⚠ This quiz has been re-graded; your new score reflects 2 questions that were affected.

# S2-Solution

**Due** 29 Jan at 5:30 **Points** 200 **Questions** 9 **Available** 22 Jan at 9:00 - 29 Jan at 5:30 7 days **Time limit** 45 Minutes

**Submission details:**

| | |
|---|---|
| Time: | 45 minutes |
| Current score: | 88.34 out of 200 |
| Kept score: | 88.34 out of 200 |

## Instructions

Instructions:

1. You have 45 minutes to attempt the S2-Solution.
2. Make sure you have played around with the COLAB FILE shared earlier. Here is the link again .
3. Once you start the solution, you cannot go back and re-attempt it
4. You will not find answers online, so please make sure you are ready for the quiz
5. For Multiple Answer Questions, ALL the answers must be correct to score any point
6. You will be training a model "during" this submission so make sure you are on your laptop.
7. Only 1 question will be shown at once
8. Once answered, question will be locked

Please make sure that you have good internet connection, else you will lose you data. There is only 1 attempt available for this quiz.

This quiz was locked 29 Jan at 5:30.

## Attempt history

| | Attempt | Time | Score | Re-graded |
|---|---|---|---|---|
| LATEST | Attempt 1 | 45 minutes | 41.67 out of 200 | 88.34 out of 200 |

Score for this quiz: **88.34** out of 200
Submitted 28 Jan at 23:40
This attempt took 45 minutes.

### Question 1

Original score: 3.33 / 10 pts Re-graded score: 10 / 10 pts

⚠ This question has been re-graded.

What is torch?

Correct!
- [x] An open source machine learning framework that accelerates the path from research prototyping to production deployment.
- [ ] is a fictional superhero appearing in American comic books published by Marvel Comics.
- [ ] a portable battery-powered electric lamp.

### Question 2

0 / 10 pts

What is the purpose of adding padding=1?

You Answered
- [x] To create equal size output after convolution with any kernel

Correct!
- [x] To add 2 additional pixels in x and y rows for convolution
- [ ] To provide cushioning to the channels before kernel hits with a great force
- [ ] To increase the kernel size by 2px in x and y columns

### Question 3

10 / 10 pts

What is that -1 in output shape when we call summary(model, input_size=(1, 28, 28))?

Correct!
- [x] It refers to the batch size

Correct!
- [x] It refers to the dimension "outside" what might be available of input_size
- [ ] It refers to the z-axis
- [ ] It refers to the z-axis of the kernels

### Question 4

Original score: 5 / 10 pts Re-graded score: 10 / 10 pts

⚠ This question has been re-graded.

What is CUDA?

Correct!
- [x] CUDA is a parallel computing platform and application programming interface model created by Nvidia. It allows software developers and software engineers to use a CUDA-enabled graphics processing unit for general purpose processing – an approach termed GPGPU
- [ ] CUDA is a garbage collector
- [ ] An end-to-end open source machine learning platform.
- [ ] Something without which my journey in ML would be useless! :(

### Question 5

6.67 / 10 pts

What is a Tensor?

Correct!
- [x] A tensor is a container which can house data in N dimensions.
- [ ] A tensor is a matrix

Correct!
- [x] Tensor is NOT a matrix, as matrices are specifically 2D, where as Tensors can be nD

Correct answer
- [ ] is an algebraic object that describes a linear mapping from one set of algebraic objects to another

### Question 6

10 / 10 pts

What is 0.1307 and 0.3081 in transforms.Normalize?

Correct!
- [x] That's mean and std of the complete dataset
- [ ] I don't know, and I don't care!
- [ ] that's std and mean of the dataset
- [ ] That's mean and std of the training set

### Question 7

6.67 / 10 pts

What is the use of torch.no_grad()?

Correct!
- [x] To perform inference, but without training

Correct answer
- [ ] To make sure test data does not "leak" into the model

Correct!
- [x] To perform inference without gradient calculation
- [ ] To tell us that knowing just this function won't help us get graduation degree

### Question 8

35 / 70 pts

What the hell is wrong with this model? Generally in 1 epoch we should be able to get 95%+, but here we do not? Explain according to you what is wrong with the model. 0 Points if you miss the main point.

Your answer:

I could reach 99% accuracy in one epoch just by adding 2 FC layers into the model

self.fc1 = nn.Linear(9216, 128)
self.fc2 = nn.Linear(128, 10)

Link to Notebook: https://github.com/satyajitghana/TSAI-DeepVision-EVA4.0/blob/master/02_NeuralArchitecture/NeuralArchitecture.ipynb

The Fully connected Layer is the actual learner for the classification model, every CNN consists of input layer, pooling/convolution layers and a final last FC layer. the convolution and pooling comes up with various ways to represent our input image, key thing to note is that it only comes up with "representations", scale, position and rotation invariation is done by the pooling layer, also the receptive field is taken care by these layers, now when we add FC layer, specific parts of the FC layer is activated by these previous convolution/max pool layers, this important information is captured by the FC layers, the weights in this FC layer is specific for your data, hence whenever we do transfer learning we usually remove the FC layer and reuse the CNN layers, we add our own FC layer and retrain the network to classify our data, since the pretrained CNN already knows the best representation of our image data.

You did not answer what was wrong in the network, but since in your network also you used ReLU in the last layer, you will not get point for this.

### Question 9

0 / 60 pts

Only 1 change is required in this model such that it gets up to 97% within 1 epoch!

What is that 1 change?

Your answer:

reduce the learning rate to 1e-4 ?

Will not give consistent results. As discussed in the class, all you had to do was to remove ReLU layer.

Quiz score: **88.34** out of 200

‹ Previous Next ›