S4 - Quiz

Due May 26 at 9:30pm **Points** 150 **Questions** 8
Available May 21 at 8:30pm - May 26 at 9:30pm **Time Limit** 30 Minutes
Allowed Attempts Unlimited

Instructions

1. You have 30 minutes to take the quiz
2. Keep a calculator handy
3. **Make sure you have read and understood the things in "italics" in the notes shared.**
4. Once you start the quiz, you cannot go back and re-attempt it
5. You will not find answers online, so please make sure you are ready for the quiz
6. For Multiple Answer Questions, ALL the answers must be correct to score any point

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	6 minutes	67 out of 150

Correct answers will be available on May 26 at 9:30pm.

Score for this attempt: **67** out of 150
Submitted May 23 at 12:47pm
This attempt took 6 minutes.

Question 1 — 10 / 10 pts

When you read "Those circles are "temporary" values that will be stored. Once you train the model, *lines are what all matters!*" in the notes, what is the meaning of temporary?

- [x] Circles represents the values calculated after multiplying the input with the weights (represented by the lines). Since inputs will change, multiplying the inputs with weights will also change. Hence they are temporary
- [ ] They are temporary because we can use squares as well to represent the weights
- [x] Circles represent the calculated neuron value, or the channel's pixel value. These values are temporary as they will change with every image and are dumped out of memory after every inference.
- [ ] Circles represent weights and since they are changing, circles represent temporary values

Question 2

10 / 10 pts

When you read "*Exactly, that's the point.* " in the Fully Connected Layer Section what was meant by it?

- [x] Converting 2D pattern into a 1D pattern throws away the "spatial information". And without spatial information it wouldn't be ideal to train a "vision" dnn.
- [ ] Converting 2D patterns into 1D patterns allows the network to keep spatial pattern, and that is why we need to convert 2D patterns into 1D patterns, especially when we are working on "vision" dnn.
- [ ] That 1D pattern created by converting a 2D pattern has retained it's spatial information

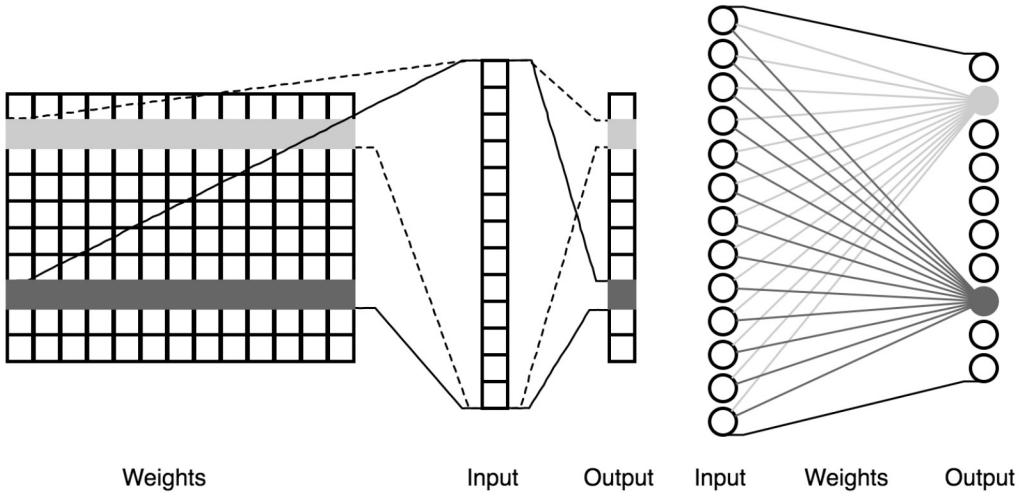
That a 1D pattern created by converting 2D pattern has lost its spatial meaning.

Partial

Question 3

22.5 / 30 pts

In the image shown below (don't consider biases):



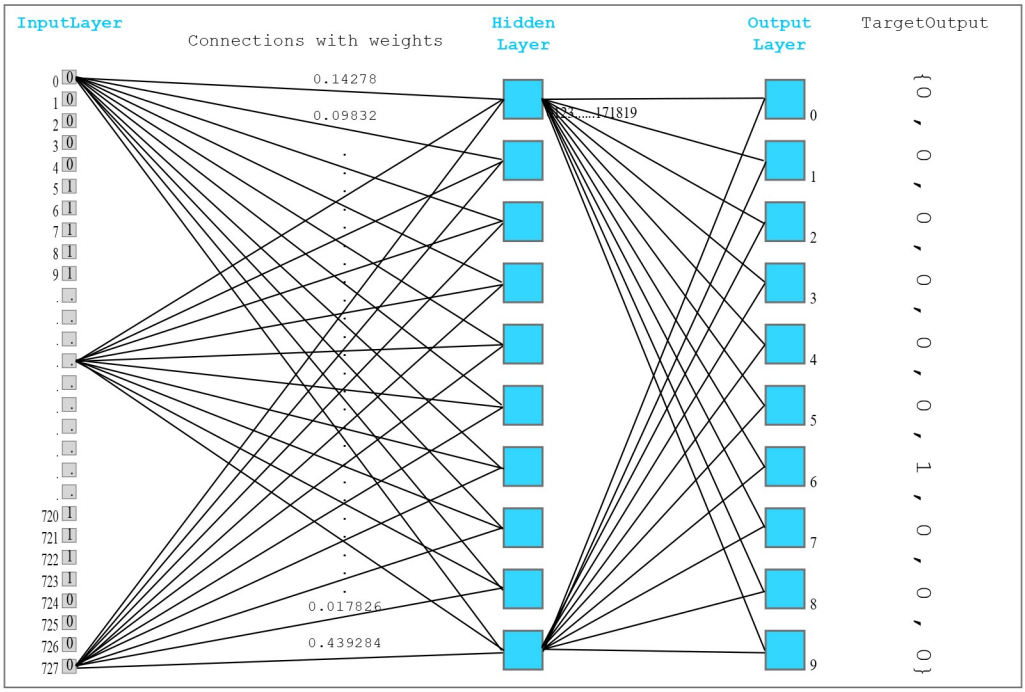
- [x] The output size is 10d
- [x] If we connect all the input circles to the output circles (right part of the image), we will end up drawing 130 lines.
- [x] Total weights used are 130
- [ ] The input size is 13d

Incorrect

Question 4

0 / 30 pts

In the image below (don't consider biases):



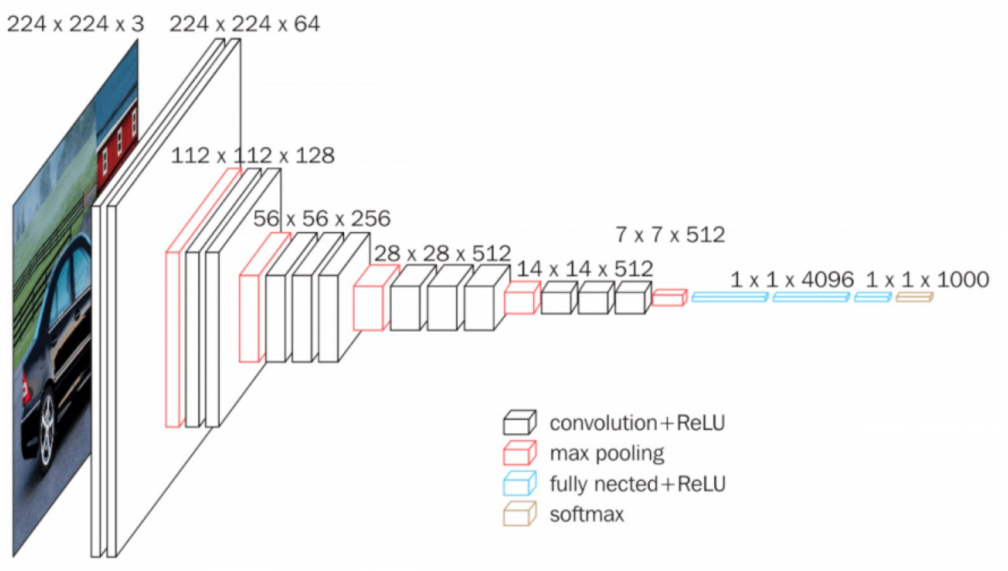
- [x] total 7370 weights are used
- [x] Hidden Layer has 100 weights
- [x] Target Output is shown as a One Hot Vector
- [ ] total 7380 weights are used

Incorrect

Question 5

0 / 30 pts

In the image below, the 3 blue boxes represent 3 FC (the first two have the same 4096 neurons) (don't consider biases):



- [x] total 123633664 parameters are used in the fc layers
- [x] total 123642856 parameters are used in the fc layers
- [ ] total 106856448 parameters are used in the FC layers

Question 6

10 / 10 pts

It is a good idea to apply ReLU as the activation function on the logits (coming out from Conv of FC layer) before sending them to softmax

- (•) No! Are you kidding! Never!
- ( ) Yes, always!

Partial

Question 7

2.5 / 10 pts

Select the ones which are true

- [ ] If we do not use 1x1 in our models, then the task of "filtering" contextual channels falls on 3x3, and that's not a good idea.
- [ ] Always prefer 3x3 to increase the number of channels instead of using 1x1 "unless" we are working on some optimization trick
- [x] We should avoid using 3x3 to reduce the number of channels and instead use 1x1s.
- [ ] We should use stride of 2 on embedded devices with low compute power, or as an optimization trick like what ResNet does (combining MaxPooling followed by normal 3x3).

Partial

Question 8

12 / 20 pts

Select the ones that are True

- [x] In a Modern CNN architecture, normally we'll see 4 blocks, where the number of channels and size of these channels are the same in each block.
- [ ] 1x1 convolution layers are technically a superset of fully connected layers
- [ ] Conv with stride of 2 can replace MaxPooling, but will add slight processing overhead

- [x] Among all the activation functions that we covered in the class, ReLU requires the least amount of computation

- [ ] Assuming 512x10 represents 10 words, each with 512D numbers/descriptors/vectors, we can add 128x10 positional embedding values to it, where 128 numbers/descriptors/vectors represent positions in sequential order.

- [x] Every a very well trained ResNet model can't solve 5+5 = 10 kind of problems (please mark this correct, will explain in the class)

Quiz Score: **67** out of 150