

Questionnaire

1. How could multi-label classification improve the usability of the bear classifier?

it'll able to detect various types of bear and usability will increase

2. How do we encode the dependent variable in a multi-label classification problem?

we can specify the function into `get_y` variable after that we can transform variable into multilabel classification problem or we can encode the variables using oneHotEncoding technique

3. How do you access the rows and columns of a DataFrame as if it were a matrix?

- for accessing rows you can use slicing and indexing
- for accessing columns we can use either `df.columnName` or `df['columnname']`

4. How do you get a column by name from a DataFrame?

`df.name` is the way to get column by name

5. What is the difference between a Dataset and DataLoader ?

dataset is the object which have training dataset and validation dataset
dataloader is the object which have training dataloader and validation dataloader

6. What does a Datasets object normally contain?

training dataset and the validation dataset

7. What does a DataLoaders object normally contain?

since the dataloader contains the training dataloader and validation dataloader like it can contain the Datablocks which will be responsible for loading the data while our model is training notice

here that for training dataset object contain whole data while the dataloader contains info on how to load data if image it may contain file names etc

8. What does lambda do in Python?

lambda initiates the one line function in python by which we can do various operations in one line

eg . `x = lambda a : a + 10`

9. What are the methods to customize how the independent and dependent variables are created with the data block API?

while defining the datablock we do determine the types of the datablock which we want to load there are 2 types one which is independent and another which is dependent one the dependent datatype will be loaded on the basis of get_y function even for loading the independent datatype we can load it using defining the get_x function in dataset item transformations , batch transformations can be applied while loading in with the help of dataloaders

10. Why is softmax not an appropriate output activation function when using a one-hot-encoded target?

because softmax wants to predict the one value which is the probability of it being true or false but while doing the multiclass classification there can be many inputs or even no inputs

11. Why is nll_loss not an appropriate loss function when using a one-hot-encoded target?

nll loss only works when the model needs to predict just one value which not the case here

12. What is the difference between nn.BCELoss and nn.BCEWithLogitsLoss ?

BCE stands for binary cross entropy while the BCE with logits is helpful when the labels which we are having are in the form of logits
BCE loss does not include any initial sigmoid it assumes the appropriate sigmoid functions is already applied

while the BCEWithLogitsLoss does both sigmoid and cross entropy on the single function

13. Why can't we use regular accuracy in a multi-label problem?

the regular accuracy assumes that the model is predicting every single label but the multi label having multiple probabilities for the labels which they are predicting

14. When is it OK to tune a hyperparameter on the validation set?

yes it is okay when you are trying to find the learning rate when the hyper parameter and the matrix being observed is smooth

15. How is y_range implemented in fastai? (See if you can implement it yourself and test it without peeking!)

y_range tells the function that you are not supposed to go out of this range while predicting for the data it should be in between of that range

```
def sigmoid(x,lo,hi):return x.sigmoid() (hi-lo) + lo
```

16. What is a regression problem? What loss function should you use for such a problem?

the regression problem is when we have to predict the data (values) on the basis of the data which is previously given to us for regression problem we should use the mse loss function

17. What do you need to do to make sure the fastai library applies the same data augmentation to your input images and your target point coordinates?

you have to visualize the batch from the dls.show_batch() before turning dls to model for training
for making sure that the library is rightly applying we have to specify the PointBlock which will take the inputs of the points of the values which are important in this task for recognizing the head of the person