13. One of your colleagues at the startup is starting a project to classify stop signs in the road as speed limit signs or not. He has approximately 30,000 examples of each image and 30,000 images without a sign. He thought of using your model and applying transfer learning but then he noticed that you use multi-task learning, hence he can't use your model. True/False? 1 / 1 point

- (•) False
- ( ) True

Expand

Correct
Correct. When using transfer learning we can remove the last layer. That is one of the aspects that is different from a binary classification problem.

14. When building a system to detect cattle crossing a road from images taken with the front-facing camera of a truck, the designers had a large dataset of images. Which of the following might be a reason to use an end-to-end approach? 1 / 1 point

- ( ) This approach will make use of useful hand-designed components.
- ( ) It requires less computational resources.
- (•) There is a large dataset available.
- ( ) That is the default approach on computer vision tasks.

Expand

Correct
Correct. To get good results when using an end-to-end approach, it is necessary to have a big dataset.

15. An end-to-end approach doesn't require that we hand-design useful features, it only requires a large enough model. True/False?

- (•) False
- ( ) True

Expand

Incorrect
This is one of the major characteristics of deep learning models, that we don't need to hand-design the features.

11. After working further on the problem, you've decided to correct the incorrectly labeled data. Your team corrects the labels of the wrongly predicted images on the dev set. Which of the following is a necessary step to take? 1 / 1

- Use a correctly labeled version and an incorrectly labeled version to make the model more robust.
- Create a train-dev set to estimate how many incorrectly labeled examples are in the train set.
- Correct the labels of the test set.
- Correct the labels of the train set.

Expand

Correct
Correct. Recall that the dev set and the test set must come from the same distribution.

We can't use this data since they have a different distribution from the ones we used (internet and front-facing camera). True/False?

- False
- True

Expand

Incorrect
The new synthesized images are added to the training set and as long as they look realistic to the human eye this will be useful data to train the model.

You are working out error analysis and counting up what errors the algorithm makes. Which of the following do you think you should manually go through and carefully examine, one image at a time? 1

- 500 images of the test set, on which the algorithm made a mistake.
- 500 images of the train set, on which the algorithm made a mistake.
- 500 images of the dev set, on which the algorithm made a mistake.
- 500 images of the training-dev set, on which the algorithm made a mistake.

Your goal is to detect road signs (stop sign, pedestrian crossing sign, construction ahead sign) and traffic signals (red and green lights) in images. The goal is to recognize which of these objects appear in each image. You plan to use a deep neural network with ReLU units in the hidden layers. For the output layer, which of the following gives you the most appropriate activation function? 1 / 1 point

- Linear
- Sigmoid
- ReLU
- Softmax

When trying to determine what strategy to implement to improve the performance of a model, we manually check all images of the training set where the algorithm was successful. True/False? 1 / 1 point

- True
- False

Expand

Correct
Correct. This set should be too large to manually check all the images. It is better to focus on the images that the algorithm got wrong from the dev set. Also, choose a large enough subset that we can manually check.

The distribution of data you care about contains images from your car's front-facing camera, which comes from a different distribution than the images you were able to find and download off the internet. The best way to split the data is using the 900,000 internet images to train, and divide the 100,000 images from your car's front-facing camera between dev and test sets. True/False?

- False
- True

Expand

Correct
Correct. 100,000 images are too many to use in dev and test. A better distribution would be to use 80,000 of those images to train, and split the rest between dev and test.

Training-Dev	20,000 images randomly picked from (900,000 internet images + 60,000 car's front-facing camera images)	2.3%
Dev	20,000 images from your car's front-facing camera	1.3%
Test	20,000 images from the car's front-facing camera	1.1%

You also know that human-level error on the road sign and traffic signals classification task is around 0.5%. Based on the information given, a friend thinks that the training data distribution is much harder than the dev/test distribution. What do you think?

- ○ Your friend is wrong. (i.e., Bayes error for the dev/test distribution is probably higher than for the train distribution.)
- ○ There's insufficient information to tell if your friend is right or wrong.
- ◉ Your friend is probably right. (i.e., Bayes error for the dev/test distribution is probably lower than for the train distribution.)

Expand

Correct
Correct. Since the training-dev error is higher than the dev and test errors, the dev/test distribution is probably "easier" than the training distribution.

One of your colleagues at the startup is starting a project to classify road signs as stop, dangerous curve, construction ahead, dead-end, and speed limit signs. Given how specific the signs are, he has only a small dataset and hasn't been able to create a good model. You offer your help providing the trained weights (parameters) of your model to transfer knowledge.

But your colleague points out that his problem has more specific items than the ones you used to train your model. This makes the transfer of knowledge impossible. True/False?

- ○ True
- ◉ False

Correct
Correct. The model can benefit from the pre-trained model since there are many features learned by your model that can be used in the new problem.

One of your colleagues at the startup is starting a project to classify road signs as stop, dangerous curve, construction ahead, dead-end, and speed limit signs. He has approximately 30,000 examples of each image and 30,000 images without a sign. This case could benefit from using multi-task learning. True/False?

- ◉ True
- ○ False

Expand

Correct
Correct. There are a lot of high-level features that all the required signs share. This is a great scenario to make use of multi-task learning.