. Stuck in local minima, use of momentum and emulating a mass rolling