任务描述

如何根据据图像的视觉内容为图像赋予一个语义类别是图像分类的目标，也是图像检索、图像内容分析和目标识别等问题的基础。本实践旨在通过一个美食分类的案列，让大家理解和掌握如何使用飞桨2.0搭建一个卷积神经网络。 特别提示：本实践所用数据集均来自互联网，请勿用于商务用途。

解压文件，使用train.csv训练，测试使用val.csv。最后以在val上的准确率作为最终分数。

✓调优

思考并动手进行调优，以在验证集上的准确率为评价指标，验证集上准确率越高，得分越高！模型大家可以更换，调参技巧任选，代码需要大家自己调通。

```
!cd data $$/
!unzip -oq /home/aistudio/data/data72793/lemon_homework.zip
!unzip -oq /home/aistudio/lemon_homework/lemon_lesson.zip -d /home/aistudio/lemon_homework/
!unzip -oq /home/aistudio/lemon_homework/lemon_lesson/test_images.zip -d /home/aistudio/lemon_homework/
!unzip -oq /home/aistudio/lemon_homework/lemon_lesson/train_images.zip -d /home/aistudio/lemon_homework/
```

```
# 导入所需要的库
from sklearn.utils import shuffle
import os
import pandas as pd
import numpy as np
from PIL import Image

import paddle
import paddle.nn as nn
from paddle.io import Dataset
import paddle.vision.transforms as T
import paddle.nn.functional as F
from paddle.metric import Accuracy

import warnings
warnings.filterwarnings("ignore")

# 读取数据
train_images = pd.read_csv('lemon_homework/train.csv', usecols=['id','class_num'])

# labelshuffling

def labelShuffling(dataFrame, groupByName = 'class_num'):

    groupDataFrame = dataFrame.groupby(by=[groupByName])
    labels = groupDataFrame.size()
    print("length of label is ", len(labels))
    maxNum = max(labels)
    lst = pd.DataFrame()
    for i in range(len(labels)):
        print("Processing label  :", i)
        tmpGroupBy = groupDataFrame.get_group(i)
        createdShuffleLabels = np.random.permutation(np.array(range(maxNum))) % labels[i]
        print("Num of the label is : ", labels[i])
        lst=lst.append(tmpGroupBy.iloc[createdShuffleLabels], ignore_index=True)
        print("Done")
    # lst.to_csv('test1.csv', index=False)
    return lst

# 划分训练集和校验集
```

```
all_size = len(train_images)
# print(all_size)
train_size = int(all_size * 0.8)
train_image_list = train_images[:train_size]
val_image_list = train_images[train_size:]

df = labelShuffling(train_image_list)
df = shuffle(df)

train_image_path_list = df['id'].values
label_list = df['class_num'].values
label_list = paddle.to_tensor(label_list, dtype='int64')
train_label_list = paddle.nn.functional.one_hot(label_list, num_classes=4)

val_image_path_list = val_image_list['id'].values
val_label_list = val_image_list['class_num'].values
val_label_list = paddle.to_tensor(val_label_list, dtype='int64')
val_label_list = paddle.nn.functional.one_hot(val_label_list, num_classes=4)

# 定义数据预处理
data_transforms = T.Compose([
    T.Resize(size=(224, 224)),
    T.RandomHorizontalFlip(224),
    T.RandomVerticalFlip(224),
    T.ColorJitter(0.4,0.4,0.4,0.4),
    T.RandomRotation(90),
    T.Transpose(),     # HWC -> CHW
    T.Normalize(
        mean=[0, 0, 0],         # 归一化
        std=[255, 255, 255],
        to_rgb=True)
])
```

```
length of label is  4
Processing label  : 0
Num of the label is :  234
Done
Processing label  : 1
Num of the label is :  156
Done
Processing label  : 2
Num of the label is :  136
Done
Processing label  : 3
Num of the label is :  123
Done
```

```
# 构建Dataset
class MyDataset(paddle.io.Dataset):
    """
    步骤一：继承paddle.io.Dataset类
    """
    def __init__(self, train_img_list, val_img_list,train_label_list,val_label_list, mode='train'):
        """
        步骤二：实现构造函数，定义数据读取方式，划分训练和测试数据集
        """
        super(MyDataset, self).__init__()
        self.img = []
        self.label = []
        # 借助pandas读csv的库
        self.train_images = train_img_list
        self.test_images = val_img_list
```

```
        self.train_label = train_label_list
        self.test_label = val_label_list
        if mode == 'train':
            # 读train_images的数据
            for img,la in zip(self.train_images, self.train_label):
                self.img.append('lemon_homework/train_images/'+img)
                self.label.append(la)
        else:
            # 读test_images的数据
            for img,la in zip(self.train_images, self.train_label):
                self.img.append('lemon_homework/test_images/'+img)
                self.label.append(la)

    def load_img(self, image_path):

        # 实际使用时使用Pillow相关库进行图片读取即可，这里我们对数据先做个模拟
        image = Image.open(image_path).convert('RGB')
        return image

    def __getitem__(self, index):
        """
        步骤三：实现__getitem__方法，定义指定index时如何获取数据，并返回单条数据（训练数据，对应的标签）
        """
        image = self.load_img(self.img[index])
        label = self.label[index]
        # label = paddle.to_tensor(label)

        return data_transforms(image), paddle.nn.functional.label_smooth(label)

    def __len__(self):
        """
        步骤四：实现__len__方法，返回数据集总数目
        """
        return len(self.img)

#train_loader
train_dataset = MyDataset(train_img_list=train_image_path_list, val_img_list=val_image_path_list, train_lab
train_loader = paddle.io.DataLoader(train_dataset, places=paddle.CPUPlace(), batch_size=32, shuffle=True, r

#val_loader

val_dataset = MyDataset(train_img_list=train_image_path_list, val_img_list=val_image_path_list, train_label
val_loader = paddle.io.DataLoader(train_dataset, places=paddle.CPUPlace(), batch_size=32, shuffle=True, num
```

```
from work.mobilenet import MobileNetV2
#定义输入
input_define=paddle.static.InputSpec(shape=[-1,3,224,224],dtype="float32",name="img")
label_define=paddle.static.InputSpec(shape=[-1,1],dtype="int64",name="label")

# 模型封装
model_res = MobileNetV2(class_dim=4)
model = paddle.Model(model_res,inputs=input_define,labels=label_define)

# 定义优化器

scheduler = paddle.optimizer.lr.LinearWarmup(
        learning_rate=0.5, warmup_steps=20, start_lr=0, end_lr=0.5, verbose=True)
optim = paddle.optimizer.SGD(learning_rate=scheduler, parameters=model.parameters())
# optim = paddle.optimizer.Adam(learning_rate=0.001, parameters=model.parameters())
```

```python
# 配置模型
model.prepare(
    optim,
    paddle.nn.CrossEntropyLoss(soft_label=True),
    Accuracy()
    )

# 模型训练与评估
model.fit(train_loader,
        val_loader,
        log_freq=1,
        epochs=10,
        # callbacks=Callbk(write=write, iters=iters),
        verbose=1,
        )
```

```
Epoch 0: LinearWarmup set learning rate to 0.0.
The loss value printed in the log is the current step, and the metric is the average value of previous step
Epoch 1/10
step  1/30 [>.............................] - loss: 1.7991 - acc: 0.2500 - ETA: 18s - 648ms/stepEpoch 1: Li
step  2/30 [=>............................] - loss: 1.6638 - acc: 0.2812 - ETA: 16s - 572ms/stepEpoch 2: Li
step  3/30 [==>...........................] - loss: 1.3778 - acc: 0.3021 - ETA: 14s - 552ms/stepEpoch 3: Li
step  4/30 [===>..........................] - loss: 1.6055 - acc: 0.2969 - ETA: 14s - 541ms/stepEpoch 4: Li
step  5/30 [====>.........................] - loss: 2.4297 - acc: 0.2938 - ETA: 13s - 537ms/stepEpoch 5: Li
step  6/30 [=====>........................] - loss: 5.4589 - acc: 0.2760 - ETA: 12s - 531ms/stepEpoch 6: Li
step  7/30 [======>.......................] - loss: 7.8443 - acc: 0.2679 - ETA: 12s - 529ms/stepEpoch 7: Li
step  8/30 [=======>......................] - loss: 11.2510 - acc: 0.2617 - ETA: 11s - 529ms/stepEpoch 8: L
step  9/30 [========>.....................] - loss: 11.8286 - acc: 0.2569 - ETA: 11s - 529ms/stepEpoch 9: L
step 10/30 [=========>....................] - loss: 11.1927 - acc: 0.2656 - ETA: 10s - 531ms/stepEpoch 10:
step 11/30 [==========>...................] - loss: 6.9656 - acc: 0.2699 - ETA: 10s - 533ms/step Epoch 11:
step 12/30 [===========>..................] - loss: 7.1325 - acc: 0.2760 - ETA: 9s - 532ms/step Epoch 12: L
step 13/30 [============>.................] - loss: 7.4597 - acc: 0.2788 - ETA: 9s - 531ms/stepEpoch 13: Li
step 14/30 [=============>................] - loss: 11.0570 - acc: 0.2790 - ETA: 8s - 530ms/stepEpoch 14: L
step 15/30 [==============>...............] - loss: 6.9919 - acc: 0.2729 - ETA: 7s - 529ms/step Epoch 15: L
step 16/30 [===============>..............] - loss: 4.0241 - acc: 0.2793 - ETA: 7s - 529ms/stepEpoch 16: Li
step 17/30 [================>.............] - loss: 6.8250 - acc: 0.2812 - ETA: 6s - 528ms/stepEpoch 17: Li
step 18/30 [=================>............] - loss: 3.4657 - acc: 0.2865 - ETA: 6s - 527ms/stepEpoch 18: Li
step 19/30 [==================>...........] - loss: 6.5070 - acc: 0.2796 - ETA: 5s - 526ms/stepEpoch 19: Li
step 20/30 [===================>..........] - loss: 6.8281 - acc: 0.2781 - ETA: 5s - 526ms/stepEpoch 20: Li
step 21/30 [====================>.........] - loss: 2.6457 - acc: 0.2783 - ETA: 4s - 525ms/stepEpoch 21: Li
step 22/30 [=====================>........] - loss: 4.8565 - acc: 0.2741 - ETA: 4s - 524ms/stepEpoch 22: Li
step 23/30 [======================>.......] - loss: 3.5572 - acc: 0.2731 - ETA: 3s - 523ms/stepEpoch 23: Li
step 24/30 [=======================>......] - loss: 5.0329 - acc: 0.2734 - ETA: 3s - 522ms/stepEpoch 24: Li
step 25/30 [========================>.....] - loss: 6.0762 - acc: 0.2737 - ETA: 2s - 522ms/stepEpoch 25: Li
step 26/30 [=========================>....] - loss: 5.8663 - acc: 0.2728 - ETA: 2s - 521ms/stepEpoch 26: Li
step 27/30 [==========================>...] - loss: 4.0715 - acc: 0.2720 - ETA: 1s - 520ms/stepEpoch 27: Li
step 28/30 [===========================>..] - loss: 4.2898 - acc: 0.2723 - ETA: 1s - 519ms/stepEpoch 28: Li
step 29/30 [============================>.] - loss: 2.6164 - acc: 0.2716 - ETA: 0s - 518ms/stepEpoch 29: Li
Epoch 30: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 4.1106 - acc: 0.2692 - 504ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 12.3455 - acc: 0.2404 - 483ms/step
Eval samples: 936
Epoch 2/10
step  1/30 [>.............................] - loss: 5.6252 - acc: 0.2500 - ETA: 16s - 559ms/stepEpoch 31: L
step  2/30 [=>............................] - loss: 5.0505 - acc: 0.3125 - ETA: 14s - 528ms/stepEpoch 32: L
step  3/30 [==>...........................] - loss: 5.5451 - acc: 0.2708 - ETA: 13s - 514ms/stepEpoch 33: L
step  4/30 [===>..........................] - loss: 3.4816 - acc: 0.2656 - ETA: 13s - 507ms/stepEpoch 34: L
step  5/30 [====>.........................] - loss: 2.8496 - acc: 0.2437 - ETA: 12s - 503ms/stepEpoch 35: L
step  6/30 [=====>........................] - loss: 3.3774 - acc: 0.2552 - ETA: 11s - 500ms/stepEpoch 36: L
step  7/30 [======>.......................] - loss: 1.5111 - acc: 0.2634 - ETA: 11s - 499ms/stepEpoch 37: L
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step  8/30 [=======>.....................] - loss: 1.7805 - acc: 0.2695 - ETA: 10s - 497ms/stepEpoch 38: L
step  9/30 [========>....................] - loss: 1.4845 - acc: 0.2778 - ETA: 10s - 496ms/stepEpoch 39: L
step 10/30 [=========>...................] - loss: 1.5684 - acc: 0.2750 - ETA: 9s - 495ms/step Epoch 40: L
step 11/30 [==========>..................] - loss: 1.5100 - acc: 0.2812 - ETA: 9s - 494ms/stepEpoch 41: Li
step 12/30 [===========>.................] - loss: 1.6990 - acc: 0.2734 - ETA: 8s - 493ms/stepEpoch 42: Li
step 13/30 [============>................] - loss: 1.4526 - acc: 0.2740 - ETA: 8s - 493ms/stepEpoch 43: Li
step 14/30 [=============>...............] - loss: 1.7355 - acc: 0.2746 - ETA: 7s - 492ms/stepEpoch 44: Li
step 15/30 [==============>..............] - loss: 1.5054 - acc: 0.2792 - ETA: 7s - 492ms/stepEpoch 45: Li
step 16/30 [===============>.............] - loss: 1.4851 - acc: 0.2754 - ETA: 6s - 492ms/stepEpoch 46: Li
step 17/30 [================>............] - loss: 1.5438 - acc: 0.2794 - ETA: 6s - 492ms/stepEpoch 47: Li
step 18/30 [=================>...........] - loss: 1.6429 - acc: 0.2830 - ETA: 5s - 492ms/stepEpoch 48: Li
step 19/30 [==================>..........] - loss: 1.5700 - acc: 0.2862 - ETA: 5s - 493ms/stepEpoch 49: Li
step 20/30 [===================>.........] - loss: 1.5437 - acc: 0.2891 - ETA: 4s - 493ms/stepEpoch 50: Li
step 21/30 [====================>........] - loss: 1.5472 - acc: 0.2872 - ETA: 4s - 493ms/stepEpoch 51: Li
step 22/30 [=====================>.......] - loss: 1.4912 - acc: 0.2855 - ETA: 3s - 494ms/stepEpoch 52: Li
step 23/30 [======================>......] - loss: 1.9143 - acc: 0.2799 - ETA: 3s - 494ms/stepEpoch 53: Li
step 24/30 [=======================>.....] - loss: 1.6228 - acc: 0.2839 - ETA: 2s - 494ms/stepEpoch 54: Li
step 25/30 [========================>....] - loss: 1.4682 - acc: 0.2838 - ETA: 2s - 494ms/stepEpoch 55: Li
step 26/30 [=========================>...] - loss: 1.4974 - acc: 0.2825 - ETA: 1s - 494ms/stepEpoch 56: Li
step 27/30 [==========================>..] - loss: 1.6221 - acc: 0.2812 - ETA: 1s - 495ms/stepEpoch 57: Li
step 28/30 [===========================>.] - loss: 1.3549 - acc: 0.2868 - ETA: 0s - 495ms/stepEpoch 58: Li
step 29/30 [============================>] - loss: 1.4343 - acc: 0.2845 - ETA: 0s - 495ms/stepEpoch 59: Li
Epoch 60: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 1.6719 - acc: 0.2842 - 483ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.6352 - acc: 0.2500 - 483ms/step
Eval samples: 936
Epoch 3/10
step  1/30 [>.............................] - loss: 1.8691 - acc: 0.3750 - ETA: 15s - 548ms/stepEpoch 61: L
step  2/30 [=>............................] - loss: 1.4997 - acc: 0.2344 - ETA: 14s - 518ms/stepEpoch 62: L
step  3/30 [==>...........................] - loss: 1.7193 - acc: 0.2396 - ETA: 13s - 509ms/stepEpoch 63: L
step  4/30 [===>..........................] - loss: 1.4139 - acc: 0.3047 - ETA: 13s - 504ms/stepEpoch 64: L
step  5/30 [====>.........................] - loss: 1.4363 - acc: 0.3375 - ETA: 12s - 500ms/stepEpoch 65: L
step  6/30 [=====>........................] - loss: 1.3736 - acc: 0.3229 - ETA: 11s - 497ms/stepEpoch 66: L
step  7/30 [======>.......................] - loss: 1.3311 - acc: 0.3214 - ETA: 11s - 496ms/stepEpoch 67: L
step  8/30 [=======>......................] - loss: 1.3209 - acc: 0.3359 - ETA: 10s - 495ms/stepEpoch 68: L
step  9/30 [========>.....................] - loss: 1.4527 - acc: 0.3229 - ETA: 10s - 495ms/stepEpoch 69: L
step 10/30 [=========>....................] - loss: 1.3416 - acc: 0.3281 - ETA: 9s - 494ms/step Epoch 70: L
step 11/30 [==========>...................] - loss: 1.2913 - acc: 0.3324 - ETA: 9s - 493ms/stepEpoch 71: Li
step 12/30 [===========>..................] - loss: 1.3810 - acc: 0.3333 - ETA: 8s - 492ms/stepEpoch 72: Li
step 13/30 [============>.................] - loss: 1.3043 - acc: 0.3341 - ETA: 8s - 491ms/stepEpoch 73: Li
step 14/30 [=============>................] - loss: 1.4807 - acc: 0.3304 - ETA: 7s - 490ms/stepEpoch 74: Li
step 15/30 [==============>...............] - loss: 1.3888 - acc: 0.3292 - ETA: 7s - 490ms/stepEpoch 75: Li
step 16/30 [===============>..............] - loss: 1.3321 - acc: 0.3359 - ETA: 6s - 490ms/stepEpoch 76: Li
step 17/30 [================>.............] - loss: 1.3392 - acc: 0.3401 - ETA: 6s - 490ms/stepEpoch 77: Li
step 18/30 [=================>............] - loss: 1.3109 - acc: 0.3438 - ETA: 5s - 490ms/stepEpoch 78: Li
step 19/30 [==================>...........] - loss: 1.5691 - acc: 0.3405 - ETA: 5s - 490ms/stepEpoch 79: Li
step 20/30 [===================>..........] - loss: 1.4940 - acc: 0.3344 - ETA: 4s - 490ms/stepEpoch 80: Li
step 21/30 [====================>.........] - loss: 1.2797 - acc: 0.3378 - ETA: 4s - 490ms/stepEpoch 81: Li
step 22/30 [=====================>........] - loss: 1.4207 - acc: 0.3324 - ETA: 3s - 490ms/stepEpoch 82: Li
step 23/30 [======================>.......] - loss: 1.3300 - acc: 0.3302 - ETA: 3s - 489ms/stepEpoch 83: Li
step 24/30 [=======================>......] - loss: 1.1786 - acc: 0.3359 - ETA: 2s - 489ms/stepEpoch 84: Li
step 25/30 [========================>.....] - loss: 1.4267 - acc: 0.3362 - ETA: 2s - 489ms/stepEpoch 85: Li
step 26/30 [=========================>....] - loss: 1.3644 - acc: 0.3317 - ETA: 1s - 489ms/stepEpoch 86: Li
step 27/30 [==========================>...] - loss: 1.5622 - acc: 0.3310 - ETA: 1s - 489ms/stepEpoch 87: Li
step 28/30 [===========================>..] - loss: 1.6272 - acc: 0.3292 - ETA: 0s - 488ms/stepEpoch 88: Li
step 29/30 [============================>.] - loss: 1.3719 - acc: 0.3297 - ETA: 0s - 488ms/stepEpoch 89: Li
Epoch 90: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 1.5471 - acc: 0.3291 - 475ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
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```
step 30/30 [==============================] - loss: 1.3215 - acc: 0.3429 - 483ms/step
Eval samples: 936
Epoch 4/10
step  1/30 [>.............................] - loss: 1.6517 - acc: 0.2500 - ETA: 15s - 551ms/stepEpoch 91: L
step  2/30 [=>............................] - loss: 1.6796 - acc: 0.2344 - ETA: 14s - 518ms/stepEpoch 92: L
step  3/30 [==>...........................] - loss: 1.3023 - acc: 0.2917 - ETA: 13s - 506ms/stepEpoch 93: L
step  4/30 [===>..........................] - loss: 1.3496 - acc: 0.3047 - ETA: 13s - 502ms/stepEpoch 94: L
step  5/30 [====>.........................] - loss: 1.2871 - acc: 0.3000 - ETA: 12s - 499ms/stepEpoch 95: L
step  6/30 [=====>........................] - loss: 1.3913 - acc: 0.3177 - ETA: 11s - 497ms/stepEpoch 96: L
step  7/30 [======>.......................] - loss: 1.3846 - acc: 0.3080 - ETA: 11s - 495ms/stepEpoch 97: L
step  8/30 [=======>......................] - loss: 1.2978 - acc: 0.3203 - ETA: 10s - 494ms/stepEpoch 98: L
step  9/30 [========>.....................] - loss: 1.1192 - acc: 0.3507 - ETA: 10s - 494ms/stepEpoch 99: L
step 10/30 [=========>....................] - loss: 1.3241 - acc: 0.3438 - ETA: 9s - 493ms/step Epoch 100:
step 11/30 [==========>...................] - loss: 1.3059 - acc: 0.3523 - ETA: 9s - 492ms/stepEpoch 101: L
step 12/30 [===========>..................] - loss: 1.2857 - acc: 0.3568 - ETA: 8s - 492ms/stepEpoch 102: L
step 13/30 [============>.................] - loss: 1.2760 - acc: 0.3606 - ETA: 8s - 492ms/stepEpoch 103: L
step 14/30 [=============>................] - loss: 1.2747 - acc: 0.3638 - ETA: 7s - 492ms/stepEpoch 104: L
step 15/30 [==============>...............] - loss: 1.2447 - acc: 0.3667 - ETA: 7s - 491ms/stepEpoch 105: L
step 16/30 [===============>..............] - loss: 1.1890 - acc: 0.3730 - ETA: 6s - 491ms/stepEpoch 106: L
step 17/30 [================>.............] - loss: 1.2751 - acc: 0.3713 - ETA: 6s - 491ms/stepEpoch 107: L
step 18/30 [=================>............] - loss: 1.0794 - acc: 0.3854 - ETA: 5s - 491ms/stepEpoch 108: L
step 19/30 [==================>...........] - loss: 1.2407 - acc: 0.3898 - ETA: 5s - 491ms/stepEpoch 109: L
step 20/30 [===================>..........] - loss: 1.3833 - acc: 0.3969 - ETA: 4s - 491ms/stepEpoch 110: L
step 21/30 [====================>.........] - loss: 1.4108 - acc: 0.3943 - ETA: 4s - 491ms/stepEpoch 111: L
step 22/30 [=====================>........] - loss: 1.2291 - acc: 0.4006 - ETA: 3s - 491ms/stepEpoch 112: L
step 23/30 [======================>.......] - loss: 1.2599 - acc: 0.4022 - ETA: 3s - 491ms/stepEpoch 113: L
step 24/30 [=======================>......] - loss: 1.2703 - acc: 0.4062 - ETA: 2s - 490ms/stepEpoch 114: L
step 25/30 [========================>.....] - loss: 1.2174 - acc: 0.4075 - ETA: 2s - 490ms/stepEpoch 115: L
step 26/30 [=========================>....] - loss: 1.2622 - acc: 0.4087 - ETA: 1s - 490ms/stepEpoch 116: L
step 27/30 [==========================>...] - loss: 1.0606 - acc: 0.4109 - ETA: 1s - 491ms/stepEpoch 117: L
step 28/30 [===========================>..] - loss: 1.0759 - acc: 0.4196 - ETA: 0s - 491ms/stepEpoch 118: L
step 29/30 [============================>.] - loss: 0.9426 - acc: 0.4278 - ETA: 0s - 491ms/stepEpoch 119: L
Epoch 120: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 0.9115 - acc: 0.4306 - 478ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.5639 - acc: 0.3761 - 476ms/step
Eval samples: 936
Epoch 5/10
step  1/30 [>.............................] - loss: 1.6737 - acc: 0.4688 - ETA: 16s - 562ms/stepEpoch 121:
step  2/30 [=>............................] - loss: 1.4904 - acc: 0.4219 - ETA: 14s - 530ms/stepEpoch 122:
step  3/30 [==>...........................] - loss: 1.5941 - acc: 0.3750 - ETA: 13s - 518ms/stepEpoch 123:
step  4/30 [===>..........................] - loss: 1.5040 - acc: 0.3828 - ETA: 13s - 512ms/stepEpoch 124:
step  5/30 [====>.........................] - loss: 1.2899 - acc: 0.3875 - ETA: 12s - 509ms/stepEpoch 125:
step  6/30 [=====>........................] - loss: 1.0542 - acc: 0.4271 - ETA: 12s - 507ms/stepEpoch 126:
step  7/30 [======>.......................] - loss: 1.1788 - acc: 0.4330 - ETA: 11s - 505ms/stepEpoch 127:
step  8/30 [=======>......................] - loss: 1.3856 - acc: 0.4336 - ETA: 11s - 504ms/stepEpoch 128:
step  9/30 [========>.....................] - loss: 1.4091 - acc: 0.4236 - ETA: 10s - 503ms/stepEpoch 129:
step 10/30 [=========>....................] - loss: 1.1068 - acc: 0.4344 - ETA: 10s - 503ms/stepEpoch 130:
step 11/30 [==========>...................] - loss: 1.1262 - acc: 0.4403 - ETA: 9s - 502ms/step Epoch 131:
step 12/30 [===========>..................] - loss: 1.1830 - acc: 0.4531 - ETA: 9s - 502ms/stepEpoch 132: L
step 13/30 [============>.................] - loss: 1.0159 - acc: 0.4688 - ETA: 8s - 502ms/stepEpoch 133: L
step 14/30 [=============>................] - loss: 1.0972 - acc: 0.4732 - ETA: 8s - 502ms/stepEpoch 134: L
step 15/30 [==============>...............] - loss: 1.3092 - acc: 0.4729 - ETA: 7s - 503ms/stepEpoch 135: L
step 16/30 [===============>..............] - loss: 1.0820 - acc: 0.4766 - ETA: 7s - 503ms/stepEpoch 136: L
step 17/30 [================>.............] - loss: 1.2686 - acc: 0.4779 - ETA: 6s - 503ms/stepEpoch 137: L
step 18/30 [=================>............] - loss: 1.0764 - acc: 0.4861 - ETA: 6s - 502ms/stepEpoch 138: L
step 19/30 [==================>...........] - loss: 1.1897 - acc: 0.4885 - ETA: 5s - 501ms/stepEpoch 139: L
step 20/30 [===================>..........] - loss: 1.0703 - acc: 0.4891 - ETA: 5s - 501ms/stepEpoch 140: L
step 21/30 [====================>.........] - loss: 1.2829 - acc: 0.4866 - ETA: 4s - 500ms/stepEpoch 141: L
step 22/30 [=====================>........] - loss: 1.2606 - acc: 0.4844 - ETA: 4s - 501ms/stepEpoch 142: L
step 23/30 [======================>.......] - loss: 1.1309 - acc: 0.4878 - ETA: 3s - 501ms/stepEpoch 143: L
```

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step 24/30 [=======================>......] - loss: 1.1063 - acc: 0.4883 - ETA: 3s - 502ms/stepEpoch 144: L
step 25/30 [========================>.....] - loss: 1.0808 - acc: 0.4888 - ETA: 2s - 501ms/stepEpoch 145: L
step 26/30 [=========================>....] - loss: 1.0324 - acc: 0.4904 - ETA: 2s - 502ms/stepEpoch 146: L
step 27/30 [==========================>...] - loss: 1.1643 - acc: 0.4907 - ETA: 1s - 502ms/stepEpoch 147: L
step 28/30 [===========================>..] - loss: 1.1818 - acc: 0.4922 - ETA: 1s - 501ms/stepEpoch 148: L
step 29/30 [============================>.] - loss: 1.1330 - acc: 0.4946 - ETA: 0s - 501ms/stepEpoch 149: L
Epoch 150: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 1.0704 - acc: 0.4947 - 488ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.2772 - acc: 0.4701 - 484ms/step
Eval samples: 936
Epoch 6/10
step  1/30 [>.............................] - loss: 1.2937 - acc: 0.5312 - ETA: 16s - 564ms/stepEpoch 151:
step  2/30 [=>............................] - loss: 1.2963 - acc: 0.5000 - ETA: 14s - 529ms/stepEpoch 152:
step  3/30 [==>...........................] - loss: 1.2259 - acc: 0.5000 - ETA: 13s - 517ms/stepEpoch 153:
step  4/30 [===>..........................] - loss: 1.1542 - acc: 0.5078 - ETA: 13s - 511ms/stepEpoch 154:
step  5/30 [====>.........................] - loss: 1.2025 - acc: 0.5062 - ETA: 12s - 508ms/stepEpoch 155:
step  6/30 [=====>........................] - loss: 0.9822 - acc: 0.5312 - ETA: 12s - 505ms/stepEpoch 156:
step  7/30 [======>.......................] - loss: 1.0640 - acc: 0.5357 - ETA: 11s - 504ms/stepEpoch 157:
step  8/30 [=======>......................] - loss: 1.0083 - acc: 0.5469 - ETA: 11s - 503ms/stepEpoch 158:
step  9/30 [========>.....................] - loss: 1.2032 - acc: 0.5382 - ETA: 10s - 502ms/stepEpoch 159:
step 10/30 [=========>....................] - loss: 0.9969 - acc: 0.5500 - ETA: 10s - 501ms/stepEpoch 160:
step 11/30 [==========>...................] - loss: 1.2044 - acc: 0.5455 - ETA: 9s - 501ms/step Epoch 161:
step 12/30 [===========>..................] - loss: 1.4089 - acc: 0.5339 - ETA: 9s - 501ms/stepEpoch 162: L
step 13/30 [============>.................] - loss: 0.9204 - acc: 0.5505 - ETA: 8s - 501ms/stepEpoch 163: L
step 14/30 [=============>................] - loss: 0.9809 - acc: 0.5513 - ETA: 8s - 500ms/stepEpoch 164: L
step 15/30 [==============>...............] - loss: 0.8981 - acc: 0.5542 - ETA: 7s - 500ms/stepEpoch 165: L
step 16/30 [===============>..............] - loss: 1.3342 - acc: 0.5547 - ETA: 7s - 501ms/stepEpoch 166: L
step 17/30 [================>.............] - loss: 1.2477 - acc: 0.5460 - ETA: 6s - 501ms/stepEpoch 167: L
step 18/30 [==================>...........] - loss: 1.2300 - acc: 0.5434 - ETA: 6s - 501ms/stepEpoch 168: L
step 19/30 [===================>..........] - loss: 1.0981 - acc: 0.5461 - ETA: 5s - 501ms/stepEpoch 169: L
step 20/30 [====================>.........] - loss: 1.0866 - acc: 0.5469 - ETA: 5s - 500ms/stepEpoch 170: L
step 21/30 [=====================>........] - loss: 0.9506 - acc: 0.5580 - ETA: 4s - 500ms/stepEpoch 171: L
step 22/30 [======================>.......] - loss: 1.2438 - acc: 0.5582 - ETA: 4s - 500ms/stepEpoch 172: L
step 23/30 [=======================>......] - loss: 0.9978 - acc: 0.5598 - ETA: 3s - 500ms/stepEpoch 173: L
step 24/30 [========================>.....] - loss: 0.9532 - acc: 0.5612 - ETA: 2s - 500ms/stepEpoch 174: L
step 25/30 [=========================>....] - loss: 1.0254 - acc: 0.5575 - ETA: 2s - 499ms/stepEpoch 175: L
step 26/30 [==========================>...] - loss: 1.1011 - acc: 0.5577 - ETA: 1s - 500ms/stepEpoch 176: L
step 27/30 [===========================>..] - loss: 1.2055 - acc: 0.5532 - ETA: 1s - 499ms/stepEpoch 177: L
step 28/30 [============================>.] - loss: 1.2706 - acc: 0.5536 - ETA: 0s - 499ms/stepEpoch 178: L
step 29/30 [=============================>] - loss: 1.1879 - acc: 0.5517 - ETA: 0s - 498ms/stepEpoch 179: L
Epoch 180: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 0.8874 - acc: 0.5524 - 485ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 0.9392 - acc: 0.5427 - 479ms/step
Eval samples: 936
Epoch 7/10
step  1/30 [>.............................] - loss: 0.9553 - acc: 0.6250 - ETA: 18s - 627ms/stepEpoch 181:
step  2/30 [=>............................] - loss: 1.4046 - acc: 0.5469 - ETA: 15s - 565ms/stepEpoch 182:
step  3/30 [==>...........................] - loss: 1.2943 - acc: 0.4792 - ETA: 14s - 533ms/stepEpoch 183:
step  4/30 [===>..........................] - loss: 1.1192 - acc: 0.5078 - ETA: 13s - 525ms/stepEpoch 184:
step  5/30 [====>.........................] - loss: 1.2262 - acc: 0.4875 - ETA: 12s - 519ms/stepEpoch 185:
step  6/30 [=====>........................] - loss: 1.0015 - acc: 0.5104 - ETA: 12s - 516ms/stepEpoch 186:
step  7/30 [======>.......................] - loss: 0.9806 - acc: 0.5223 - ETA: 11s - 512ms/stepEpoch 187:
step  8/30 [=======>......................] - loss: 1.2063 - acc: 0.5117 - ETA: 11s - 510ms/stepEpoch 188:
step  9/30 [========>.....................] - loss: 1.0557 - acc: 0.5208 - ETA: 10s - 509ms/stepEpoch 189:
step 10/30 [=========>....................] - loss: 1.0807 - acc: 0.5250 - ETA: 10s - 508ms/stepEpoch 190:
step 11/30 [==========>...................] - loss: 0.9761 - acc: 0.5369 - ETA: 9s - 507ms/step Epoch 191:
step 12/30 [===========>..................] - loss: 1.1016 - acc: 0.5417 - ETA: 9s - 506ms/stepEpoch 192: L
step 13/30 [============>.................] - loss: 1.0839 - acc: 0.5481 - ETA: 8s - 506ms/stepEpoch 193: L
```

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step 14/30 [=============>...............] - loss: 1.0839 - acc: 0.5446 - ETA: 8s - 505ms/stepEpoch 194: L
step 15/30 [==============>..............] - loss: 1.1602 - acc: 0.5417 - ETA: 7s - 504ms/stepEpoch 195: L
step 16/30 [===============>.............] - loss: 1.1327 - acc: 0.5508 - ETA: 7s - 503ms/stepEpoch 196: L
step 17/30 [================>............] - loss: 0.8492 - acc: 0.5643 - ETA: 6s - 503ms/stepEpoch 197: L
step 18/30 [=================>...........] - loss: 1.0069 - acc: 0.5677 - ETA: 6s - 503ms/stepEpoch 198: L
step 19/30 [==================>..........] - loss: 0.8990 - acc: 0.5707 - ETA: 5s - 503ms/stepEpoch 199: L
step 20/30 [===================>.........] - loss: 1.0103 - acc: 0.5687 - ETA: 5s - 503ms/stepEpoch 200: L
step 21/30 [====================>........] - loss: 0.9279 - acc: 0.5729 - ETA: 4s - 502ms/stepEpoch 201: L
step 22/30 [=====================>.......] - loss: 0.9493 - acc: 0.5781 - ETA: 4s - 502ms/stepEpoch 202: L
step 23/30 [======================>......] - loss: 0.9660 - acc: 0.5829 - ETA: 3s - 501ms/stepEpoch 203: L
step 24/30 [=======================>.....] - loss: 0.9721 - acc: 0.5846 - ETA: 3s - 501ms/stepEpoch 204: L
step 25/30 [========================>....] - loss: 0.8648 - acc: 0.5913 - ETA: 2s - 501ms/stepEpoch 205: L
step 26/30 [=========================>...] - loss: 1.5677 - acc: 0.5841 - ETA: 2s - 501ms/stepEpoch 206: L
step 27/30 [==========================>..] - loss: 1.4426 - acc: 0.5764 - ETA: 1s - 500ms/stepEpoch 207: L
step 28/30 [===========================>.] - loss: 1.0984 - acc: 0.5737 - ETA: 1s - 501ms/stepEpoch 208: L
step 29/30 [============================>] - loss: 1.0753 - acc: 0.5744 - ETA: 0s - 500ms/stepEpoch 209: L
Epoch 210: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 1.0542 - acc: 0.5759 - 487ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 0.8185 - acc: 0.6464 - 482ms/step
Eval samples: 936
Epoch 8/10
step  1/30 [>.............................] - loss: 0.9217 - acc: 0.6562 - ETA: 16s - 564ms/stepEpoch 211:
step  2/30 [=>............................] - loss: 1.0618 - acc: 0.5938 - ETA: 15s - 547ms/stepEpoch 212:
step  3/30 [==>...........................] - loss: 1.1380 - acc: 0.5729 - ETA: 14s - 526ms/stepEpoch 213:
step  4/30 [===>..........................] - loss: 0.9479 - acc: 0.6016 - ETA: 13s - 518ms/stepEpoch 214:
step  5/30 [====>.........................] - loss: 1.0944 - acc: 0.5875 - ETA: 12s - 514ms/stepEpoch 215:
step  6/30 [=====>........................] - loss: 0.9303 - acc: 0.6094 - ETA: 12s - 509ms/stepEpoch 216:
step  7/30 [======>.......................] - loss: 0.9967 - acc: 0.6116 - ETA: 11s - 506ms/stepEpoch 217:
step  8/30 [=======>......................] - loss: 1.0285 - acc: 0.6172 - ETA: 11s - 504ms/stepEpoch 218:
step  9/30 [========>.....................] - loss: 1.1189 - acc: 0.6181 - ETA: 10s - 503ms/stepEpoch 219:
step 10/30 [=========>....................] - loss: 0.9656 - acc: 0.6125 - ETA: 10s - 501ms/stepEpoch 220:
step 11/30 [==========>...................] - loss: 1.2125 - acc: 0.6051 - ETA: 9s - 501ms/step Epoch 221:
step 12/30 [===========>..................] - loss: 1.0790 - acc: 0.5938 - ETA: 9s - 500ms/stepEpoch 222: L
step 13/30 [============>.................] - loss: 0.9736 - acc: 0.5889 - ETA: 8s - 499ms/stepEpoch 223: L
step 14/30 [=============>................] - loss: 1.0350 - acc: 0.5938 - ETA: 7s - 499ms/stepEpoch 224: L
step 15/30 [==============>...............] - loss: 0.9585 - acc: 0.6021 - ETA: 7s - 499ms/stepEpoch 225: L
step 16/30 [===============>..............] - loss: 0.9537 - acc: 0.6055 - ETA: 6s - 499ms/stepEpoch 226: L
step 17/30 [================>.............] - loss: 1.0464 - acc: 0.6029 - ETA: 6s - 499ms/stepEpoch 227: L
step 18/30 [=================>............] - loss: 0.9913 - acc: 0.6076 - ETA: 5s - 499ms/stepEpoch 228: L
step 19/30 [==================>...........] - loss: 1.0250 - acc: 0.6102 - ETA: 5s - 499ms/stepEpoch 229: L
step 20/30 [===================>..........] - loss: 1.2925 - acc: 0.6062 - ETA: 5s - 500ms/stepEpoch 230: L
step 21/30 [====================>.........] - loss: 1.2062 - acc: 0.5982 - ETA: 4s - 500ms/stepEpoch 231: L
step 22/30 [=====================>........] - loss: 0.8470 - acc: 0.6023 - ETA: 4s - 501ms/stepEpoch 232: L
step 23/30 [======================>.......] - loss: 1.0303 - acc: 0.5992 - ETA: 3s - 501ms/stepEpoch 233: L
step 24/30 [=======================>......] - loss: 0.9944 - acc: 0.6016 - ETA: 3s - 501ms/stepEpoch 234: L
step 25/30 [========================>.....] - loss: 0.8639 - acc: 0.6088 - ETA: 2s - 501ms/stepEpoch 235: L
step 26/30 [=========================>....] - loss: 1.2033 - acc: 0.6094 - ETA: 2s - 501ms/stepEpoch 236: L
step 27/30 [==========================>...] - loss: 0.9961 - acc: 0.6065 - ETA: 1s - 501ms/stepEpoch 237: L
step 28/30 [===========================>..] - loss: 1.1994 - acc: 0.6038 - ETA: 1s - 501ms/stepEpoch 238: L
step 29/30 [============================>.] - loss: 1.0299 - acc: 0.6034 - ETA: 0s - 501ms/stepEpoch 239: L
Epoch 240: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 0.9839 - acc: 0.6047 - 488ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.1108 - acc: 0.5620 - 483ms/step
Eval samples: 936
Epoch 9/10
step  1/30 [>.............................] - loss: 1.1408 - acc: 0.5000 - ETA: 16s - 560ms/stepEpoch 241:
step  2/30 [=>............................] - loss: 1.0837 - acc: 0.5625 - ETA: 14s - 530ms/stepEpoch 242:
step  3/30 [==>...........................] - loss: 1.0190 - acc: 0.5833 - ETA: 14s - 520ms/stepEpoch 243:
```

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step  4/30 [===>.........................] - loss: 0.9900 - acc: 0.6016 - ETA: 13s - 516ms/stepEpoch 244:
step  5/30 [====>........................] - loss: 1.1055 - acc: 0.5938 - ETA: 12s - 511ms/stepEpoch 245:
step  6/30 [=====>.......................] - loss: 0.7950 - acc: 0.6302 - ETA: 12s - 509ms/stepEpoch 246:
step  7/30 [======>......................] - loss: 1.0360 - acc: 0.6250 - ETA: 11s - 507ms/stepEpoch 247:
step  8/30 [=======>.....................] - loss: 0.9578 - acc: 0.6211 - ETA: 11s - 506ms/stepEpoch 248:
step  9/30 [========>....................] - loss: 0.9102 - acc: 0.6215 - ETA: 10s - 504ms/stepEpoch 249:
step 10/30 [=========>...................] - loss: 0.9251 - acc: 0.6375 - ETA: 10s - 503ms/stepEpoch 250:
step 11/30 [==========>..................] - loss: 1.0327 - acc: 0.6392 - ETA: 9s - 503ms/step Epoch 251:
step 12/30 [===========>.................] - loss: 0.9398 - acc: 0.6458 - ETA: 9s - 503ms/stepEpoch 252: L
step 13/30 [============>................] - loss: 1.0209 - acc: 0.6514 - ETA: 8s - 501ms/stepEpoch 253: L
step 14/30 [=============>...............] - loss: 0.9161 - acc: 0.6540 - ETA: 8s - 501ms/stepEpoch 254: L
step 15/30 [==============>..............] - loss: 1.1545 - acc: 0.6438 - ETA: 7s - 501ms/stepEpoch 255: L
step 16/30 [===============>.............] - loss: 0.9831 - acc: 0.6426 - ETA: 7s - 501ms/stepEpoch 256: L
step 17/30 [================>............] - loss: 1.5225 - acc: 0.6287 - ETA: 6s - 501ms/stepEpoch 257: L
step 18/30 [=================>...........] - loss: 1.0161 - acc: 0.6267 - ETA: 6s - 500ms/stepEpoch 258: L
step 19/30 [==================>..........] - loss: 1.2074 - acc: 0.6151 - ETA: 5s - 501ms/stepEpoch 259: L
step 20/30 [===================>.........] - loss: 1.1185 - acc: 0.6141 - ETA: 5s - 501ms/stepEpoch 260: L
step 21/30 [====================>........] - loss: 1.0550 - acc: 0.6161 - ETA: 4s - 502ms/stepEpoch 261: L
step 22/30 [=====================>.......] - loss: 0.9685 - acc: 0.6207 - ETA: 4s - 502ms/stepEpoch 262: L
step 23/30 [======================>......] - loss: 0.7932 - acc: 0.6250 - ETA: 3s - 502ms/stepEpoch 263: L
step 24/30 [=======================>.....] - loss: 0.9126 - acc: 0.6263 - ETA: 3s - 502ms/stepEpoch 264: L
step 25/30 [========================>....] - loss: 1.0294 - acc: 0.6250 - ETA: 2s - 502ms/stepEpoch 265: L
step 26/30 [=========================>...] - loss: 1.1041 - acc: 0.6238 - ETA: 2s - 502ms/stepEpoch 266: L
step 27/30 [==========================>..] - loss: 1.0764 - acc: 0.6215 - ETA: 1s - 501ms/stepEpoch 267: L
step 28/30 [===========================>.] - loss: 0.9219 - acc: 0.6261 - ETA: 1s - 502ms/stepEpoch 268: L
step 29/30 [============================>] - loss: 0.9761 - acc: 0.6282 - ETA: 0s - 502ms/stepEpoch 269: L
Epoch 270: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 0.6419 - acc: 0.6314 - 488ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.0040 - acc: 0.6432 - 486ms/step
Eval samples: 936
Epoch 10/10
step  1/30 [>.........................] - loss: 0.6823 - acc: 0.8750 - ETA: 16s - 561ms/stepEpoch 271:
step  2/30 [=>........................] - loss: 1.0629 - acc: 0.7344 - ETA: 14s - 530ms/stepEpoch 272:
step  3/30 [==>.......................] - loss: 0.8166 - acc: 0.7604 - ETA: 13s - 518ms/stepEpoch 273:
step  4/30 [===>......................] - loss: 0.9375 - acc: 0.7500 - ETA: 13s - 513ms/stepEpoch 274:
step  5/30 [====>.....................] - loss: 1.0376 - acc: 0.7000 - ETA: 12s - 512ms/stepEpoch 275:
step  6/30 [=====>....................] - loss: 0.9822 - acc: 0.6875 - ETA: 12s - 514ms/stepEpoch 276:
step  7/30 [======>...................] - loss: 0.8764 - acc: 0.7054 - ETA: 11s - 513ms/stepEpoch 277:
step  8/30 [=======>..................] - loss: 0.7746 - acc: 0.7227 - ETA: 11s - 514ms/stepEpoch 278:
step  9/30 [========>.................] - loss: 0.9041 - acc: 0.7083 - ETA: 10s - 512ms/stepEpoch 279:
step 10/30 [=========>................] - loss: 0.7736 - acc: 0.7156 - ETA: 10s - 511ms/stepEpoch 280:
step 11/30 [==========>...............] - loss: 0.9644 - acc: 0.7074 - ETA: 9s - 509ms/step Epoch 281:
step 12/30 [===========>..............] - loss: 0.8834 - acc: 0.7005 - ETA: 9s - 508ms/stepEpoch 282: L
step 13/30 [============>.............] - loss: 0.9626 - acc: 0.6899 - ETA: 8s - 507ms/stepEpoch 283: L
step 14/30 [=============>............] - loss: 0.8617 - acc: 0.6897 - ETA: 8s - 506ms/stepEpoch 284: L
step 15/30 [==============>...........] - loss: 1.1190 - acc: 0.6833 - ETA: 7s - 506ms/stepEpoch 285: L
step 16/30 [===============>..........] - loss: 0.9226 - acc: 0.6875 - ETA: 7s - 505ms/stepEpoch 286: L
step 17/30 [================>.........] - loss: 1.1177 - acc: 0.6820 - ETA: 6s - 508ms/stepEpoch 287: L
step 18/30 [=================>........] - loss: 0.8736 - acc: 0.6858 - ETA: 6s - 505ms/stepEpoch 288: L
step 19/30 [==================>.......] - loss: 0.7231 - acc: 0.6957 - ETA: 5s - 505ms/stepEpoch 289: L
step 20/30 [===================>......] - loss: 0.9837 - acc: 0.6953 - ETA: 5s - 505ms/stepEpoch 290: L
step 21/30 [====================>.....] - loss: 0.9924 - acc: 0.6964 - ETA: 4s - 504ms/stepEpoch 291: L
step 22/30 [=====================>....] - loss: 0.7788 - acc: 0.7003 - ETA: 4s - 504ms/stepEpoch 292: L
step 23/30 [======================>...] - loss: 1.2669 - acc: 0.6929 - ETA: 3s - 509ms/stepEpoch 293: L
step 24/30 [=======================>..] - loss: 0.8564 - acc: 0.6953 - ETA: 3s - 508ms/stepEpoch 294: L
step 25/30 [========================>.] - loss: 0.9927 - acc: 0.6950 - ETA: 2s - 509ms/stepEpoch 295: L
step 26/30 [=========================] - loss: 0.8444 - acc: 0.6995 - ETA: 2s - 508ms/stepEpoch 296: L
step 27/30 [==========================] - loss: 0.8499 - acc: 0.6991 - ETA: 1s - 508ms/stepEpoch 297: L
step 28/30 [==========================] - loss: 0.9348 - acc: 0.6953 - ETA: 1s - 509ms/stepEpoch 298: L
step 29/30 [==========================] - loss: 1.2284 - acc: 0.6875 - ETA: 0s - 508ms/stepEpoch 299: L
```

```
Epoch 300: LinearWarmup set learning rate to 0.5.
step 30/30 [==============================] - loss: 0.7964 - acc: 0.6880 - 495ms/step
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 1.2859 - acc: 0.6122 - 484ms/step
Eval samples: 936
```

```
result = model.evaluate(val_loader,batch_size=32,log_freq=100, verbose=1, num_workers=0, callbacks=None)
print(result)
```

```
Eval begin...
The loss value printed in the log is the current batch, and the metric is the average value of previous ste
step 30/30 [==============================] - loss: 0.9873 - acc: 0.6335 - 484ms/step
Eval samples: 936
{'loss': [0.98725235], 'acc': 0.6335470085470085}
```

```
with open("work/result.txt", "w") as f:
    for r in result:
        f.write(str(print(result)))
```

```
{'loss': [0.98725235], 'acc': 0.6335470085470085}
{'loss': [0.98725235], 'acc': 0.6335470085470085}
```