

Assignment 1 - Problem 2: Skin Lesion Classification

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```
In [1]: from collections import OrderedDict
from PIL import Image
from pytorch_metric_learning import losses
from torch import nn
from torch.autograd import Variable
from torch.nn import init
from torch.utils.data import Dataset, DataLoader
from torchvision import datasets
from torchvision.transforms import (
    CenterCrop,
    Compose,
    Normalize,
    RandomHorizontalFlip,
    RandomVerticalFlip,
    RandomResizedCrop,
    Resize,
    ToTensor,
)
from transformers import AutoConfig, AutoFeatureExtractor, AutoModelForImage
from tqdm import tqdm

import datasets
import h5py
import matplotlib.image as mpimg
import matplotlib.pyplot as plt
import numpy as np
import os
import pandas as pd
import random
import surface_distance.metrics as sf
import torch
import torch.nn.functional as F
import torch.optim as optim
import torchio as tio
import torchmetrics
import torchvision
```

```
In [2]: RANDOM_SEED = 42

def set_all_seeds(seed):
    random.seed(seed)
    np.random.seed(seed)
    torch.manual_seed(seed)
    torch.cuda.manual_seed(seed)
    torch.backends.cudnn.deterministic = True

set_all_seeds(RANDOM_SEED)
```

Problem 2: Skin Lesion Classification

```
In [3]: NUM_CLASSES = 7
```

```
In [4]: model_name_or_path = "microsoft/resnet-152"
```

Data loading

Function declaration

Loading function for `problem2_datas` dataset.

```
In [5]: def problem2_load_dataset(manifest_path, img_dir_path, img_column_name="image"):
    manifest_df = pd.read_csv(manifest_path)
    manifest_df[img_column_name] = img_dir_path + manifest_df[img_column_name]
    manifest_df = manifest_df.rename(columns={img_column_name: "image", label: "label"})
    dataset = datasets.Dataset.from_pandas(manifest_df)
    dataset = dataset.cast_column("image", datasets.Image(decode=True))
    dataset = dataset.class_encode_column("label")
    if return_df:
        return dataset, manifest_df
    else:
        return dataset
```

Loading function for `HAM10000` dataset.

You can download the dataset from [Kaggle](#) before starting the experiment.

Since the `problem2_datas` and `HAM10000` datasets are both skin lesion classification datasets that have the same classes, let's convert the label configuration in `HAM10000` to that of `problem2_datas`. Clinical labels are obtained from the `HAM10000` dataset paper [here](#).

| <code>problem2_datas</code> | Label ID | <code>HAM10000</code> | Label ID | Clinical Label |
|-----------------------------|----------|-----------------------|----------|----------------------|
| 0 | | mel | | Melanoma |
| 1 | | nv | | Nevi |
| 2 | | bcc | | Basal cell carcinoma |
| 3 | | akiec | | Actinic keratoses |
| 4 | | bkl | | Benign keratosis |
| 5 | | df | | Dermafibratoma |
| 6 | | vasc | | Vascular lesion |

```
In [6]: def ham10000_load_dataset(manifest_path, img_dir_paths, img_column_name="image"):
    manifest_df = pd.read_csv(manifest_path)
    for i in range(len(manifest_df)):
        for img_dir_path in img_dir_paths:
            img_path = os.path.join(img_dir_path, f"{manifest_df[img_column_name][i]}")
            if os.path.isfile(img_path):
                manifest_df[img_column_name][i] = img_path
    manifest_df = manifest_df.drop(manifest_df[~manifest_df[img_column_name].apply(lambda x: os.path.isfile(x))].index)
    manifest_df = manifest_df.rename(columns={img_column_name: "image", label: "label"})
    manifest_df = manifest_df.replace({
```

```

        "mel": 0,
        "nv": 1,
        "bcc": 2,
        "akiec": 3,
        "bkl": 4,
        "df": 5,
        "vasc": 6,
    })
dataset = datasets.Dataset.from_pandas(manifest_df)
dataset = dataset.cast_column("image", datasets.Image(decode=True))
dataset = dataset.class_encode_column("label")
if return_df:
    return dataset, manifest_df
else:
    return dataset

```

Function utilization

Load the `problem2_datas` dataset.

I use this data as the sole training dataset in Experiment 1 and as a fine-tuning dataset in Experiment 2. Since the assignment asks for a "test loss curve", then the test split is used for validation. From this point onwards, the test split will be regarded as the eval/validation dataset.

```
In [7]: raw_datasets = datasets.DatasetDict()
raw_datasets["train"], train_df = problem2_load_dataset(
    "./data/problem2_datas/annotation/train.csv", "./data/problem2_datas/ima
raw_datasets["valid"] = problem2_load_dataset(
    "./data/problem2_datas/annotation/test.csv", "./data/problem2_datas/imag
raw_datasets
```

```

Stringifying the column: 0% | 0/1 [00:00<?, ?ba/s]
Casting to class labels: 0% | 0/1 [00:00<?, ?ba/s]
Casting the dataset: 0% | 0/1 [00:00<?, ?ba/s]
Stringifying the column: 0% | 0/1 [00:00<?, ?ba/s]
Casting to class labels: 0% | 0/1 [00:00<?, ?ba/s]
Casting the dataset: 0% | 0/1 [00:00<?, ?ba/s]
```

```
Out[7]: DatasetDict({
    train: Dataset({
        features: ['image', 'label'],
        num_rows: 305
    })
    valid: Dataset({
        features: ['image', 'label'],
        num_rows: 99
    })
})
```

Display the label statistics of the `problem2_datas` dataset.

```
In [8]: label_stats = train_df["label"].value_counts()
label_stats
```

```
Out[8]: 1    206
        0    34
        4    33
        2    15
        3    10
        6     4
        5     3
Name: label, dtype: int64
```

Wow, so imbalanced. Let's get the class weights. They can be used to adjust the cross-entropy loss later.

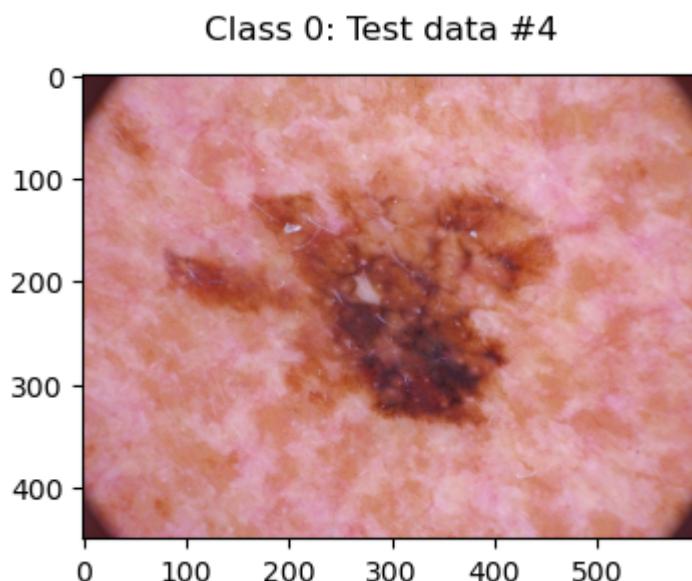
```
In [9]: num_train_labels = sum(label_stats)
train_class_weights = []
for i in range(NUM_CLASSES):
    train_class_weights.append(float(round(train_df["label"].value_counts()[train_classes]
```

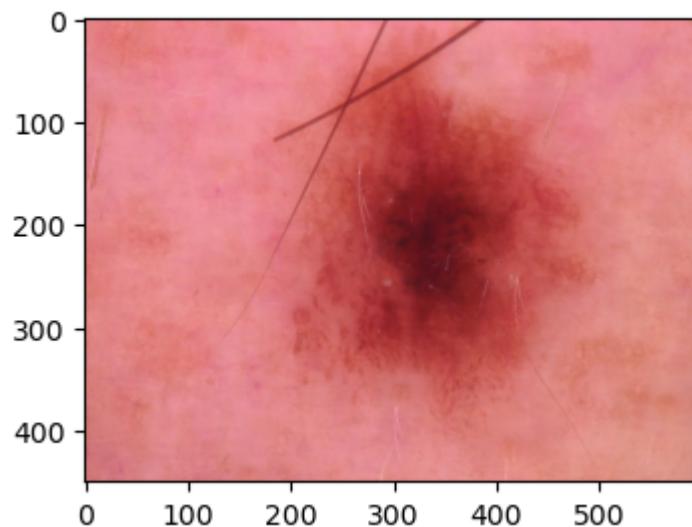
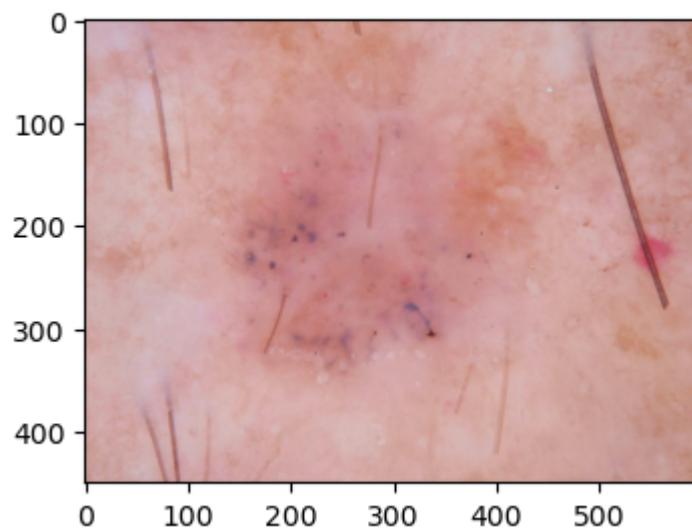
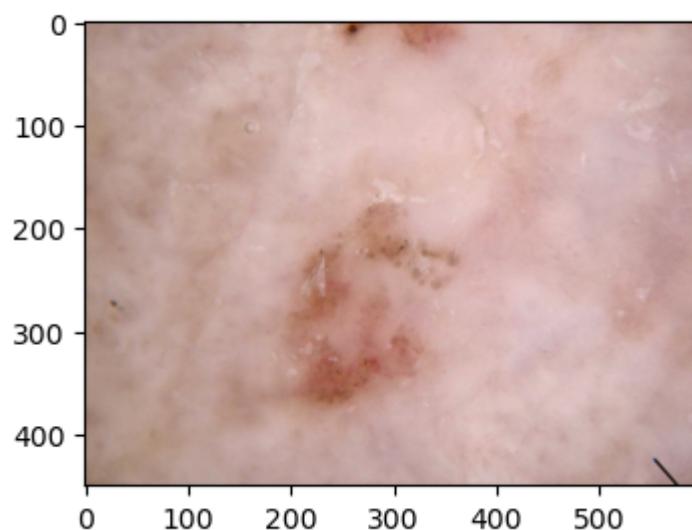


```
Out[9]: [0.11, 0.68, 0.05, 0.03, 0.11, 0.01, 0.01]
```

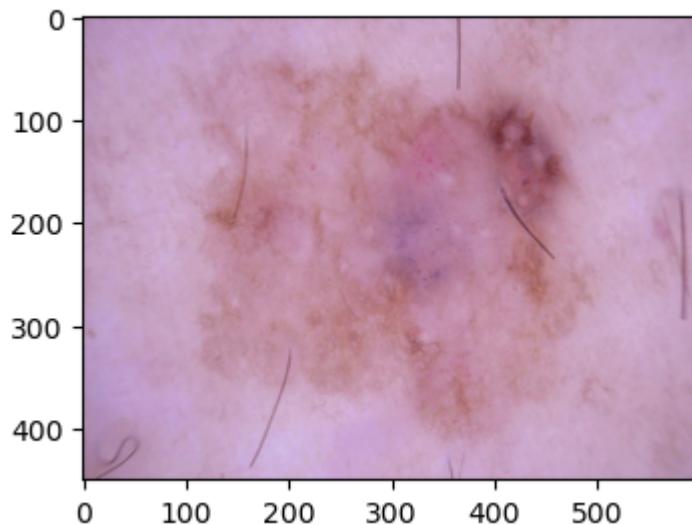
What do the data look like? Let's display a data sample of each class in the `problem2_datas`.

```
In [10]: for class_id in range(NUM_CLASSES):
    # Get the index of the first sample from `class_id`
    index = train_df.index[train_df["label"] == class_id][0]
    plt.figure(figsize=(4, 3))
    plt.suptitle(f'Class {class_id}: Test data #{index}', fontsize=12)
    plt.imshow(raw_datasets["train"][int(index)]["image"])
```

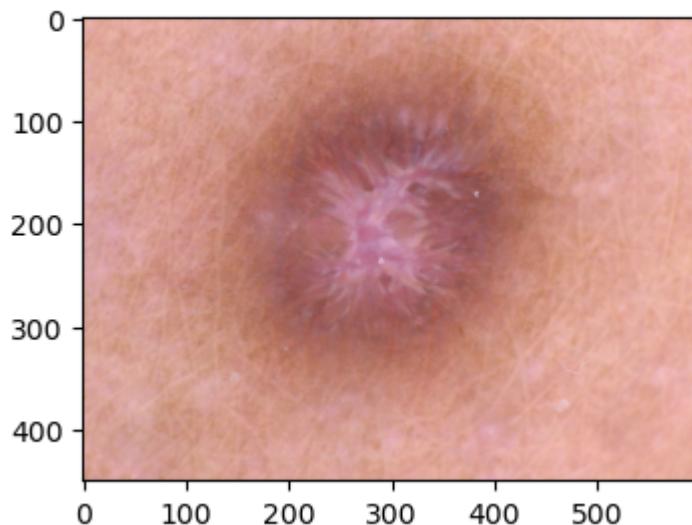


Class 1: Test data #0**Class 2: Test data #19****Class 3: Test data #18**

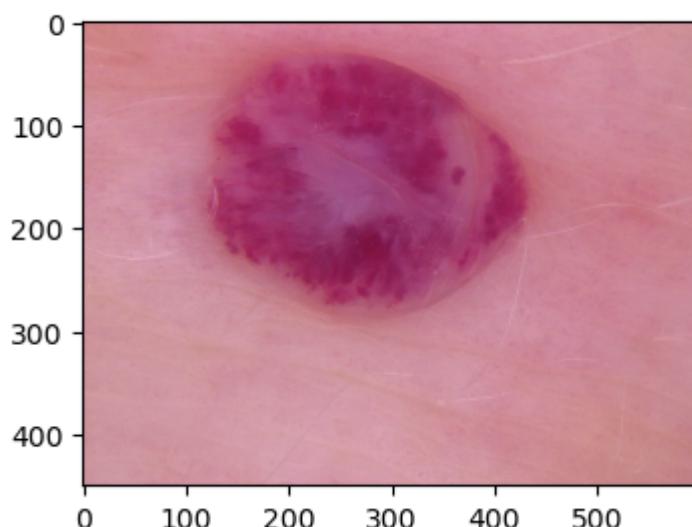
Class 4: Test data #6



Class 5: Test data #11



Class 6: Test data #48



Load the `HAM10000` dataset.

I use this data as a pre-training dataset in Experiment 2.

In [11]: `pretrain_datasets = datasets.DatasetDict()`

```

pretrain_train_val_dataset = ham10000_load_dataset(
    "./data/HAM10000/HAM10000_metadata.csv",
    [
        "./data/HAM10000/ham10000_images_part_1",
        "./data/HAM10000/HAM10000_images_part_1",
        "./data/HAM10000/ham10000_images_part_2",
        "./data/HAM10000/HAM10000_images_part_2"
    ]).train_test_split(test_size=0.2)
pretrain_datasets["train"] = pretrain_train_val_dataset["train"]
pretrain_datasets["valid"] = pretrain_train_val_dataset["test"]
pretrain_datasets

```

/tmp/ipykernel_20175/1366491957.py:7: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
manifest_df[img_column_name][i] = img_path
Stringifying the column: 0% | 0/11 [00:00<?, ?ba/s]
Casting to class labels: 0% | 0/11 [00:00<?, ?ba/s]
Casting the dataset: 0% | 0/2 [00:00<?, ?ba/s]

```

Out[11]: DatasetDict({
    train: Dataset({
        features: ['lesion_id', 'image', 'label', 'dx_type', 'age', 'sex',
        'localization'],
        num_rows: 1600
    })
    valid: Dataset({
        features: ['lesion_id', 'image', 'label', 'dx_type', 'age', 'sex',
        'localization'],
        num_rows: 400
    })
})

```

Preprocessing

Initialize the feature extractor I want to use.

```
In [12]: feature_extractor = AutoFeatureExtractor.from_pretrained(model_name_or_path)
```

Function declarations

Augmentation and preprocessing functions.

```

In [13]: normalize = Normalize(mean=feature_extractor.image_mean, std=feature_extractor.image_std)
train_transforms = Compose(
    [
        Resize(feature_extractor.size),
        CenterCrop(feature_extractor.size),
        RandomHorizontalFlip(),
        RandomVerticalFlip(),
        ToTensor(),
        normalize,
    ]
)

eval_transforms = Compose(
    [
        Resize(feature_extractor.size),
        CenterCrop(feature_extractor.size),
        ToTensor(),
    ]
)

```

```

        normalize,
    ]
)

def preprocess_train(example_batch):
    """Apply train_transforms across a batch."""
    example_batch["pixel_values"] = [
        train_transforms(image.convert("RGB")) for image in example_batch["image"]
    ]
    return example_batch

def preprocess_eval(example_batch):
    """Apply eval_transforms across a batch."""
    example_batch["pixel_values"] = [
        eval_transforms(image.convert("RGB")) for image in example_batch["image"]
    ]
    return example_batch

```

Data collator.

This will be useful for batched data processing later.

```
In [14]: def collate_fn(examples):
    pixel_values = torch.stack([example["pixel_values"] for example in examples])
    labels = torch.tensor([example["label"] for example in examples])
    return {"pixel_values": pixel_values, "labels": labels}
```

Function utilization

Don't forget to preprocess both the `problem2_datas` dataset and the `HAM10000` dataset.

```
In [15]: proc_datasets = raw_datasets
proc_datasets["train"].set_transform(preprocess_train)
proc_datasets["valid"].set_transform(preprocess_eval)
```

```
In [16]: proc_pretrain_datasets = pretrain_datasets
proc_pretrain_datasets["train"].set_transform(preprocess_train)
proc_pretrain_datasets["valid"].set_transform(preprocess_eval)
```

Training and evaluation

Function declarations

Modified Trainer.

Use the pre-computed `train_class_weights` to adjust the cross entropy loss.

```
In [17]: class SkinLesionTrainer(Trainer):
    def compute_loss(self, model, inputs, return_outputs=False):
        labels = inputs.get("labels").to("cuda")
        # forward pass
        outputs = model(**inputs)
        logits = outputs.get("logits").to("cuda")
        # compute weighted cross entropy loss
        loss_fct = nn.CrossEntropyLoss(weight=torch.tensor(train_class_weights))
        loss = loss_fct(logits.view(-1, self.model.config.num_labels), labels)
        return (loss, outputs) if return_outputs else loss
```

Accuracy evaluation metric.

```
In [18]: metric = datasets.load_metric("accuracy")

/tmp/ipykernel_20175/3770023701.py:1: FutureWarning: load_metric is deprecated and will be removed in the next major version of datasets. Use 'evaluate.load' instead, from the new library 😊 Evaluate: https://huggingface.co/docs/evaluate
    metric = datasets.load_metric("accuracy")
```

```
In [19]: def compute_metrics(eval_pred):
    """Computes accuracy on a batch of predictions"""
    predictions = np.argmax(eval_pred.predictions, axis=1)
    return metric.compute(predictions=predictions, references=eval_pred.labels)
```

Evaluation.

```
In [20]: def evaluation(trainer, datasets=[], eval_names=[]):
    for dset, name in zip(datasets, eval_names):
        metrics = trainer.evaluate(dset)
        trainer.log_metrics(name, metrics)
        trainer.save_metrics(name, metrics)
```

Pre-training loop.

```
In [21]: def pretraining(
    model,
    output_dir=f"save/problem2/pretrain_{model_name_or_path}_1e-3_submitt",
    train_dataset=proc_pretrain_datasets["train"],
    eval_dataset=proc_pretrain_datasets["valid"],
    trainer_class=SkinLesionTrainer):

    args = TrainingArguments(
        output_dir,
        remove_unused_columns=False,
        evaluation_strategy = "epoch",
        save_strategy = "epoch",
        learning_rate=1e-3,
        per_device_train_batch_size=32,
        gradient_accumulation_steps=4,
        per_device_eval_batch_size=32,
        num_train_epochs=200,
        warmup_ratio=0.1,
        logging_steps=10,
        load_best_model_at_end=True,
        metric_for_best_model="eval_accuracy",
        gradient_checkpointing=True,
        save_total_limit=1,
        seed=RANDOM_SEED,
        data_seed=RANDOM_SEED,
        dataloader_num_workers=4,
        lr_scheduler_type="cosine",
        fp16=True,
        report_to="wandb",
        run_name=output_dir,
    )

    trainer = trainer_class(
        model,
        args,
        train_dataset=train_dataset,
```

```
        eval_dataset=eval_dataset,
        tokenizer=feature_extractor,
        compute_metrics=compute_metrics,
        data_collator=collate_fn,
        callbacks=[EarlyStoppingCallback(early_stopping_patience=10)],
    )

    train_results = trainer.train()
    trainer.save_model()

    return trainer
```

Training loop.

```
In [22]: def training(
    model,
    output_dir=f"save/problem2/{model_name_or_path}__1e-3__submitted",
    train_dataset=proc_datasets["train"],
    eval_dataset=proc_datasets["valid"],
    trainer_class=SkinLesionTrainer,
):
    args = TrainingArguments(
        output_dir,
        remove_unused_columns=False,
        evaluation_strategy = "epoch",
        save_strategy = "epoch",
        learning_rate=1e-3,
        per_device_train_batch_size=32,
        gradient_accumulation_steps=4,
        per_device_eval_batch_size=32,
        num_train_epochs=200,
        warmup_ratio=0.1,
        logging_steps=10,
        load_best_model_at_end=True,
        metric_for_best_model="eval_accuracy",
        gradient_checkpointing=True,
        save_total_limit=1,
        seed=RANDOM_SEED,
        data_seed=RANDOM_SEED,
        dataloader_num_workers=4,
        lr_scheduler_type="cosine",
        fp16=True,
        report_to="wandb",
        run_name=output_dir,
    )

    trainer = trainer_class(
        model,
        args,
        train_dataset=train_dataset,
        eval_dataset=eval_dataset,
        tokenizer=feature_extractor,
        compute_metrics=compute_metrics,
        data_collator=collate_fn,
        callbacks=[EarlyStoppingCallback(early_stopping_patience=20)],
    )

    train_results = trainer.train()
    trainer.save_model()

    return trainer
```

Experiment 1: Default/Normal

```
In [23]: exp1_model = AutoModelForImageClassification.from_pretrained(model_name_or_p  
In [24]: trainer = training(  
    exp1_model,  
    output_dir=f"save/problem2/default_{model_name_or_path}_1e-3_submitted",  
    train_dataset=proc_datasets["train"],  
    eval_dataset=proc_datasets["valid"],  
    trainer_class=Trainer)  
  
Using cuda_amp half precision backend  
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o  
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate  
d and will be removed in a future version. Use the PyTorch implementation to  
rch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi  
s warning  
warnings.warn()  
***** Running training *****  
Num examples = 305  
Num Epochs = 200  
Instantaneous batch size per device = 32  
Total train batch size (w. parallel, distributed & accumulation) = 128  
Gradient Accumulation steps = 4  
Total optimization steps = 400  
Automatic Weights & Biases logging enabled, to disable set os.environ["WANDB  
_DISABLED"] = "true"  
wandb: Currently logged in as: holylovenia. Use `wandb login --relogin` to f  
orce relogin  
Tracking run with wandb version 0.13.4  
Run data is saved locally in /home/holy/projects/ai-  
healthcare/assignment1/wandb/run-20221015_181523-1s68kmpg  
Syncing run save/problem2/default_microsoft/resnet-152_1e-3_submitted to  
Weights & Biases (docs)
```

[120/400 06:08 < 14:34, 0.32 it/s, Epoch 59/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | No log | 7.084044 | 0.000000 |
| 1 | No log | 7.134549 | 0.000000 |
| 2 | No log | 7.376381 | 0.000000 |
| 3 | No log | 7.223563 | 0.000000 |
| 4 | 8.972900 | 6.901674 | 0.000000 |
| 5 | 8.972900 | 6.383523 | 0.000000 |
| 6 | 8.972900 | 5.731494 | 0.020202 |
| 7 | 8.972900 | 4.803751 | 0.282828 |
| 8 | 8.972900 | 3.588485 | 0.515152 |
| 9 | 7.115400 | 2.838811 | 0.606061 |
| 10 | 7.115400 | 2.189589 | 0.626263 |
| 11 | 7.115400 | 1.819446 | 0.636364 |
| 12 | 7.115400 | 1.657597 | 0.636364 |
| 13 | 7.115400 | 1.590787 | 0.646465 |
| 14 | 2.229700 | 1.382822 | 0.616162 |
| 15 | 2.229700 | 1.202621 | 0.646465 |
| 16 | 2.229700 | 1.110815 | 0.646465 |
| 17 | 2.229700 | 0.965654 | 0.717172 |
| 18 | 2.229700 | 0.858295 | 0.707071 |
| 19 | 0.500700 | 0.861896 | 0.747475 |
| 20 | 0.500700 | 1.039521 | 0.707071 |
| 21 | 0.500700 | 1.176731 | 0.717172 |
| 22 | 0.500700 | 1.234467 | 0.747475 |
| 23 | 0.500700 | 1.433730 | 0.717172 |
| 24 | 0.171000 | 1.215672 | 0.666667 |
| 25 | 0.171000 | 1.421182 | 0.646465 |
| 26 | 0.171000 | 1.467690 | 0.707071 |
| 27 | 0.171000 | 1.345719 | 0.717172 |
| 28 | 0.171000 | 1.452749 | 0.666667 |
| 29 | 0.116500 | 1.502022 | 0.686869 |
| 30 | 0.116500 | 1.431497 | 0.686869 |
| 31 | 0.116500 | 1.360464 | 0.696970 |
| 32 | 0.116500 | 1.355433 | 0.696970 |
| 33 | 0.116500 | 1.374386 | 0.686869 |
| 34 | 0.112700 | 1.273247 | 0.646465 |
| 35 | 0.112700 | 1.076461 | 0.686869 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 0.112700 | 1.098938 | 0.727273 |
| 37 | 0.112700 | 1.308660 | 0.656566 |
| 38 | 0.112700 | 1.252366 | 0.696970 |
| 39 | 0.170100 | 1.249298 | 0.757576 |
| 40 | 0.170100 | 1.267895 | 0.737374 |
| 41 | 0.170100 | 1.133336 | 0.747475 |
| 42 | 0.170100 | 1.226341 | 0.707071 |
| 43 | 0.170100 | 1.191488 | 0.707071 |
| 44 | 0.107300 | 1.188492 | 0.737374 |
| 45 | 0.107300 | 1.120462 | 0.747475 |
| 46 | 0.107300 | 1.260271 | 0.737374 |
| 47 | 0.107300 | 1.427754 | 0.717172 |
| 48 | 0.107300 | 1.347254 | 0.717172 |
| 49 | 0.082900 | 1.244276 | 0.717172 |
| 50 | 0.082900 | 1.150285 | 0.737374 |
| 51 | 0.082900 | 1.404997 | 0.727273 |
| 52 | 0.082900 | 1.351818 | 0.747475 |
| 53 | 0.082900 | 1.338300 | 0.727273 |
| 54 | 0.048100 | 1.466523 | 0.747475 |
| 55 | 0.048100 | 1.388493 | 0.717172 |
| 56 | 0.048100 | 1.415077 | 0.707071 |
| 57 | 0.048100 | 1.499319 | 0.737374 |
| 58 | 0.048100 | 1.543633 | 0.696970 |
| 59 | 0.053800 | 1.633520 | 0.707071 |

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-2
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-2/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-2/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-2/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-4
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-4/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-4/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-4/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-6
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-6/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-6/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-6/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-4] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-8
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-8/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-8/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-8/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-6] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-10
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-10/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-10/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-10/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-8] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
```

```
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-12
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-12/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-10] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-14
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-14/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-14/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-14/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-2] due to args.save_total_limit
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-16
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-16/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-16/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-16/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-14] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-18
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-18/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-18/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-18/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-16] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-20
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-20/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-20/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-20/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-18] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-22
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-22/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-22/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-22/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-20] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-24
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-24/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-22] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-26
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-26/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-26/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-26/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-28
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-28/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-28/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-28/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-24] due to args.save_total_limit
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-26] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-30
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-30/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-30/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-30/preprocessor_config.json
***** Running Evaluation *****
```

```
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-32
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-32/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-32/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-32/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-30] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-34
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-34/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-34/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-34/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-32] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-36
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-36/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-28] due to args.save_total_limit
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-34] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-38
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-38/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-38/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-38/preprocessor_config.json
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-40
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-40/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-40/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-40/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-36] due to args.save_total_limit
```

```
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-38] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-42
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-42/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-42/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-42/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-44
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-44/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-44/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-44/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-42] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-46
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-46/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-46/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-46/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-44] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-48
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-48/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-46] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-50
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-50/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-50/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
_submitted/checkpoint-50/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
```

```
__submitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-52
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-52/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-52/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-52/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-50] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-54
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-54/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-54/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-54/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-52] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-56
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-56/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-56/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-56/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-54] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-58
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-58/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-58/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-58/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-56] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-60
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-60/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-60/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-58] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-62
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-62/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-62/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-62/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-64
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-64/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-64/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-64/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-62] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-66
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-66/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-66/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-66/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-64] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-68
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-68/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-68/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-68/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-66] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152_1e-3
__submitted/checkpoint-70
Configuration saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-70/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152_1e-3__su
bmitted/checkpoint-70/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152_1e-3
```

```
__submitted/checkpoint-70/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-68] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-72
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-72/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-70] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-74
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-74/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-74/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-74/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-76
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-76/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-76/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-76/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-74] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-78
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-78/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-78/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-78/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-76] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-80
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-80/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-80/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-80/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-40] due to args.save_total_limit
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-78] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-82
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-82/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-82/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-82/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-84
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-84/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-84/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-84/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-82] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-86
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-86/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-86/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-86/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-84] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-88
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-88/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-88/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-88/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-86] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-90
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-90/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
```

```
bmitted/checkpoint-90/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-90/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-88] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-92
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-92/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-92/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-92/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-90] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-94
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-94/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-94/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-94/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-92] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-96
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-96/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-96/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-96/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-94] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-98
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-98/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-98/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-98/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-96] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3
__submitted/checkpoint-100
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-100/config.json
```

```
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-100/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-100/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-98] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-102
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-102/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-102/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-102/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-100] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-104
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-104/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-104/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-104/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-102] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-106
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-106/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-106/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-106/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-104] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-108
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-108/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-108/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-108/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-106] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-110
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__su
```

```
bmitted/checkpoint-110/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-110/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-110/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-108] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-112
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-112/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-112/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-112/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-110] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-114
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-114/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-114/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-114/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-112] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-116
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-116/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-116/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-116/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-114] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-118
Configuration saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-118/config.json
Model weights saved in save/problem2/default_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-118/pytorch_model.bin
Feature extractor saved in save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-118/preprocessor_config.json
Deleting older checkpoint [save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-116] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/default_microsoft/resnet-152_1e-3_
_submitted/checkpoint-120
```

```
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-120/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-120/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-120/preprocessor_config.json
Deleting older checkpoint [save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-118] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/models =)

```
Loading best model from save/problem2/default__microsoft/resnet-152__1e-3__submitted/checkpoint-80 (score: 0.7575757575757576).
Saving model checkpoint to save/problem2/default__microsoft/resnet-152__1e-3__submitted
Configuration saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/config.json
Model weights saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/pytorch_model.bin
Feature extractor saved in save/problem2/default__microsoft/resnet-152__1e-3__submitted/preprocessor_config.json
```

In [25]:

```
evaluation(
    trainer,
    datasets=[proc_datasets["valid"]],
    eval_names=["problem2_datas_valid"]
)
```

```
***** Running Evaluation *****
Num examples = 99
Batch size = 32
```

```
***** problem2_datas_valid metrics *****
epoch = 59.8
eval_accuracy = 0.7576
eval_loss = 1.2493
eval_runtime = 0:00:01.36
eval_samples_per_second = 72.572
eval_steps_per_second = 2.932
```

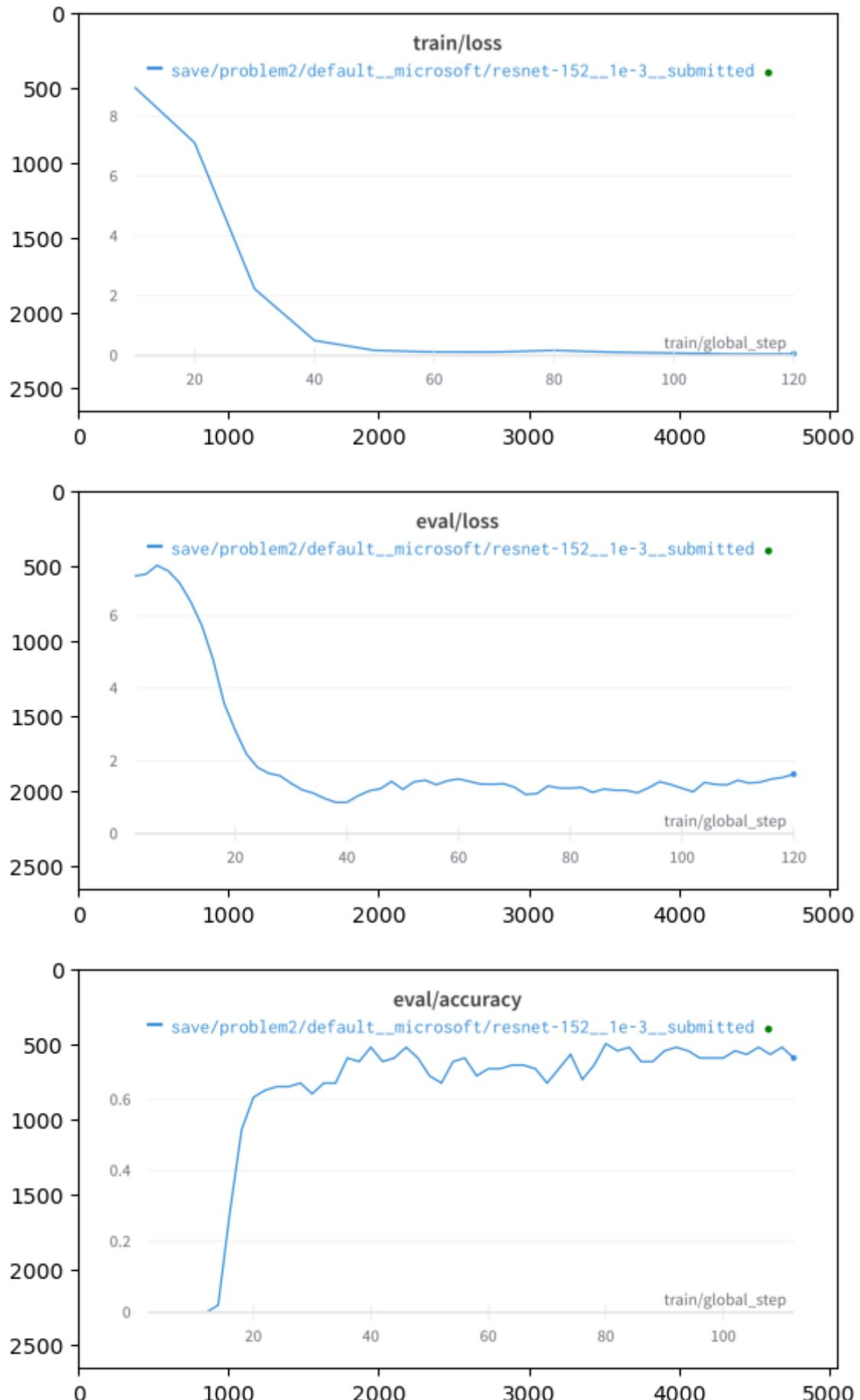
In [26]:

```
plt.figure()
img = mpimg.imread("./log/problem2/exp1/exp1_train_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp1/exp1_valid_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp1/exp1_valid_acc.png")
plt.imshow(img)
```

Out[26]: <matplotlib.image.AxesImage at 0x7fcbe538bd60>



Experiment 2: Weighted Cross-Entropy Loss

```
In [23]: exp2_model = AutoModelForImageClassification.from_pretrained(model_name_or_p
```

```
In [24]: trainer = training(  
    exp2_model,  
    output_dir=f"save/problem2/{model_name_or_path}__1e-3__submitted",  
    train_dataset=proc_datasets["train"],  
    eval_dataset=proc_datasets["valid"])  
  
Using cuda_amp half precision backend  
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o  
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate  
d and will be removed in a future version. Use the PyTorch implementation to  
rch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi  
s warning  
    warnings.warn(  
***** Running training *****  
    Num examples = 305  
    Num Epochs = 200  
    Instantaneous batch size per device = 32  
    Total train batch size (w. parallel, distributed & accumulation) = 128  
    Gradient Accumulation steps = 4  
    Total optimization steps = 400  
    Automatic Weights & Biases logging enabled, to disable set os.environ["WANDB  
_DISABLED"] = "true"  
wandb: Currently logged in as: holylovenia. Use `wandb login --relogin` to f  
orce relogin  
Tracking run with wandb version 0.13.4  
Run data is saved locally in /home/holy/projects/ai-  
healthcare/assignment1/wandb/run-20221015_152502-6czf0grr  
Syncing run save/problem2/microsoft/resnet-152\_\_1e-3\_\_submitted to Weights &  
Biases \(docs\)
```

[148/400 07:48 < 13:27, 0.31 it/s, Epoch 73/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | No log | 7.047606 | 0.000000 |
| 1 | No log | 7.053577 | 0.000000 |
| 2 | No log | 7.399084 | 0.000000 |
| 3 | No log | 7.270785 | 0.000000 |
| 4 | 9.018300 | 6.764757 | 0.000000 |
| 5 | 9.018300 | 5.824580 | 0.010101 |
| 6 | 9.018300 | 5.067624 | 0.090909 |
| 7 | 9.018300 | 3.895259 | 0.333333 |
| 8 | 9.018300 | 2.491891 | 0.535354 |
| 9 | 6.515600 | 1.651899 | 0.616162 |
| 10 | 6.515600 | 1.008987 | 0.646465 |
| 11 | 6.515600 | 0.570947 | 0.666667 |
| 12 | 6.515600 | 0.532021 | 0.676768 |
| 13 | 6.515600 | 0.473889 | 0.676768 |
| 14 | 1.230600 | 0.396226 | 0.666667 |
| 15 | 1.230600 | 0.428152 | 0.686869 |
| 16 | 1.230600 | 0.481247 | 0.676768 |
| 17 | 1.230600 | 0.368552 | 0.707071 |
| 18 | 1.230600 | 0.238424 | 0.707071 |
| 19 | 0.268800 | 0.217886 | 0.707071 |
| 20 | 0.268800 | 0.260175 | 0.727273 |
| 21 | 0.268800 | 0.347939 | 0.727273 |
| 22 | 0.268800 | 0.283527 | 0.747475 |
| 23 | 0.268800 | 0.306298 | 0.727273 |
| 24 | 0.124100 | 0.379417 | 0.737374 |
| 25 | 0.124100 | 0.450743 | 0.717172 |
| 26 | 0.124100 | 0.265937 | 0.747475 |
| 27 | 0.124100 | 0.216478 | 0.757576 |
| 28 | 0.124100 | 0.280987 | 0.696970 |
| 29 | 0.063000 | 0.673131 | 0.707071 |
| 30 | 0.063000 | 0.530988 | 0.707071 |
| 31 | 0.063000 | 0.406437 | 0.727273 |
| 32 | 0.063000 | 0.364291 | 0.767677 |
| 33 | 0.063000 | 0.674605 | 0.717172 |
| 34 | 0.055100 | 0.448213 | 0.727273 |
| 35 | 0.055100 | 0.332557 | 0.707071 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 0.055100 | 0.301515 | 0.727273 |
| 37 | 0.055100 | 0.444264 | 0.696970 |
| 38 | 0.055100 | 0.470501 | 0.676768 |
| 39 | 0.054400 | 0.346266 | 0.737374 |
| 40 | 0.054400 | 0.442450 | 0.747475 |
| 41 | 0.054400 | 0.495021 | 0.737374 |
| 42 | 0.054400 | 0.463470 | 0.757576 |
| 43 | 0.054400 | 0.335269 | 0.777778 |
| 44 | 0.042800 | 0.203071 | 0.787879 |
| 45 | 0.042800 | 0.180842 | 0.797980 |
| 46 | 0.042800 | 0.201916 | 0.797980 |
| 47 | 0.042800 | 0.484968 | 0.777778 |
| 48 | 0.042800 | 0.314754 | 0.757576 |
| 49 | 0.043900 | 0.218441 | 0.767677 |
| 50 | 0.043900 | 0.225955 | 0.808081 |
| 51 | 0.043900 | 0.480931 | 0.767677 |
| 52 | 0.043900 | 0.221748 | 0.818182 |
| 53 | 0.043900 | 0.219404 | 0.828283 |
| 54 | 0.031000 | 0.245770 | 0.797980 |
| 55 | 0.031000 | 0.310375 | 0.797980 |
| 56 | 0.031000 | 0.437079 | 0.797980 |
| 57 | 0.031000 | 0.258188 | 0.787879 |
| 58 | 0.031000 | 0.222829 | 0.787879 |
| 59 | 0.027100 | 0.297309 | 0.787879 |
| 60 | 0.027100 | 0.441907 | 0.757576 |
| 61 | 0.027100 | 0.413655 | 0.777778 |
| 62 | 0.027100 | 0.361237 | 0.808081 |
| 63 | 0.027100 | 0.382686 | 0.767677 |
| 64 | 0.014900 | 0.324031 | 0.808081 |
| 65 | 0.014900 | 0.309800 | 0.787879 |
| 66 | 0.014900 | 0.315118 | 0.797980 |
| 67 | 0.014900 | 0.352561 | 0.797980 |
| 68 | 0.014900 | 0.404579 | 0.818182 |
| 69 | 0.008800 | 0.659922 | 0.777778 |
| 70 | 0.008800 | 0.697905 | 0.767677 |
| 71 | 0.008800 | 0.618251 | 0.787879 |
| 72 | 0.008800 | 0.434565 | 0.808081 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 73 | 0.008800 | 0.376500 | 0.808081 |

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-2
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-2/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-2/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-2/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-108] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-148] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-4
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-4/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-4/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-4/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-6
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-6/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-6/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-6/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-4] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-8
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-8/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-8/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-8/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-6] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-10
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-10/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-10/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-10/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitt
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ed/checkpoint-8] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-2] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-10] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-14
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-14/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-14/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-14/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-16
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-16/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-16/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-16/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-14] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-18
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-18/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-18/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-18/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-16] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-20
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-20/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-20/pytorch_model.bin
```

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Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-20/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-18] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-22
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-22/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-22/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-22/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-20] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-22] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-26
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-26/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-26/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-26/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-24] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-28
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-28/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-28/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-28/preprocessor_config.json
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-30
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-30/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-30/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitt
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ed/checkpoint-30/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-28] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-32
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-32/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-32/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-32/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-26] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-30] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-34
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-34/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-34/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-34/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-32] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-34] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-38
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-38/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-38/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-38/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-40
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-40/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-40/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-40/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-38] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-42
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-42/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-42/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-42/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-36] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-40] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-44
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-44/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-44/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-44/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-46
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-46/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-46/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-46/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-42] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-44] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-48/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-50
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-50/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/c
```

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heckpoint-50/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-50/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-52
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-52/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-52/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-52/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-50] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-54
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-54/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-54/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-54/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-52] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-56
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-56/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-56/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-56/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-46] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-54] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-58
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-58/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-58/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-58/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-60
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-60/config.json
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Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-60/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-58] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-62
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-62/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-62/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-62/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-64
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-64/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-64/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-64/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-62] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-66
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-66/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-66/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-66/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-56] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-64] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-68
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-68/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-68/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-68/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-70
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/c
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heckpoint-70/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-70/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-70/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-68] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-72
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-72/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-70] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-74
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-74/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-74/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-74/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-76
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-76/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-76/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-76/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-74] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-78
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-78/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-78/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-78/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-76] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-80
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Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-80/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-80/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-80/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-78] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-82
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-82/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-82/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-82/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-80] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-84
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-84/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-84/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-84/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-82] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-86
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-86/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-86/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-86/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-84] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-88
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-88/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-88/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-88/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-66] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-86] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
```

```
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-90
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-90/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-90/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-90/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-88] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-92
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-92/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-92/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-92/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-90] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-94
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-94/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-94/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-94/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-96
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-96/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-96/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-96/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-94] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-98
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-98/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-98/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-98/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-96] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
```

```
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-100
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-100/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-100/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-100/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-98] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-102
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-102/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-102/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-102/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-92] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-100] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-104
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-104/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-104/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-104/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-106
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-106/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-106/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-106/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-102] due to args.save_total_limit
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-104] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-108
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-108/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-108/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-108/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-106] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-110
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-110/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-110/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-110/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-112
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-112/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-112/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-112/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-110] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-114
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-114/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-114/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-114/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-112] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-116
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-116/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-116/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-116/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-114] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-118
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-118/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-118/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-118/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-116] due to args.save_total_limit
***** Running Evaluation *****
```

```
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-120
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-120/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-120/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-120/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-118] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-122
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-122/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-122/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-122/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-120] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-124
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-124/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-124/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-124/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-122] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-126
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-126/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-126/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-126/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-124] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-128
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-128/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-128/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-128/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-126] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-130
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-130/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-130/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-130/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-128] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-132
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-132/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-132/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-132/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-130] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-134
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-134/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-134/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-134/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-132] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-136
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-136/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-136/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-136/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-134] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-138
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-138/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-138/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-138/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-136] due to args.save_total_limit
```

```
ed/checkpoint-136] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-140
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-140/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-140/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-140/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-138] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-142
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-142/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-142/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-142/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-140] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-144
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-144/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-144/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-144/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-142] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-146
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-146/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-146/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-146/preprocessor_config.json
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-144] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-148
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-148/config.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-148/pytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitted/checkpoint-148/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/microsoft/resnet-152_1e-3_submitt
ed/checkpoint-146] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/
mode
ls =)

```
Loading best model from save/problem2/microsoft/resnet-152_1e-3_submitted/
checkpoint-108 (score: 0.8282828282828283).
Saving model checkpoint to save/problem2/microsoft/resnet-152_1e-3_submitt
ed
Configuration saved in save/problem2/microsoft/resnet-152_1e-3_submitted/c
onfig.json
Model weights saved in save/problem2/microsoft/resnet-152_1e-3_submitted/p
ytorch_model.bin
Feature extractor saved in save/problem2/microsoft/resnet-152_1e-3_submitt
ed/preprocessor_config.json
```

In [25]:

```
evaluation(
    trainer,
    datasets=[proc_datasets["valid"]],
    eval_names=["problem2_datas_valid"]
)
```

```
***** Running Evaluation *****
Num examples = 99
Batch size = 32
```

[4/4 00:00]

```
***** problem2_datas_valid metrics *****
epoch = 73.8
eval_accuracy = 0.8283
eval_loss = 0.2194
eval_runtime = 0:00:01.64
eval_samples_per_second = 60.227
eval_steps_per_second = 2.433
```

In [35]:

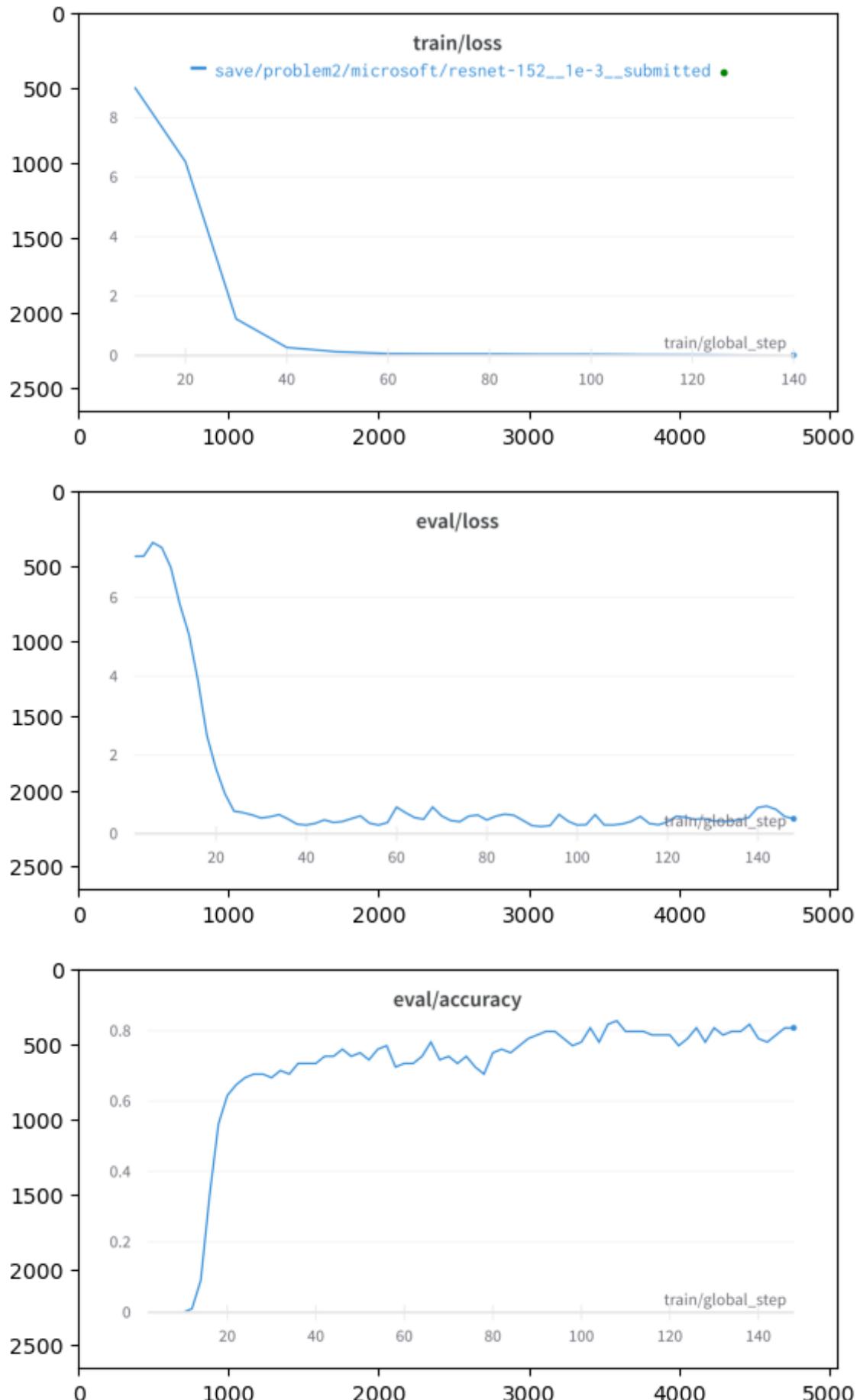
```
plt.figure()
img = mpimg.imread("./log/problem2/exp2/exp2_train_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp2/exp2_valid_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp2/exp2_valid_acc.png")
plt.imshow(img)
```

Out[35]:

```
<matplotlib.image.AxesImage at 0x7fa8f81669e0>
```



Experiment 3: Experiment 2 + Pre-training

Pre-training.

```
In [36]: exp3_pretraining_model = AutoModelForImageClassification.from_pretrained(mod
```

```
loading configuration file config.json from cache at /home/holy/.cache/huggi
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094
b8778c242907844/config.json
Model config ResNetConfig {
    "_name_or_path": "microsoft/resnet-152",
    "architectures": [
        "ResNetForImageClassification"
    ],
    "depths": [
        3,
        8,
        36,
        3
    ],
    "downsample_in_first_stage": false,
    "embedding_size": 64,
    "hidden_act": "relu",
    "hidden_sizes": [
        256,
        512,
        1024,
        2048
    ],
    "id2label": {
        "0": "tench, Tinca tinca",
        "1": "goldfish, Carassius auratus",
        "2": "great white shark, white shark, man-eater, man-eating shark, Carch
arodon carcharias",
        "3": "tiger shark, Galeocerdo cuvieri",
        "4": "hammerhead, hammerhead shark",
        "5": "electric ray, crampfish, numbfish, torpedo",
        "6": "stingray",
        "7": "cock",
        "8": "hen",
        "9": "ostrich, Struthio camelus",
        "10": "brambling, Fringilla montifringilla",
        "11": "goldfinch, Carduelis carduelis",
        "12": "house finch, linnet, Carpodacus mexicanus",
        "13": "junco, snowbird",
        "14": "indigo bunting, indigo finch, indigo bird, Passerina cyanea",
        "15": "robin, American robin, Turdus migratorius",
        "16": "bulbul",
        "17": "jay",
        "18": "magpie",
        "19": "chickadee",
        "20": "water ouzel, dipper",
        "21": "kite",
        "22": "bald eagle, American eagle, Haliaeetus leucocephalus",
        "23": "vulture",
        "24": "great grey owl, great gray owl, Strix nebulosa",
        "25": "European fire salamander, Salamandra salamandra",
        "26": "common newt, Triturus vulgaris",
        "27": "eft",
        "28": "spotted salamander, Ambystoma maculatum",
        "29": "axolotl, mud puppy, Ambystoma mexicanum",
        "30": "bullfrog, Rana catesbeiana",
        "31": "tree frog, tree-frog",
        "32": "tailed frog, bell toad, ribbed toad, tailed toad, Ascaphus trui",
        "33": "loggerhead, loggerhead turtle, Caretta caretta",
        "34": "leatherback turtle, leatherback, leathery turtle, Dermochelys cor
iacea",
        "35": "mud turtle",
        "36": "terrapin",
        "37": "box turtle, box tortoise",
```

```
"38": "banded gecko",
"39": "common iguana, iguana, Iguana iguana",
"40": "American chameleon, anole, Anolis carolinensis",
"41": "whiptail, whiptail lizard",
"42": "agama",
"43": "frilled lizard, Chlamydosaurus kingi",
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"68": "sidewinder, horned rattlesnake, Crotalus cerastes",
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"289": "snow leopard, ounce, Panthera uncia",
"290": "jaguar, panther, Panthera onca, Felis onca",
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"292": "tiger, Panthera tigris",
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"496": "Christmas stocking",
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"603": "horse cart, horse-cart",
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"608": "jean, blue jean, denim",
"609": "jeep, landrover",
"610": "jersey, T-shirt, tee shirt",
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    "African grey, African gray, Psittacus erithacus": 87,
    "African hunting dog, hyena dog, Cape hunting dog, Lycaon pictus": 275,
    "Airedale, Airedale terrier": 191,
    "American Staffordshire terrier, Staffordshire terrier, American pit bull terrier, pit bull terrier": 180,
    "American alligator, Alligator mississippiensis": 50,
    "American black bear, black bear, Ursus americanus, Euarctos americanus": 295,
    "American chameleon, anole, Anolis carolinensis": 40,
    "American coot, marsh hen, mud hen, water hen, Fulica americana": 137,
    "American egret, great white heron, Egretta albus": 132,
    "American lobster, Northern lobster, Maine lobster, Homarus americanus": 122,
    "Angora, Angora rabbit": 332,
    "Appenzeller": 240,
    "Arabian camel, dromedary, Camelus dromedarius": 354,
    "Arctic fox, white fox, Alopex lagopus": 279,
    "Australian terrier": 193,
    "Band Aid": 419,
    "Bedlington terrier": 181,
    "Bernese mountain dog": 239,
    "Blenheim spaniel": 156,
    "Border collie": 232,
    "Border terrier": 182,
    "Boston bull, Boston terrier": 195,
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"Bouvier des Flandres, Bouviers des Flandres": 233,
"Brabancon griffon": 262,
"Brittany spaniel": 215,
"CD player": 485,
"Cardigan, Cardigan Welsh corgi": 264,
"Chesapeake Bay retriever": 209,
"Chihuahua": 151,
"Christmas stocking": 496,
"Crock Pot": 521,
"Dandie Dinmont, Dandie Dinmont terrier": 194,
"Doberman, Doberman pinscher": 236,
"Dungeness crab, Cancer magister": 118,
"Dutch oven": 544,
"Egyptian cat": 285,
"English foxhound": 167,
"English setter": 212,
"English springer, English springer spaniel": 217,
"EntleBucher": 241,
"Eskimo dog, husky": 248,
"European fire salamander, Salamandra salamandra": 25,
"European gallinule, Porphyrio porphyrio": 136,
"French bulldog": 245,
"French horn, horn": 566,
"French loaf": 930,
"German shepherd, German shepherd dog, German police dog, alsatian": 23
5,
"German short-haired pointer": 210,
"Gila monster, Heloderma suspectum": 45,
"Gordon setter": 214,
"Granny Smith": 948,
"Great Dane": 246,
"Great Pyrenees": 257,
"Greater Swiss Mountain dog": 238,
"Ibizan hound, Ibizan Podenco": 173,
"Indian cobra, Naja naja": 63,
"Indian elephant, Elephas maximus": 385,
"Irish setter, red setter": 213,
"Irish terrier": 184,
"Irish water spaniel": 221,
"Irish wolfhound": 170,
"Italian greyhound": 171,
"Japanese spaniel": 152,
"Kerry blue terrier": 183,
"Komodo dragon, Komodo lizard, dragon lizard, giant lizard, Varanus komo
doensis": 48,
"Labrador retriever": 208,
"Lakeland terrier": 189,
"Leonberg": 255,
"Lhasa, Lhasa apso": 204,
"Loafer": 630,
"Madagascar cat, ring-tailed lemur, Lemur catta": 383,
"Maltese dog, Maltese terrier, Maltese": 153,
"Mexican hairless": 268,
"Model T": 661,
"Newfoundland, Newfoundland dog": 256,
"Norfolk terrier": 185,
"Norwegian elkhound, elkhound": 174,
"Norwich terrier": 186,
"Old English sheepdog, bobtail": 229,
"Pekinese, Pekingese, Peke": 154,
"Pembroke, Pembroke Welsh corgi": 263,
"Persian cat": 283,
"Petri dish": 712,
"Polaroid camera, Polaroid Land camera": 732,

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"Pomeranian": 259,
"Rhodesian ridgeback": 159,
"Rottweiler": 234,
"Saint Bernard, St Bernard": 247,
"Saluki, gazelle hound": 176,
"Samoyed, Samoyede": 258,
"Scotch terrier, Scottish terrier, Scottie": 199,
"Scottish deerhound, deerhound": 177,
"Sealyham terrier, Sealyham": 190,
"Shetland sheepdog, Shetland sheep dog, Shetland": 230,
"Shih-Tzu": 155,
"Siamese cat, Siamese": 284,
"Siberian husky": 250,
"Staffordshire bullterrier, Staffordshire bull terrier": 179,
"Sussex spaniel": 220,
"Tibetan mastiff": 244,
"Tibetan terrier, chrysanthemum dog": 200,
"Walker hound, Walker foxhound": 166,
"Weimaraner": 178,
"Welsh springer spaniel": 218,
"West Highland white terrier": 203,
"Windsor tie": 906,
"Yorkshire terrier": 187,
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"accordion, piano accordion, squeeze box": 401,
"acorn": 988,
"acorn squash": 941,
"acoustic guitar": 402,
"admiral": 321,
"affenpinscher, monkey pinscher, monkey dog": 252,
"agama": 42,
"agaric": 992,
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"airliner": 404,
"airship, dirigible": 405,
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"alligator lizard": 44,
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"ambulance": 407,
"amphibian, amphibious vehicle": 408,
"analog clock": 409,
"anemone fish": 393,
"ant, emmet, pismire": 310,
"apiary, bee house": 410,
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"artichoke, globe artichoke": 944,
"ashcan, trash can, garbage can, wastebin, ash bin, ash-bin, ashbin, dus
tbin, trash barrel, trash bin": 412,
"assault rifle, assault gun": 413,
"axolotl, mud puppy, Ambystoma mexicanum": 29,
"baboon": 372,
"backpack, back pack, knapsack, packsack, rucksack, haversack": 414,
"badger": 362,
"bagel, beigel": 931,
"bakery, bakeshop, bakehouse": 415,
"balance beam, beam": 416,
"bald eagle, American eagle, Haliaeetus leucocephalus": 22,
"balloon": 417,
"ballplayer, baseball player": 981,
"ballpoint, ballpoint pen, ballpen, Biro": 418,
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"barbell": 422,
"barber chair": 423,
"barbershop": 424,
"barn": 425,
"barn spider, Araneus cavaticus": 73,
"barometer": 426,
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"barrel, cask": 427,
"barrow, garden cart, lawn cart, wheelbarrow": 428,
"baseball": 429,
"basenji": 253,
"basketball": 430,
"basset, basset hound": 161,
"bassinet": 431,
"bassoon": 432,
"bath towel": 434,
"bathing cap, swimming cap": 433,
"bathtub, bathing tub, bath, tub": 435,
"beach wagon, station wagon, wagon, estate car, beach waggon, station wa-
ggon": 436,
"beacon, lighthouse, beacon light, pharos": 437,
"beagle": 162,
"beaker": 438,
"bearskin, busby, shako": 439,
"beaver": 337,
"bee": 309,
"bee eater": 92,
"beer bottle": 440,
"beer glass": 441,
"bell cote, bell cot": 442,
"bell pepper": 945,
"bib": 443,
"bicycle-built-for-two, tandem bicycle, tandem": 444,
"bighorn, bighorn sheep, cimarron, Rocky Mountain bighorn, Rocky Mountai-
n sheep, Ovis canadensis": 349,
"bikini, two-piece": 445,
"binder, ring-binder": 446,
"binoculars, field glasses, opera glasses": 447,
"birdhouse": 448,
"bison": 347,
"bittern": 133,
"black and gold garden spider, Argiope aurantia": 72,
"black grouse": 80,
"black stork, Ciconia nigra": 128,
"black swan, Cygnus atratus": 100,
"black widow, Latrodectus mactans": 75,
"black-and-tan coonhound": 165,
"black-footed ferret, ferret, Mustela nigripes": 359,
"bloodhound, sleuthhound": 163,
"bluetick": 164,
"boa constrictor, Constrictor constrictor": 61,
"boathouse": 449,
"bobsled, bobsleigh, bob": 450,
"bolete": 997,
"bolo tie, bolo, bola tie, bola": 451,
"bonnet, poke bonnet": 452,
"book jacket, dust cover, dust jacket, dust wrapper": 921,
"bookcase": 453,
"bookshop, bookstore, bookstall": 454,
"borzoi, Russian wolfhound": 169,
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"bottlecap": 455,
"bow": 456,
"bow tie, bow-tie, bowtie": 457,
"box turtle, box tortoise": 37,
"boxer": 242,
"brain coral": 109,
"brambling, Fringilla montifringilla": 10,
"brass, memorial tablet, plaque": 458,
"brassiere, bra, bandeau": 459,
"breakwater, groin, groyne, mole, bulwark, seawall, jetty": 460,
"breastplate, aegis, egis": 461,
"briard": 226,
"broccoli": 937,
"broom": 462,
"brown bear, bruin, Ursus arctos": 294,
"bubble": 971,
"bucket, pail": 463,
"buckeye, horse chestnut, conker": 990,
"buckle": 464,
"bulbul": 16,
"bull mastiff": 243,
"bullet train, bullet": 466,
"bulletproof vest": 465,
"bullfrog, Rana catesbeiana": 30,
"burrito": 965,
"bustard": 138,
"butcher shop, meat market": 467,
"butternut squash": 942,
"cab, hack, taxi, taxicab": 468,
"cabbage butterfly": 324,
"cairn, cairn terrier": 192,
"cauldron, cauldron": 469,
"can opener, tin opener": 473,
"candle, taper, wax light": 470,
"cannon": 471,
"canoe": 472,
"capuchin, ringtail, Cebus capucinus": 378,
"car mirror": 475,
"car wheel": 479,
"carbonara": 959,
"cardigan": 474,
"cardoon": 946,
"carousel, carrousel, merry-go-round, roundabout, whirligig": 476,
"carpenter's kit, tool kit": 477,
"carton": 478,
"cash machine, cash dispenser, automated teller machine, automatic teller machine, automated teller, automatic teller, ATM": 480,
"cassette": 481,
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"castle": 483,
"catamaran": 484,
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"titi, titi monkey": 380,
"toaster": 859,
"tobacco shop, tobacconist shop, tobacconist": 860,
"toilet seat": 861,
"toilet tissue, toilet paper, bathroom tissue": 999,
"torch": 862,
"totem pole": 863,
"toucan": 96,
"tow truck, tow car, wrecker": 864,
"toy poodle": 265,
"toy terrier": 158,
"toyshop": 865,
"tractor": 866,
"traffic light, traffic signal, stoplight": 920,
"trailer truck, tractor trailer, trucking rig, rig, articulated lorry, s
emi": 867,
"tray": 868,
"tree frog, tree-frog": 31,
"trench coat": 869,
"triceratops": 51,
"tricycle, trike, velocipede": 870,
"trifle": 927,
"trilobite": 69,
"trimaran": 871,
"tripod": 872,
"triumphal arch": 873,
"trolleybus, trolley coach, trackless trolley": 874,
"trombone": 875,
"tub, vat": 876,
"turnstile": 877,
"tusker": 101,
"typewriter keyboard": 878,
"umbrella": 879,
"unicycle, monocycle": 880,
"upright, upright piano": 881,
"vacuum, vacuum cleaner": 882,
"valley, vale": 979,
"vase": 883,
"vault": 884,
"velvet": 885,
"vending machine": 886,
"vestment": 887,
"viaduct": 888,
"vine snake": 59,
"violin, fiddle": 889,
"vizsla, Hungarian pointer": 211,
"volcano": 980,
"volleyball": 890,
"vulture": 23,
"waffle iron": 891,
"walking stick, walkingstick, stick insect": 313,
"wall clock": 892,
"wallaby, brush kangaroo": 104,
"wallet, billfold, notecase, pocketbook": 893,
"wardrobe, closet, press": 894,
"warplane, military plane": 895,
```

```

    "warthog": 343,
    "washbasin, handbasin, washbowl, lavabo, wash-hand basin": 896,
    "washer, automatic washer, washing machine": 897,
    "water bottle": 898,
    "water buffalo, water ox, Asiatic buffalo, Bubalus bubalis": 346,
    "water jug": 899,
    "water ouzel, dipper": 20,
    "water snake": 58,
    "water tower": 900,
    "weasel": 356,
    "web site, website, internet site, site": 916,
    "weevil": 307,
    "whippet": 172,
    "whiptail, whiptail lizard": 41,
    "whiskey jug": 901,
    "whistle": 902,
    "white stork, Ciconia ciconia": 127,
    "white wolf, Arctic wolf, Canis lupus tundrarum": 270,
    "wig": 903,
    "wild boar, boar, Sus scrofa": 342,
    "window screen": 904,
    "window shade": 905,
    "wine bottle": 907,
    "wing": 908,
    "wire-haired fox terrier": 188,
    "wok": 909,
    "wolf spider, hunting spider": 77,
    "wombat": 106,
    "wood rabbit, cottontail, cottontail rabbit": 330,
    "wooden spoon": 910,
    "wool, woolen, woollen": 911,
    "worm fence, snake fence, snake-rail fence, Virginia fence": 912,
    "wreck": 913,
    "yaw": 914,
    "yellow lady's slipper, yellow lady-slipper, Cypripedium calceolus, Cypr
ipedium parviflorum": 986,
    "yurt": 915,
    "zebra": 340,
    "zucchini, courgette": 939
  },
  "layer_type": "bottleneck",
  "model_type": "resnet",
  "num_channels": 3,
  "torch_dtype": "float32",
  "transformers_version": "4.23.1"
}

loading weights file pytorch_model.bin from cache at /home/holy/.cache/huggi
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094
b8778c242907844/pytorch_model.bin
All model checkpoint weights were used when initializing ResNetForImageClass
ification.

All the weights of ResNetForImageClassification were initialized from the mo
del checkpoint at microsoft/resnet-152.
If your task is similar to the task the model of the checkpoint was trained
on, you can already use ResNetForImageClassification for predictions without
further training.

```

```
In [37]: pretrainer = pretraining(
    exp3_pretraining_model,
    output_dir=f"save/problem2/pretrain_{model_name_or_path}_1e-3_submitt
    train_dataset=proc_pretrain_datasets["train"],
    eval_dataset=proc_pretrain_datasets["valid"])
```

```
PyTorch: setting up devices
Using cuda_amp half precision backend
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate
d and will be removed in a future version. Use the PyTorch implementation to
rch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi
s warning
    warnings.warn(
***** Running training *****
    Num examples = 1600
    Num Epochs = 200
    Instantaneous batch size per device = 32
    Total train batch size (w. parallel, distributed & accumulation) = 128
    Gradient Accumulation steps = 4
    Total optimization steps = 2400
Automatic Weights & Biases logging enabled, to disable set os.environ[ "WANDB
_DISABLED" ] = "true"
```

[576/2400 14:03 < 44:38, 0.68 it/s,

Epoch 47/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | 7.536400 | 7.284433 | 0.000000 |
| 1 | 7.589800 | 6.353826 | 0.005000 |
| 2 | 6.775900 | 4.979838 | 0.210000 |
| 3 | 5.656800 | 2.077876 | 0.587500 |
| 4 | 1.677900 | 1.081237 | 0.715000 |
| 5 | 0.899600 | 0.609056 | 0.732500 |
| 6 | 0.543500 | 0.480014 | 0.737500 |
| 7 | 0.342800 | 0.427933 | 0.805000 |
| 8 | 0.336500 | 0.398646 | 0.787500 |
| 9 | 0.265300 | 0.475188 | 0.805000 |
| 10 | 0.290600 | 0.494014 | 0.782500 |
| 11 | 0.268600 | 0.584471 | 0.770000 |
| 12 | 0.260100 | 0.466159 | 0.792500 |
| 13 | 0.215000 | 0.464877 | 0.802500 |
| 14 | 0.188800 | 0.405824 | 0.805000 |
| 15 | 0.203800 | 0.425395 | 0.812500 |
| 16 | 0.259000 | 0.641469 | 0.780000 |
| 17 | 0.195300 | 0.511246 | 0.805000 |
| 18 | 0.177300 | 0.418922 | 0.832500 |
| 19 | 0.172200 | 0.499942 | 0.825000 |
| 20 | 0.177400 | 0.415786 | 0.837500 |
| 21 | 0.191700 | 0.480685 | 0.817500 |
| 22 | 0.175800 | 0.509533 | 0.802500 |
| 23 | 0.211800 | 0.599800 | 0.790000 |
| 24 | 0.159900 | 0.566911 | 0.807500 |
| 25 | 0.124500 | 0.542113 | 0.810000 |
| 26 | 0.083400 | 0.515495 | 0.832500 |
| 27 | 0.094400 | 0.525375 | 0.832500 |
| 28 | 0.153800 | 0.433746 | 0.835000 |
| 29 | 0.089200 | 0.455271 | 0.847500 |
| 30 | 0.077200 | 0.454984 | 0.842500 |
| 31 | 0.118600 | 0.436700 | 0.855000 |
| 32 | 0.067900 | 0.406050 | 0.862500 |
| 33 | 0.063500 | 0.479952 | 0.850000 |
| 34 | 0.074400 | 0.402897 | 0.867500 |
| 35 | 0.066700 | 0.577170 | 0.820000 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 0.062100 | 0.497512 | 0.842500 |
| 37 | 0.052800 | 0.448100 | 0.877500 |
| 38 | 0.049100 | 0.360877 | 0.862500 |
| 39 | 0.059200 | 0.445732 | 0.835000 |
| 40 | 0.092300 | 0.404723 | 0.850000 |
| 41 | 0.040700 | 0.457119 | 0.835000 |
| 42 | 0.050400 | 0.495991 | 0.850000 |
| 43 | 0.030500 | 0.553759 | 0.860000 |
| 44 | 0.031400 | 0.499859 | 0.867500 |
| 45 | 0.027500 | 0.482668 | 0.852500 |
| 46 | 0.052600 | 0.557211 | 0.832500 |
| 47 | 0.038600 | 0.430799 | 0.862500 |

```
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-24] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-36] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-60
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-60/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-60/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
```

```
3__submitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-72
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-72/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-84
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-84/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-84/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-84/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-96
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-96/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-96/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-96/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-84] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-108
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-108/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-108/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-108/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-120
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-120/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-120/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-120/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-108] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-132
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-132/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-132/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-132/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-120] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-144
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-144/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-144/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-144/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-132] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-156
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-156/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-156/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-156/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-144] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-168
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-168/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-168/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-168/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-156] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-180
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-180/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-180/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-180/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
```

```
3__submitted/checkpoint-168] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-192
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-192/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-192/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-192/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-96] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-180] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-204
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-204/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-204/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-204/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-216
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-216/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-216/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-216/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-204] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-228
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-228/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-228/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-228/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-192] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-216] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3__submitted/checkpoint-240
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-240/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-240/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-240/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-252
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-252/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-252/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-252/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-228] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-240] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-264
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-264/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-264/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-264/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-276
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-276/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-276/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-276/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-264] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-288
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-288/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-288/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-288/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-276] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-300
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-300/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-300/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
```

```
3_submitted/checkpoint-300/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-288] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-312
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-312/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-312/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-312/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-300] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-324
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-324/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-324/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-324/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-312] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-336
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-336/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-336/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-336/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-324] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-348
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-348/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-348/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-348/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-336] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-360
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-360/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-360/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-360/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-252] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-348] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-372
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-372/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-372/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-372/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-384
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-384/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-384/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-384/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-360] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-372] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-396
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-396/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-396/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-396/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-384] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-408
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-408/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-408/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-408/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-420
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-420/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_submitted/checkpoint-420/pytorch_model.bin
```

```
ubmitted/checkpoint-420/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-420/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-396] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-408] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-432
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-432/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-432/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-432/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-444
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-444/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-444/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-444/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-432] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-456
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-456/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-456/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-456/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-420] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-444] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-468
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-468/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-468/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-468/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-480
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-480/config.json
```

```
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-480/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-480/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-468] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-492
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-492/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-492/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-492/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-480] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-504
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-504/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-504/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-504/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-492] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-516
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-516/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-516/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-516/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-504] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-528
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-528/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-528/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-528/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-516] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-540
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
```

```
ubmitted/checkpoint-540/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-540/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-540/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-528] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-552
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-552/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-552/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-552/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-540] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-564
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-564/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-564/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-564/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-552] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-576
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-576/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/checkpoint-576/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-576/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/checkpoint-564] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/models =)

```
Loading best model from save/problem2/pretrain_microsoft/resnet-152_1e-3_
submitted/checkpoint-456 (score: 0.8775).
Saving model checkpoint to save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted
Configuration saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/config.json
Model weights saved in save/problem2/pretrain_microsoft/resnet-152_1e-3_s
ubmitted/pytorch_model.bin
Feature extractor saved in save/problem2/pretrain_microsoft/resnet-152_1e-
3_submitted/preprocessor_config.json
```

In [38]: evaluation(

```

    pretrainer,
    datasets=[proc_pretrain_datasets["valid"], proc_datasets["valid"]],
    eval_names=["ham10000_valid", "problem2_datas_valid"]
)

```

```

***** Running Evaluation *****
Num examples = 400
Batch size = 32

```

[13/13 00:02]

```

***** Running Evaluation *****
Num examples = 99
Batch size = 32
***** ham10000_valid metrics *****
epoch = 47.96
eval_accuracy = 0.8775
eval_loss = 0.4481
eval_runtime = 0:00:02.86
eval_samples_per_second = 139.503
eval_steps_per_second = 4.534
***** problem2_datas_valid metrics *****
epoch = 47.96
eval_accuracy = 0.1818
eval_loss = 8.9857
eval_runtime = 0:00:01.48
eval_samples_per_second = 66.747
eval_steps_per_second = 2.697

```

Fine-tuning.

In [24]: `exp3_finetuning_model = AutoModelForImageClassification.from_pretrained(f"save/problem2/pretrain_{model_name_or_path}_1e-3_submitted")`

In [25]: `trainer = training(
 exp3_finetuning_model,
 output_dir=f"save/problem2/pretrained_1e-3|{model_name_or_path}_1e-3",
 train_dataset=proc_datasets["train"],
 eval_dataset=proc_datasets["valid"])`

```

Using cuda_amp half precision backend
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate
d and will be removed in a future version. Use the PyTorch implementation to
rch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi
s warning
warnings.warn(
***** Running training *****
Num examples = 305
Num Epochs = 200
Instantaneous batch size per device = 32
Total train batch size (w. parallel, distributed & accumulation) = 128
Gradient Accumulation steps = 4
Total optimization steps = 400
Automatic Weights & Biases logging enabled, to disable set os.environ["WANDB
_DISABLED"] = "true"
wandb: Currently logged in as: holylovenia. Use `wandb login --relogin` to f
orce relogin

```

Tracking run with wandb version 0.13.4

Run data is saved locally in /home/holy/projects/ai-
healthcare/assignment1/wandb/run-20221015_160156-21fafanq

Syncing run [save/problem2/pretrained_1e-3|microsoft/resnet-152_1e-3_submitted](#) to [Weights & Biases \(docs\)](#)

 [134/400 07:12 < 14:30, 0.31 it/s, Epoch 66/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | No log | 9.743649 | 0.181818 |
| 1 | No log | 9.509656 | 0.191919 |
| 2 | No log | 8.557146 | 0.181818 |
| 3 | No log | 7.036314 | 0.181818 |
| 4 | 10.672100 | 5.320508 | 0.181818 |
| 5 | 10.672100 | 3.856836 | 0.212121 |
| 6 | 10.672100 | 3.416615 | 0.272727 |
| 7 | 10.672100 | 2.804009 | 0.383838 |
| 8 | 10.672100 | 1.785927 | 0.535354 |
| 9 | 4.037200 | 0.968431 | 0.616162 |
| 10 | 4.037200 | 0.521328 | 0.717172 |
| 11 | 4.037200 | 0.269251 | 0.767677 |
| 12 | 4.037200 | 0.220115 | 0.707071 |
| 13 | 4.037200 | 0.240553 | 0.707071 |
| 14 | 0.505100 | 0.226966 | 0.727273 |
| 15 | 0.505100 | 0.220155 | 0.727273 |
| 16 | 0.505100 | 0.260423 | 0.727273 |
| 17 | 0.505100 | 0.210635 | 0.737374 |
| 18 | 0.505100 | 0.209391 | 0.727273 |
| 19 | 0.162400 | 0.212570 | 0.707071 |
| 20 | 0.162400 | 0.256154 | 0.727273 |
| 21 | 0.162400 | 0.335970 | 0.757576 |
| 22 | 0.162400 | 0.380399 | 0.767677 |
| 23 | 0.162400 | 0.322120 | 0.787879 |
| 24 | 0.069800 | 0.318850 | 0.757576 |
| 25 | 0.069800 | 0.261684 | 0.818182 |
| 26 | 0.069800 | 0.218022 | 0.818182 |
| 27 | 0.069800 | 0.224061 | 0.808081 |
| 28 | 0.069800 | 0.239498 | 0.818182 |
| 29 | 0.027900 | 0.269661 | 0.818182 |
| 30 | 0.027900 | 0.278969 | 0.797980 |
| 31 | 0.027900 | 0.317174 | 0.777778 |
| 32 | 0.027900 | 0.341978 | 0.787879 |
| 33 | 0.027900 | 0.370376 | 0.777778 |
| 34 | 0.018900 | 0.386950 | 0.737374 |
| 35 | 0.018900 | 0.506625 | 0.767677 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 0.018900 | 0.422429 | 0.747475 |
| 37 | 0.018900 | 0.380033 | 0.767677 |
| 38 | 0.018900 | 0.341176 | 0.797980 |
| 39 | 0.011300 | 0.325536 | 0.797980 |
| 40 | 0.011300 | 0.328922 | 0.797980 |
| 41 | 0.011300 | 0.336503 | 0.767677 |
| 42 | 0.011300 | 0.354579 | 0.808081 |
| 43 | 0.011300 | 0.350207 | 0.808081 |
| 44 | 0.009400 | 0.308947 | 0.818182 |
| 45 | 0.009400 | 0.283211 | 0.828283 |
| 46 | 0.009400 | 0.273863 | 0.848485 |
| 47 | 0.009400 | 0.298123 | 0.848485 |
| 48 | 0.009400 | 0.306809 | 0.838384 |
| 49 | 0.008300 | 0.308976 | 0.818182 |
| 50 | 0.008300 | 0.270457 | 0.808081 |
| 51 | 0.008300 | 0.452038 | 0.797980 |
| 52 | 0.008300 | 0.463704 | 0.808081 |
| 53 | 0.008300 | 0.509276 | 0.777778 |
| 54 | 0.015700 | 0.418477 | 0.818182 |
| 55 | 0.015700 | 0.263178 | 0.797980 |
| 56 | 0.015700 | 0.283308 | 0.797980 |
| 57 | 0.015700 | 0.291952 | 0.797980 |
| 58 | 0.015700 | 0.312167 | 0.777778 |
| 59 | 0.018100 | 0.380707 | 0.767677 |
| 60 | 0.018100 | 0.433491 | 0.767677 |
| 61 | 0.018100 | 0.355849 | 0.777778 |
| 62 | 0.018100 | 0.249879 | 0.808081 |
| 63 | 0.018100 | 0.276483 | 0.787879 |
| 64 | 0.015500 | 0.283809 | 0.777778 |
| 65 | 0.015500 | 0.329166 | 0.787879 |
| 66 | 0.015500 | 0.354287 | 0.787879 |

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-2
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-2/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-2/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-2/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-4
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-4/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-4/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-4/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-2] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-6
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-6/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-6/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-6/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-8
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-8/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-8/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-8/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-6] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-10
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-10/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-10/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-10/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-8] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
```

```
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-4] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-10] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-14
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-14/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-14/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-14/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-16
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-16/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-16/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-16/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-14] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-18
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-18/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-18/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-18/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-16] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-20
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-20/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-20/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-20/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-18] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-22
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-22/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-22/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-22/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-20] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-22] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-26
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-26/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-26/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-26/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-28
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-28/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-28/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-28/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-26] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-30
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-30/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-30/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-30/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-28] due to args.save_total_limit
***** Running Evaluation *****
```

```
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-32
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-32/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-32/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-32/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-30] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-34
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-34/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-34/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-34/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-32] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-34] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-38
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-38/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-38/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-38/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-36] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-40
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-40/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-40/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-40/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-38] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-42
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-42/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-42/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-42/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-40] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-44
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-44/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-44/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-44/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-42] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-46
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-46/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-46/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-46/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-44] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-46] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-46] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-50
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-50/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-50/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
```

```
52_1e-3_submitted/checkpoint-50/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-52
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-52/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-52/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-52/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-48] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-50] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-54
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-54/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-54/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-54/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-56
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-56/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-56/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-56/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-54] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-58
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-58/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-58/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-58/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-56] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-60
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-60/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-60/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-58] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-62
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-62/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-62/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-62/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-64
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-64/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-64/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-64/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-62] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-66
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-66/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-66/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-66/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-64] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-68
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-68/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-68/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-68/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-66] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-70
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-70/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-70/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
```

```
52_1e-3_submitted/checkpoint-70/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-68] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-72
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-72/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-70] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-74
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-74/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-74/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-74/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-76
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-76/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-76/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-76/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-74] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-78
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-78/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-78/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-78/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-76] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-80
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-80/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-80/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-80/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-78] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-82
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-82/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-82/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-82/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-80] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-84
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-84/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-84/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-84/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-82] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-86
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-86/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-86/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-86/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-84] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-88
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-88/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-88/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-88/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-86] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-90
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-90/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
```

```
1e-3_submitted/checkpoint-90/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-90/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-88] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-92
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-92/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-92/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-92/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-52] due to args.save_total_limit
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-90] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-94
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-94/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-94/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-94/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-92] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-96
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-96/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-96/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-96/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-98
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-98/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-98/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-98/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-96] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-100
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-100/config.json
```

```
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-100/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-100/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-98] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-102
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-102/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-102/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-102/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-100] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-104
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-104/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-104/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-104/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-102] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-106
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-106/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-106/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-106/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-104] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-108
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-108/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-108/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-108/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-106] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-110
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
```

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1e-3_submitted/checkpoint-110/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-110/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-110/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-108] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-112
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-112/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-112/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-112/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-110] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-114
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-114/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-114/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-114/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-112] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-116
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-116/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-116/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-116/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-114] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-118
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-118/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-118/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-118/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-116] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-120
```

```
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-120/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-120/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-120/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-118] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-122
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-122/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-122/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-122/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-120] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-124
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-124/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-124/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-124/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-122] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-126
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-126/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-126/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-126/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-124] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-128
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-128/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-128/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-128/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-126] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
```

```

52_1e-3_submitted/checkpoint-130
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-130/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-130/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-130/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-128] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-132
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-132/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-132/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-132/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-130] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-134
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-134/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-134/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-134/preprocessor_config.json
Deleting older checkpoint [save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/checkpoint-132] due to args.save_total_limit

```

Training completed. Do not forget to share your model on huggingface.co/models =)

```

Loading best model from save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/checkpoint-94 (score: 0.8484848484848485).
Saving model checkpoint to save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted
Configuration saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/config.json
Model weights saved in save/problem2/pretrained_1e-3|microsoft/resnet-152_
1e-3_submitted/pytorch_model.bin
Feature extractor saved in save/problem2/pretrained_1e-3|microsoft/resnet-1
52_1e-3_submitted/preprocessor_config.json

```

In [26]:

```

evaluation(
    trainer,
    datasets=[proc_datasets["valid"]],
    eval_names=["problem2_datas_valid"]
)

```

```

***** Running Evaluation *****
    Num examples = 99
    Batch size = 32

```

[4/4 00:00]

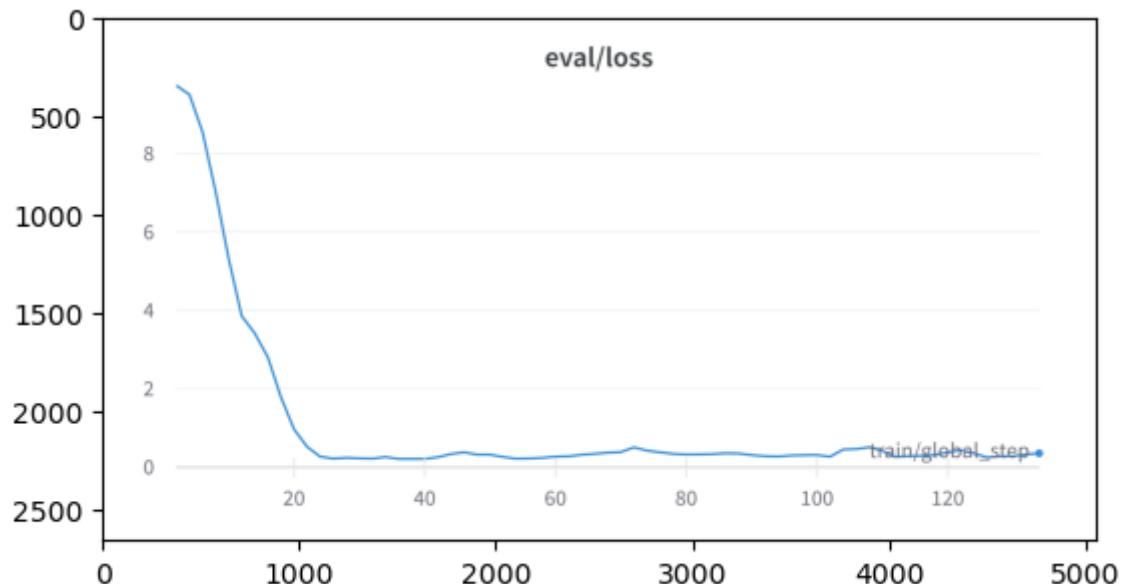
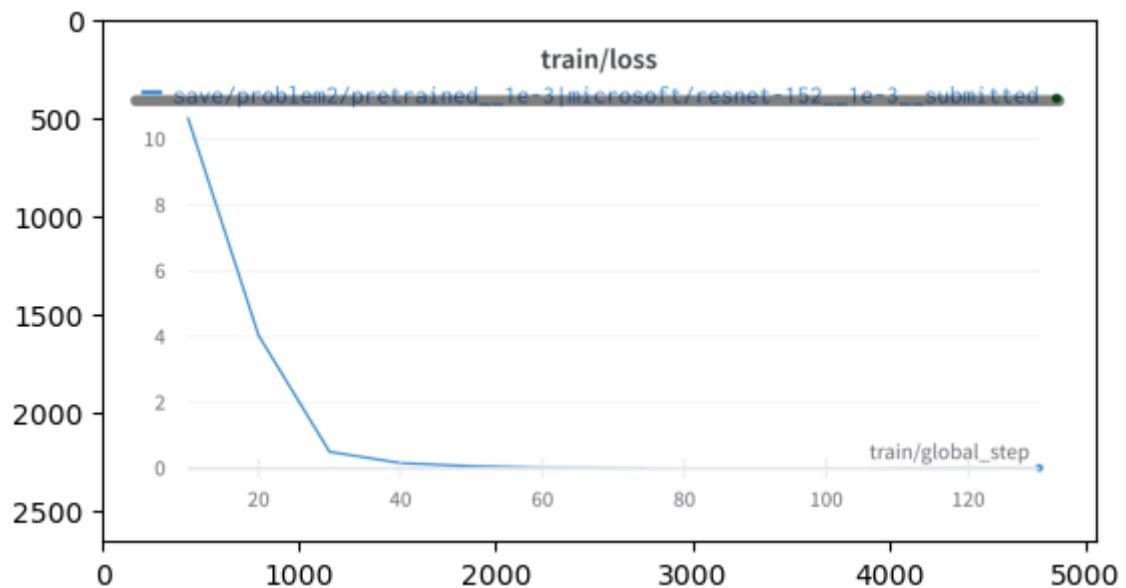
```
***** problem2_datas__valid metrics *****
epoch = 66.8
eval_accuracy = 0.8485
eval_loss = 0.2739
eval_runtime = 0:00:01.28
eval_samples_per_second = 76.975
eval_steps_per_second = 3.11
```

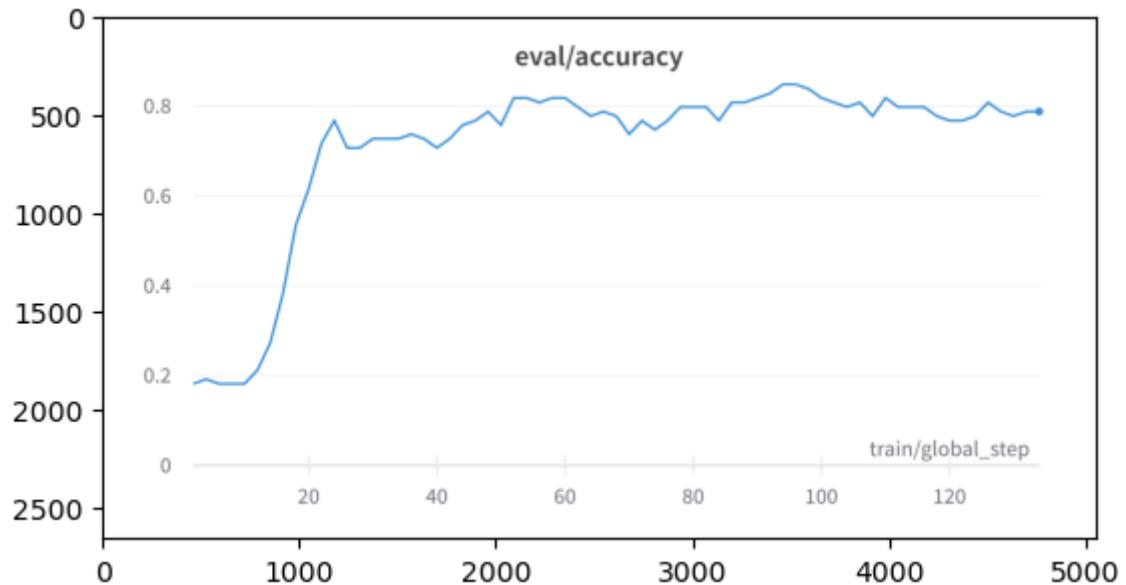
```
In [29]: plt.figure()
img = mpimg.imread("./log/problem2/exp3/exp3_train_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp3/exp3_valid_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp3/exp3_valid_acc.png")
plt.imshow(img)
```

```
Out[29]: <matplotlib.image.AxesImage at 0x7f3ed9ea8910>
```





Experiment 4: Experiment 2 + Contrastive Loss

Function declarations

Modify Trainer to incorporate contrastive loss.

```
In [23]: class SkinLesionWithContrastiveLearningTrainer(Trainer):
    def compute_loss(self, model, inputs, return_outputs=False):
        labels = inputs.get("labels").to("cuda")
        # forward pass
        outputs = model(**inputs)
        logits = outputs.get("logits").to("cuda")
        # compute weighted cross entropy loss
        con_loss_fct = losses.SupConLoss()
        ce_loss_fct = nn.CrossEntropyLoss(weight=torch.tensor(train_class_we
        ce_loss = ce_loss_fct(logits.view(-1, self.model.config.num_labels),
        con_loss = con_loss_fct(logits.view(-1, self.model.config.num_labels
        loss = ce_loss + con_loss
        return (loss, outputs) if return_outputs else loss
```

Function utilization

```
In [38]: exp4_model = AutoModelForImageClassification.from_pretrained(model_name_or_p
```

```
loading configuration file config.json from cache at /home/holy/.cache/huggi
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094
b8778c242907844/config.json
Model config ResNetConfig {
    "_name_or_path": "microsoft/resnet-152",
    "architectures": [
        "ResNetForImageClassification"
    ],
    "depths": [
        3,
        8,
        36,
        3
    ],
    "downsample_in_first_stage": false,
    "embedding_size": 64,
    "hidden_act": "relu",
    "hidden_sizes": [
        256,
        512,
        1024,
        2048
    ],
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arodon carcharias",
        "3": "tiger shark, Galeocerdo cuvieri",
        "4": "hammerhead, hammerhead shark",
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        "6": "stingray",
        "7": "cock",
        "8": "hen",
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        "13": "junco, snowbird",
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iacea",
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"386": "African elephant, Loxodonta africana",
"387": "lesser panda, red panda, panda, bear cat, cat bear, Ailurus fulg
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"388": "giant panda, panda, panda bear, coon bear, Ailuropoda melanoleuc
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"396": "lionfish",
"397": "puffer, pufferfish, blowfish, globefish",
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in, dustbin, trash barrel, trash bin",
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"556": "fire screen, fireguard",
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"558": "flute, transverse flute",
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"634": "lumbermill, sawmill",
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"647": "measuring cup",
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"680": "nipple",
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"682": "obelisk",
"683": "oboe, hautboy, hautbois",
"684": "ocarina, sweet potato",
"685": "odometer, hodometer, mileometer, milometer",
"686": "oil filter",
"687": "organ, pipe organ",
"688": "oscilloscope, scope, cathode-ray oscilloscope, CRO",
"689": "overskirt",
"690": "oxcart",
"691": "oxygen mask",
"692": "packet",
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"694": "paddlewheel, paddle wheel",
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"696": "paintbrush",
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"699": "panpipe, pandean pipe, syrinx",
"700": "paper towel",
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"707": "pay-phone, pay-station",
"708": "pedestal, plinth, footstall",
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"710": "pencil sharpener",
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"712": "Petri dish",
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"714": "pick, plectrum, plectron",
"715": "pickelhaube",
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"731": "plunger, plumber's helper",
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"737": "pop bottle, soda bottle",
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"739": "potter's wheel",
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"773": "saltshaker, salt shaker",
"774": "sandal",
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"802": "snowmobile",
"803": "snowplow, snowplough",
"804": "soap dispenser",
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"806": "sock",
"807": "solar dish, solar collector, solar furnace",
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"818": "spotlight, spot",
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"827": "stove",
"828": "strainer",
"829": "streetcar, tram, tramcar, trolley, trolley car",
"830": "stretcher",
"831": "studio couch, day bed",
"832": "stupa, tope",
"833": "submarine, pigboat, sub, U-boat",
"834": "suit, suit of clothes",
"835": "sundial",
"836": "sunglass",
"837": "sunglasses, dark glasses, shades",
"838": "sunscreen, sunblock, sun blocker",
"839": "suspension bridge",
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"856": "thresher, thrasher, threshing machine",
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"876": "tub, vat",
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"894": "wardrobe, closet, press",
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"896": "washbasin, handbasin, washbowl, lavabo, wash-hand basin",
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"918": "crossword puzzle, crossword",
"919": "street sign",
"920": "traffic light, traffic signal, stoplight",
"921": "book jacket, dust cover, dust jacket, dust wrapper",
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"924": "guacamole",
"925": "consomme",
"926": "hot pot, hotpot",
"927": "trifle",
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"929": "ice lolly, lolly, lollipop, popsicle",
"930": "French loaf",
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"939": "zucchini, courgette",
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"941": "acorn squash",
"942": "butternut squash",
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"944": "artichoke, globe artichoke",
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"961": "dough",
"962": "meat loaf, meatloaf",
"963": "pizza, pizza pie",
"964": "potpie",
"965": "burrito",
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"973": "coral reef",
"974": "geyser",
"975": "lakeside, lakeshore",
"976": "promontory, headland, head, foreland",
"977": "sandbar, sand bar",
"978": "seashore, coast, seacoast, sea-coast",
"979": "valley, vale",
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"982": "groom, bridegroom",
"983": "scuba diver",
"984": "rapeseed",
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"994": "stinkhorn, carrion fungus",
"995": "earthstar",
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"997": "bolete",
"998": "ear, spike, capitulum",
"999": "toilet tissue, toilet paper, bathroom tissue"
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    "African crocodile, Nile crocodile, Crocodylus niloticus": 49,
    "African elephant, Loxodonta africana": 386,
    "African grey, African gray, Psittacus erithacus": 87,
    "African hunting dog, hyena dog, Cape hunting dog, Lycaon pictus": 275,
    "Airedale, Airedale terrier": 191,
    "American Staffordshire terrier, Staffordshire terrier, American pit bull terrier, pit bull terrier": 180,
    "American alligator, Alligator mississippiensis": 50,
    "American black bear, black bear, Ursus americanus, Euarctos americanus": 295,
    "American chameleon, anole, Anolis carolinensis": 40,
    "American coot, marsh hen, mud hen, water hen, Fulica americana": 137,
    "American egret, great white heron, Egretta albus": 132,
    "American lobster, Northern lobster, Maine lobster, Homarus americanus": 122,
    "Angora, Angora rabbit": 332,
    "Appenzeller": 240,
    "Arabian camel, dromedary, Camelus dromedarius": 354,
    "Arctic fox, white fox, Alopex lagopus": 279,
    "Australian terrier": 193,
    "Band Aid": 419,
    "Bedlington terrier": 181,
    "Bernese mountain dog": 239,
    "Blenheim spaniel": 156,
    "Border collie": 232,
    "Border terrier": 182,
    "Boston bull, Boston terrier": 195,
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"patio, terrace": 706,
"pay-phone, pay-station": 707,
"peacock": 84,
"pedestal, plinth, footstall": 708,
"pelican": 144,
"pencil box, pencil case": 709,
"pencil sharpener": 710,
"perfume, essence": 711,
"photocopier": 713,
"pick, plectrum, plectron": 714,
"pickelhaube": 715,
"picket fence, paling": 716,
"pickup, pickup truck": 717,
"pier": 718,
"piggy bank, penny bank": 719,
"pill bottle": 720,
"pillow": 721,
"pineapple, ananas": 953,
"ping-pong ball": 722,
"pinwheel": 723,
"pirate, pirate ship": 724,
"pitcher, ewer": 725,
"pizza, pizza pie": 963,
"plane, carpenter's plane, woodworking plane": 726,
"planetarium": 727,
"plastic bag": 728,
"plate": 923,
"plate rack": 729,
"platypus, duckbill, duckbilled platypus, duck-billed platypus, Ornithorhynchus anatinus": 103,
"plow, plough": 730,
"plunger, plumber's helper": 731,
"pole": 733,
"polecat, fitch, foulmart, foumart, Mustela putorius": 358,
"police van, police wagon, paddy wagon, patrol wagon, wagon, black Maria": 734,
"pomegranate": 957,
"poncho": 735,
"pool table, billiard table, snooker table": 736,
"pop bottle, soda bottle": 737,
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"porcupine, hedgehog": 334,
"pot, flowerpot": 738,
"potpie": 964,
"potter's wheel": 739,
"power drill": 740,
"prairie chicken, prairie grouse, prairie fowl": 83,
"prayer rug, prayer mat": 741,
"pretzel": 932,
"printer": 742,
"prison, prison house": 743,
"proboscis monkey, Nasalis larvatus": 376,
"projectile, missile": 744,
"projector": 745,
"promontory, headland, head, foreland": 976,
"ptarmigan": 81,
"puck, hockey puck": 746,
"puffer, pufferfish, blowfish, globefish": 397,
"pug, pug-dog": 254,
"punching bag, punch bag, punching ball, punchball": 747,
"purse": 748,
"quail": 85,
"quill, quill pen": 749,
"quilt, comforter, comfort, puff": 750,
"racer, race car, racing car": 751,
"racket, racquet": 752,
"radiator": 753,
"radio telescope, radio reflector": 755,
"radio, wireless": 754,
"rain barrel": 756,
"ram, tup": 348,
"rapeseed": 984,
"recreational vehicle, RV, R.V.": 757,
"red fox, Vulpes vulpes": 277,
"red wine": 966,
"red wolf, maned wolf, Canis rufus, Canis niger": 271,
"red-backed sandpiper, dunlin, Erolia alpina": 140,
"red-breasted merganser, Mergus serrator": 98,
"redbone": 168,
"redshank, Tringa totanus": 141,
"reel": 758,
"reflex camera": 759,
"refrigerator, icebox": 760,
"remote control, remote": 761,
"restaurant, eating house, eating place, eatery": 762,
"revolver, six-gun, six-shooter": 763,
"rhinoceros beetle": 306,
"rifle": 764,
"ringlet, ringlet butterfly": 322,
"ringneck snake, ring-necked snake, ring snake": 53,
"robin, American robin, Turdus migratorius": 15,
"rock beauty, Holocanthus tricolor": 392,
"rock crab, Cancer irroratus": 119,
"rock python, rock snake, Python sebae": 62,
"rocking chair, rocker": 765,
"rotisserie": 766,
"rubber eraser, rubber, pencil eraser": 767,
"ruddy turnstone, Arenaria interpres": 139,
"ruffed grouse, partridge, Bonasa umbellus": 82,
"rugby ball": 768,
"rule, ruler": 769,
"running shoe": 770,
"safe": 771,
"safety pin": 772,
"saltshaker, salt shaker": 773,
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"sandal": 774,
"sandbar, sand bar": 977,
"sarong": 775,
"sax, saxophone": 776,
"scabbard": 777,
"scale, weighing machine": 778,
"schipperke": 223,
"school bus": 779,
"schooner": 780,
"scoreboard": 781,
"scorpion": 71,
"screen, CRT screen": 782,
"screw": 783,
"screwdriver": 784,
"scuba diver": 983,
"sea anemone, anemone": 108,
"sea cucumber, holothurian": 329,
"sea lion": 150,
"sea slug, nudibranch": 115,
"sea snake": 65,
"sea urchin": 328,
"seashore, coast, seacoast, sea-coast": 978,
"seat belt, seatbelt": 785,
"sewing machine": 786,
"shield, buckler": 787,
"shoe shop, shoe-shop, shoe store": 788,
"shoji": 789,
"shopping basket": 790,
"shopping cart": 791,
"shovel": 792,
"shower cap": 793,
"shower curtain": 794,
"siamang, Hylobates syndactylus, Symphalangus syndactylus": 369,
"sidewinder, horned rattlesnake, Crotalus cerastes": 68,
"silky terrier, Sydney silky": 201,
"ski": 795,
"ski mask": 796,
"skunk, polecat, wood pussy": 361,
"sleeping bag": 797,
"slide rule, slipstick": 798,
"sliding door": 799,
"slot, one-armed bandit": 800,
"sloth bear, Melursus ursinus, Ursus ursinus": 297,
"slug": 114,
"snail": 113,
"snorkel": 801,
"snow leopard, ounce, Panthera uncia": 289,
"snowmobile": 802,
"snowplow, snowplough": 803,
"soap dispenser": 804,
"soccer ball": 805,
"sock": 806,
"soft-coated wheaten terrier": 202,
"solar dish, solar collector, solar furnace": 807,
"sombrero": 808,
"sorrel": 339,
"soup bowl": 809,
"space bar": 810,
"space heater": 811,
"space shuttle": 812,
"spaghetti squash": 940,
"spatula": 813,
"speedboat": 814,
"spider monkey, Ateles geoffroyi": 381,
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"spider web, spider's web": 815,
"spindle": 816,
"spiny lobster, langouste, rock lobster, crawfish, crayfish, sea crawfish": 123,
"spoonbill": 129,
"sports car, sport car": 817,
"spotlight, spot": 818,
"spotted salamander, Ambystoma maculatum": 28,
"squirrel monkey, Saimiri sciureus": 382,
"stage": 819,
"standard poodle": 267,
"standard schnauzer": 198,
"starfish, sea star": 327,
"steam locomotive": 820,
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"steel drum": 822,
"stethoscope": 823,
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"stinkhorn, carrion fungus": 994,
"stole": 824,
"stone wall": 825,
"stopwatch, stop watch": 826,
"stove": 827,
"strainer": 828,
"strawberry": 949,
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"streetcar, tram, tramcar, trolley, trolley car": 829,
"stretcher": 830,
"studio couch, day bed": 831,
"stupa, tope": 832,
"sturgeon": 394,
"submarine, pigboat, sub, U-boat": 833,
"suit, suit of clothes": 834,
"sulphur butterfly, sulfur butterfly": 325,
"sulphur-crested cockatoo, Kakatoe galerita, Cacatua galerita": 89,
"sundial": 835,
"sunglass": 836,
"sunglasses, dark glasses, shades": 837,
"sunscreen, sunblock, sun blocker": 838,
"suspension bridge": 839,
"swab, swob, mop": 840,
"sweatshirt": 841,
"swimming trunks, bathing trunks": 842,
"swing": 843,
"switch, electric switch, electrical switch": 844,
"syringe": 845,
"tabby, tabby cat": 281,
"table lamp": 846,
"tailed frog, bell toad, ribbed toad, tailed toad, Ascaphus trui": 32,
"tank, army tank, armored combat vehicle, armoured combat vehicle": 847,
"tape player": 848,
"tarantula": 76,
"teapot": 849,
"teddy, teddy bear": 850,
"television, television system": 851,
"tench, Tinca tinca": 0,
"tennis ball": 852,
"terrapin": 36,
"thatch, thatched roof": 853,
"theater curtain, theatre curtain": 854,
"thimble": 855,
"three-toed sloth, ai, Bradypus tridactylus": 364,
"thresher, thrasher, threshing machine": 856,
"throne": 857,
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"thunder snake, worm snake, Carphophis amoenus": 52,
"tick": 78,
"tiger beetle": 300,
"tiger cat": 282,
"tiger shark, Galeocerdo cuvieri": 3,
"tiger, Panthera tigris": 292,
"tile roof": 858,
"timber wolf, grey wolf, gray wolf, Canis lupus": 269,
"titi, titi monkey": 380,
"toaster": 859,
"tobacco shop, tobacconist shop, tobacconist": 860,
"toilet seat": 861,
"toilet tissue, toilet paper, bathroom tissue": 999,
"torch": 862,
"totem pole": 863,
"toucan": 96,
"tow truck, tow car, wrecker": 864,
"toy poodle": 265,
"toy terrier": 158,
"toyshop": 865,
"tractor": 866,
"traffic light, traffic signal, stoplight": 920,
"trailer truck, tractor trailer, trucking rig, rig, articulated lorry, s
emi": 867,
"tray": 868,
"tree frog, tree-frog": 31,
"trench coat": 869,
"triceratops": 51,
"tricycle, trike, velocipede": 870,
"trifle": 927,
"trilobite": 69,
"trimaran": 871,
"tripod": 872,
"triumphal arch": 873,
"trolleybus, trolley coach, trackless trolley": 874,
"trombone": 875,
"tub, vat": 876,
"turnstile": 877,
"tusker": 101,
"typewriter keyboard": 878,
"umbrella": 879,
"unicycle, monocycle": 880,
"upright, upright piano": 881,
"vacuum, vacuum cleaner": 882,
"valley, vale": 979,
"vase": 883,
"vault": 884,
"velvet": 885,
"vending machine": 886,
"vestment": 887,
"viaduct": 888,
"vine snake": 59,
"violin, fiddle": 889,
"vizsla, Hungarian pointer": 211,
"volcano": 980,
"volleyball": 890,
"vulture": 23,
"waffle iron": 891,
"walking stick, walkingstick, stick insect": 313,
"wall clock": 892,
"wallaby, brush kangaroo": 104,
"wallet, billfold, notecase, pocketbook": 893,
"wardrobe, closet, press": 894,
"warplane, military plane": 895,
```

```

    "warthog": 343,
    "washbasin, handbasin, washbowl, lavabo, wash-hand basin": 896,
    "washer, automatic washer, washing machine": 897,
    "water bottle": 898,
    "water buffalo, water ox, Asiatic buffalo, Bubalus bubalis": 346,
    "water jug": 899,
    "water ouzel, dipper": 20,
    "water snake": 58,
    "water tower": 900,
    "weasel": 356,
    "web site, website, internet site, site": 916,
    "weevil": 307,
    "whippet": 172,
    "whiptail, whiptail lizard": 41,
    "whiskey jug": 901,
    "whistle": 902,
    "white stork, Ciconia ciconia": 127,
    "white wolf, Arctic wolf, Canis lupus tundrarum": 270,
    "wig": 903,
    "wild boar, boar, Sus scrofa": 342,
    "window screen": 904,
    "window shade": 905,
    "wine bottle": 907,
    "wing": 908,
    "wire-haired fox terrier": 188,
    "wok": 909,
    "wolf spider, hunting spider": 77,
    "wombat": 106,
    "wood rabbit, cottontail, cottontail rabbit": 330,
    "wooden spoon": 910,
    "wool, woolen, woollen": 911,
    "worm fence, snake fence, snake-rail fence, Virginia fence": 912,
    "wreck": 913,
    "yaw": 914,
    "yellow lady's slipper, yellow lady-slipper, Cypripedium calceolus, Cypr
ipedium parviflorum": 986,
    "yurt": 915,
    "zebra": 340,
    "zucchini, courgette": 939
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  "layer_type": "bottleneck",
  "model_type": "resnet",
  "num_channels": 3,
  "torch_dtype": "float32",
  "transformers_version": "4.23.1"
}

loading weights file pytorch_model.bin from cache at /home/holy/.cache/huggi
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094
b8778c242907844/pytorch_model.bin
All model checkpoint weights were used when initializing ResNetForImageClass
ification.

All the weights of ResNetForImageClassification were initialized from the mo
del checkpoint at microsoft/resnet-152.
If your task is similar to the task the model of the checkpoint was trained
on, you can already use ResNetForImageClassification for predictions without
further training.

```

In [39]:

```

trainer = training(
    exp4_model,
    output_dir=f"save/problem2/con_{model_name_or_path}_1e-3_submitted",
    train_dataset=proc_datasets["train"],
)

```

```
eval_dataset=proc_datasets[ "valid" ],  
trainer_class=SkinLesionWithContrastiveLearningTrainer)
```

```
PyTorch: setting up devices  
Using cuda_amp half precision backend  
***** Running training *****  
Num examples = 305  
Num Epochs = 200  
Instantaneous batch size per device = 32  
Total train batch size (w. parallel, distributed & accumulation) = 128  
Gradient Accumulation steps = 4  
Total optimization steps = 400  
Automatic Weights & Biases logging enabled, to disable set os.environ[ "WANDB  
_DISABLED" ] = "true"
```

[122/400 06:50 < 15:50, 0.29 it/s, Epoch 60/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | No log | 10.398209 | 0.000000 |
| 1 | No log | 10.404078 | 0.000000 |
| 2 | No log | 10.749628 | 0.000000 |
| 3 | No log | 10.604155 | 0.000000 |
| 4 | 13.066300 | 10.041531 | 0.000000 |
| 5 | 13.066300 | 9.161851 | 0.010101 |
| 6 | 13.066300 | 8.235914 | 0.131313 |
| 7 | 13.066300 | 6.968581 | 0.404040 |
| 8 | 13.066300 | 5.618059 | 0.606061 |
| 9 | 10.799700 | 4.961116 | 0.626263 |
| 10 | 10.799700 | 4.279010 | 0.626263 |
| 11 | 10.799700 | 3.843666 | 0.676768 |
| 12 | 10.799700 | 3.873747 | 0.676768 |
| 13 | 10.799700 | 3.892563 | 0.676768 |
| 14 | 5.497800 | 3.751097 | 0.676768 |
| 15 | 5.497800 | 3.694247 | 0.696970 |
| 16 | 5.497800 | 3.704146 | 0.707071 |
| 17 | 5.497800 | 3.630167 | 0.747475 |
| 18 | 5.497800 | 3.568627 | 0.747475 |
| 19 | 4.472100 | 3.555633 | 0.757576 |
| 20 | 4.472100 | 3.713567 | 0.686869 |
| 21 | 4.472100 | 3.778222 | 0.676768 |
| 22 | 4.472100 | 3.616107 | 0.707071 |
| 23 | 4.472100 | 3.597129 | 0.727273 |
| 24 | 4.300700 | 3.783107 | 0.727273 |
| 25 | 4.300700 | 3.779665 | 0.727273 |
| 26 | 4.300700 | 3.672193 | 0.707071 |
| 27 | 4.300700 | 3.780789 | 0.666667 |
| 28 | 4.300700 | 3.896813 | 0.696970 |
| 29 | 4.251200 | 3.849748 | 0.727273 |
| 30 | 4.251200 | 3.943788 | 0.696970 |
| 31 | 4.251200 | 4.222252 | 0.686869 |
| 32 | 4.251200 | 3.901508 | 0.777778 |
| 33 | 4.251200 | 4.058073 | 0.727273 |
| 34 | 4.122400 | 4.200539 | 0.686869 |
| 35 | 4.122400 | 4.225471 | 0.666667 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 4.122400 | 3.606828 | 0.727273 |
| 37 | 4.122400 | 3.953569 | 0.727273 |
| 38 | 4.122400 | 4.059637 | 0.707071 |
| 39 | 3.830300 | 3.633953 | 0.737374 |
| 40 | 3.830300 | 3.427866 | 0.797980 |
| 41 | 3.830300 | 4.070516 | 0.767677 |
| 42 | 3.830300 | 4.123061 | 0.777778 |
| 43 | 3.830300 | 4.161956 | 0.787879 |
| 44 | 3.728800 | 4.241825 | 0.747475 |
| 45 | 3.728800 | 3.823594 | 0.797980 |
| 46 | 3.728800 | 3.927897 | 0.747475 |
| 47 | 3.728800 | 3.949950 | 0.757576 |
| 48 | 3.728800 | 4.085998 | 0.727273 |
| 49 | 3.618100 | 3.731256 | 0.777778 |
| 50 | 3.618100 | 4.098305 | 0.747475 |
| 51 | 3.618100 | 4.171662 | 0.737374 |
| 52 | 3.618100 | 4.200391 | 0.747475 |
| 53 | 3.618100 | 3.983500 | 0.717172 |
| 54 | 3.530000 | 4.128293 | 0.727273 |
| 55 | 3.530000 | 3.977392 | 0.747475 |
| 56 | 3.530000 | 3.794914 | 0.767677 |
| 57 | 3.530000 | 3.808777 | 0.787879 |
| 58 | 3.530000 | 3.935254 | 0.787879 |
| 59 | 3.410600 | 3.888508 | 0.797980 |
| 60 | 3.410600 | 3.886045 | 0.787879 |

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-2
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-4
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-6
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-4] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-8
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-6] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-10
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-8] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
```

```
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-2] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-10] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-14
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-16
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-14] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-18
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-16] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-20
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-18] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-22
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-20] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-22] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-26
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-28
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-26] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-30
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-28] due to args.save_total_limit
***** Running Evaluation *****
```

```
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-32
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-24] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-30] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-34
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-32] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-34] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-38
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/preprocessor_config.json
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-40
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-36] due to args.save_total_limit
```

```
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-38] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-42
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-44
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-42] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-46
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-44] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-46] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-50
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-48]
```

```
bmitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-52
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-52/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-52/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-52/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-50] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-54
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-54/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-54/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-54/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-52] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-56
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-56/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-56/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-56/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-54] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-58
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-58/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-58/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-58/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-56] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-60
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-60/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
tted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmitted/checkpoint-60/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-58] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-62
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-64
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-62] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-66
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-40] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-64] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-68
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-70
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-70/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-70/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
```

```
bmited/checkpoint-70/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-68] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-72
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-72/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-70] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-74
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-74/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-74/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-74/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-76
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-76/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-76/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-76/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-74] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-78
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-78/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-78/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-78/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-76] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_su
bmited/checkpoint-80
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-80/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submi
ted/checkpoint-80/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-80/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-78] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-82
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-82/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-82/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-82/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-66] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-80] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-84
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-84/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-84/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-84/preprocessor_config.json
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-86
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-86/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-86/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-86/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-84] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-88
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-88/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-88/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-88/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-86] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-90
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-90/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-90/pytorch_model.bin
```

```
ted/checkpoint-90/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-90/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-88] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-92
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-92/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-92/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-92/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-90] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-94
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-94/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-94/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-94/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-92] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-96
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-96/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-96/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-96/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-94] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-98
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-98/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-98/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-98/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-96] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-100
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-100/config.json
```

```
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-100/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-100/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-98] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-102
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-102/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-102/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-102/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-100] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-104
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-104/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-104/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-104/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-102] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-106
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-106/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-106/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-106/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-104] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-108
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-108/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-108/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-108/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-106] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-110
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-110
```

```
ted/checkpoint-110/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-110/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-110/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-108] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-112
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-112/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-112/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-112/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-110] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-114
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-114/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-114/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-114/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-112] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-116
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-116/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-116/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-116/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-114] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-118
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-118/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-118/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-118/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-116] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-120
```

```
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-120/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-120/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-120/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-118] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 99
Batch size = 32
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-122
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-122/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-122/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-122/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-120] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/models =)

```
Loading best model from save/problem2/con_microsoft/resnet-152_1e-3_submitted/checkpoint-82 (score: 0.7979797979797979).
Saving model checkpoint to save/problem2/con_microsoft/resnet-152_1e-3_submitted
Configuration saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/config.json
Model weights saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/pytorch_model.bin
Feature extractor saved in save/problem2/con_microsoft/resnet-152_1e-3_submitted/preprocessor_config.json
```

```
In [40]: evaluation(
    trainer,
    datasets=[proc_datasets["valid"]],
    eval_names=["problem2_datas_valid"]
)
```

```
***** Running Evaluation *****
Num examples = 99
Batch size = 32
```

[4/4 00:00]

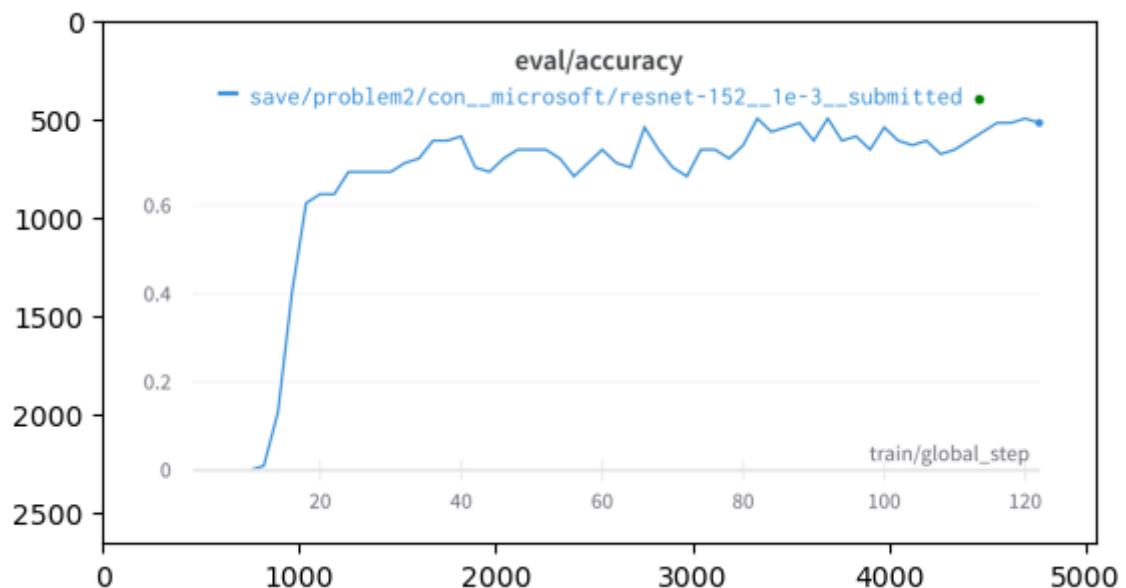
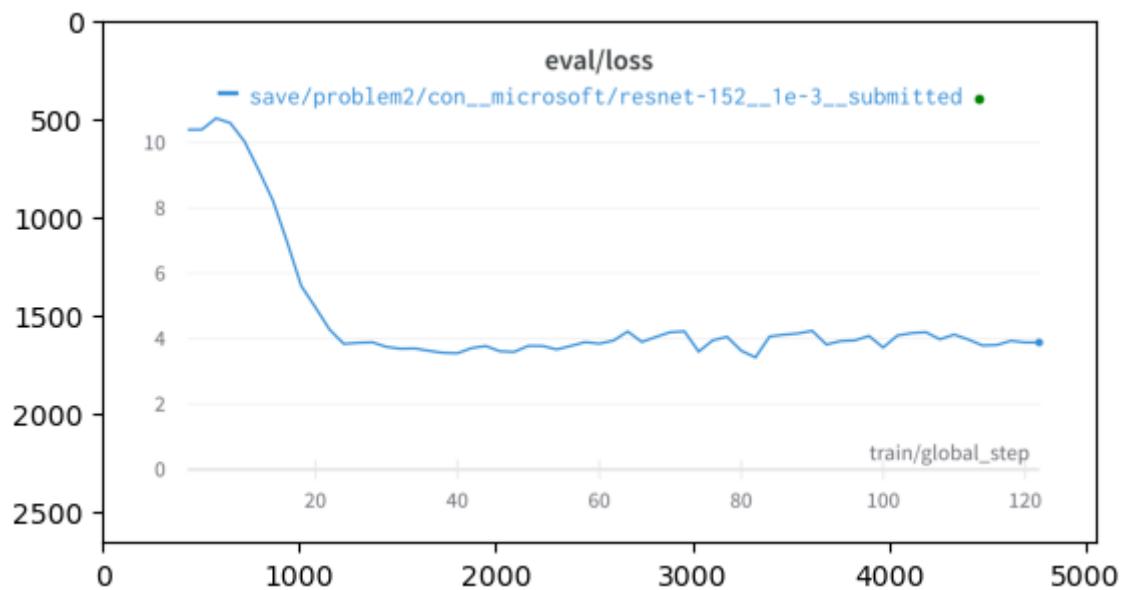
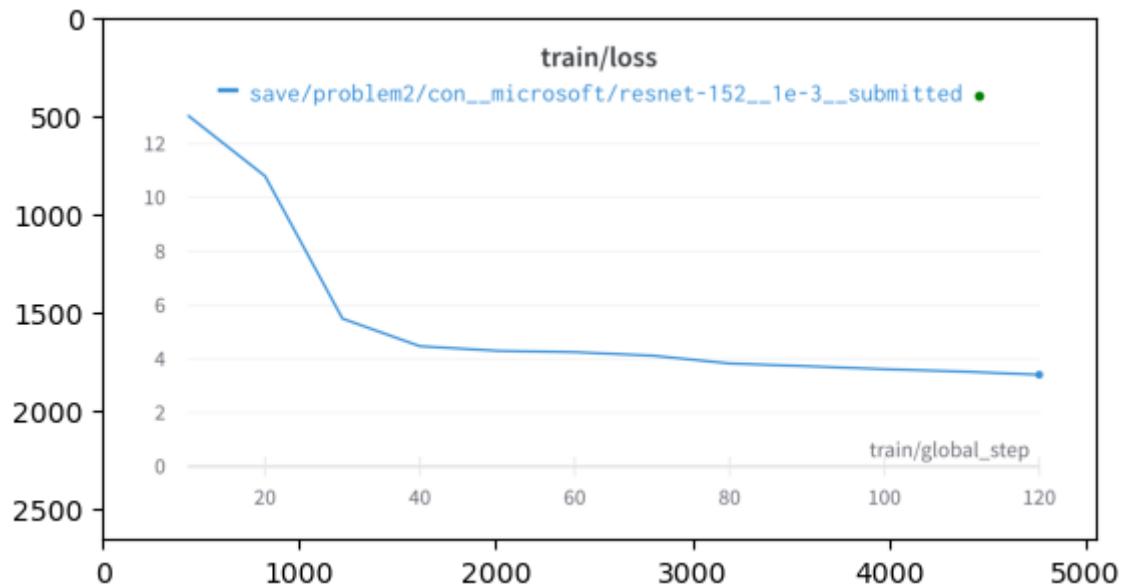
```
***** problem2_datas_valid metrics *****
epoch = 60.8
eval_accuracy = 0.798
eval_loss = 3.4279
eval_runtime = 0:00:01.43
eval_samples_per_second = 69.172
eval_steps_per_second = 2.795
```

```
In [41]: plt.figure()
img = mpimg.imread("./log/problem2/exp4/exp4_train_loss.png")
plt.imshow(img)

plt.figure()
img = mpimg.imread("./log/problem2/exp4/exp4_valid_loss.png")
plt.imshow(img)
```

```
plt.figure()  
img = mpimg.imread("./log/problem2/exp4/exp4_valid_acc.png")  
plt.imshow(img)
```

Out[41]: <matplotlib.image.AxesImage at 0x7f9d40bde080>



Experiment 5: Experiment + Contrastive Loss

Pre-training.

```
In [42]: exp5_pretraining_model = AutoModelForImageClassification.from_pretrained(mod
```

```
loading configuration file config.json from cache at /home/holy/.cache/huggi  
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094  
b8778c242907844/config.json  
Model config ResNetConfig {  
    "_name_or_path": "microsoft/resnet-152",  
    "architectures": [  
        "ResNetForImageClassification"  
    ],  
    "depths": [  
        3,  
        8,  
        36,  
        3  
    ],  
    "downsample_in_first_stage": false,  
    "embedding_size": 64,  
    "hidden_act": "relu",  
    "hidden_sizes": [  
        256,  
        512,  
        1024,  
        2048  
    ],  
    "id2label": {  
        "0": "tench, Tinca tinca",  
        "1": "goldfish, Carassius auratus",  
        "2": "great white shark, white shark, man-eater, man-eating shark, Carch  
arodon carcharias",  
        "3": "tiger shark, Galeocerdo cuvieri",  
        "4": "hammerhead, hammerhead shark",  
        "5": "electric ray, crampfish, numbfish, torpedo",  
        "6": "stingray",  
        "7": "cock",  
        "8": "hen",  
        "9": "ostrich, Struthio camelus",  
        "10": "brambling, Fringilla montifringilla",  
        "11": "goldfinch, Carduelis carduelis",  
        "12": "house finch, linnet, Carpodacus mexicanus",  
        "13": "junco, snowbird",  
        "14": "indigo bunting, indigo finch, indigo bird, Passerina cyanea",  
        "15": "robin, American robin, Turdus migratorius",  
        "16": "bulbul",  
        "17": "jay",  
        "18": "magpie",  
        "19": "chickadee",  
        "20": "water ouzel, dipper",  
        "21": "kite",  
        "22": "bald eagle, American eagle, Haliaeetus leucocephalus",  
        "23": "vulture",  
        "24": "great grey owl, great gray owl, Strix nebulosa",  
        "25": "European fire salamander, Salamandra salamandra",  
        "26": "common newt, Triturus vulgaris",  
        "27": "eft",  
        "28": "spotted salamander, Ambystoma maculatum",  
        "29": "axolotl, mud puppy, Ambystoma mexicanum",  
        "30": "bullfrog, Rana catesbeiana",  
        "31": "tree frog, tree-frog",  
        "32": "tailed frog, bell toad, ribbed toad, tailed toad, Ascaphus trui",  
        "33": "loggerhead, loggerhead turtle, Caretta caretta",  
        "34": "leatherback turtle, leatherback, leathery turtle, Dermochelys cor  
iacea",  
        "35": "mud turtle",  
        "36": "terrapin",  
        "37": "box turtle, box tortoise",  
    }  
}
```

```
"38": "banded gecko",
"39": "common iguana, iguana, Iguana iguana",
"40": "American chameleon, anole, Anolis carolinensis",
"41": "whiptail, whiptail lizard",
"42": "agama",
"43": "frilled lizard, Chlamydosaurus kingi",
"44": "alligator lizard",
"45": "Gila monster, Heloderma suspectum",
"46": "green lizard, Lacerta viridis",
"47": "African chameleon, Chamaeleo chamaeleon",
"48": "Komodo dragon, Komodo lizard, dragon lizard, giant lizard, Varanus komodoensis",
"49": "African crocodile, Nile crocodile, Crocodylus niloticus,
"50": "American alligator, Alligator mississippiensis,
"51": "triceratops",
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"53": "ringneck snake, ring-necked snake, ring snake",
"54": "hognose snake, puff adder, sand viper",
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"56": "king snake, kingsnake",
"57": "garter snake, grass snake",
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"60": "night snake, Hypsirhynchus torquata",
"61": "boa constrictor, Constrictor constrictor",
"62": "rock python, rock snake, Python sebae",
"63": "Indian cobra, Naja naja",
"64": "green mamba",
"65": "sea snake",
"66": "horned viper, cerastes, sand viper, horned asp, Cerastes cornutus,
"67": "diamondback, diamondback rattlesnake, Crotalus adamanteus,
"68": "sidewinder, horned rattlesnake, Crotalus cerastes,
"69": "trilobite",
"70": "harvestman, daddy longlegs, Phalangium opilio,
"71": "scorpion",
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"73": "barn spider, Araneus cavaticus,
"74": "garden spider, Aranea diademata,
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"76": "tarantula",
"77": "wolf spider, hunting spider",
"78": "tick",
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"80": "black grouse",
"81": "ptarmigan",
"82": "ruffed grouse, partridge, Bonasa umbellus,
"83": "prairie chicken, prairie grouse, prairie fowl",
"84": "peacock",
"85": "quail",
"86": "partridge",
"87": "African grey, African gray, Psittacus erithacus,
"88": "macaw",
"89": "sulphur-crested cockatoo, Kakatoe galerita, Cacatua galerita,
"90": "lorikeet",
"91": "coucal",
"92": "bee eater",
"93": "hornbill",
"94": "hummingbird",
"95": "jacamar",
"96": "toucan",
"97": "drake",
"98": "red-breasted merganser, Mergus serrator,
"99": "goose",
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"100": "black swan, Cygnus atratus",
"101": "tusker",
"102": "echidna, spiny anteater, anteater",
"103": "platypus, duckbill, duckbilled platypus, duck-billed platypus, Ornithorhynchus anatinus",
"104": "wallaby, brush kangaroo",
"105": "koala, koala bear, kangaroo bear, native bear, Phascolarctos cinereus",
"106": "wombat",
"107": "jellyfish",
"108": "sea anemone, anemone",
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"112": "conch",
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"123": "spiny lobster, langouste, rock lobster, crawfish, crayfish, sea crawfish",
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"125": "hermit crab",
"126": "isopod",
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"134": "crane",
"135": "limpkin, Aramus pictus",
"136": "European gallinule, Porphyrio porphyrio",
"137": "American coot, marsh hen, mud hen, water hen, Fulica americana",
"138": "bustard",
"139": "ruddy turnstone, Arenaria interpres",
"140": "red-backed sandpiper, dunlin, Erolia alpina",
"141": "redshank, Tringa totanus",
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"144": "pelican",
"145": "king penguin, Aptenodytes patagonica",
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"147": "grey whale, gray whale, devilfish, Eschrichtius gibbosus, Eschrichtius robustus",
"148": "killer whale, killer, orca, grampus, sea wolf, Orcinus orca",
"149": "dugong, Dugong dugon",
"150": "sea lion",
"151": "Chihuahua",
"152": "Japanese spaniel",
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"154": "Pekinese, Pekingese, Peke",
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"162": "beagle",
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"171": "Italian greyhound",
"172": "whippet",
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"176": "Saluki, gazelle hound",
"177": "Scottish deerhound, deerhound",
"178": "Weimaraner",
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"188": "wire-haired fox terrier",
"189": "Lakeland terrier",
"190": "Sealyham terrier, Sealyham",
"191": "Airedale, Airedale terrier",
"192": "cairn, cairn terrier",
"193": "Australian terrier",
"194": "Dandie Dinmont, Dandie Dinmont terrier",
"195": "Boston bull, Boston terrier",
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"197": "giant schnauzer",
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"199": "Scotch terrier, Scottish terrier, Scottie",
"200": "Tibetan terrier, chrysanthemum dog",
"201": "silky terrier, Sydney silky",
"202": "soft-coated wheaten terrier",
"203": "West Highland white terrier",
"204": "Lhasa, Lhasa apso",
"205": "flat-coated retriever",
"206": "curly-coated retriever",
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"209": "Chesapeake Bay retriever",
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"211": "vizsla, Hungarian pointer",
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"214": "Gordon setter",
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"216": "clumber, clumber spaniel",
"217": "English springer, English springer spaniel",
"218": "Welsh springer spaniel",
"219": "cocker spaniel, English cocker spaniel, cocker",
"220": "Sussex spaniel",
```

```
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"223": "schipperke",
"224": "groenendael",
"225": "malinois",
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"227": "kelpie",
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"230": "Shetland sheepdog, Shetland sheep dog, Shetland",
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"232": "Border collie",
"233": "Bouvier des Flandres, Bouviers des Flandres",
"234": "Rottweiler",
"235": "German shepherd, German shepherd dog, German police dog, alsatian",
"236": "Doberman, Doberman pinscher",
"237": "miniature pinscher",
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"239": "Bernese mountain dog",
"240": "Appenzeller",
"241": "EntleBucher",
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"245": "French bulldog",
"246": "Great Dane",
"247": "Saint Bernard, St Bernard",
"248": "Eskimo dog, husky",
"249": "malamute, malemute, Alaskan malamute",
"250": "Siberian husky",
"251": "dalmatian, coach dog, carriage dog",
"252": "affenpinscher, monkey pinscher, monkey dog",
"253": "basenji",
"254": "pug, pug-dog",
"255": "Leonberg",
"256": "Newfoundland, Newfoundland dog",
"257": "Great Pyrenees",
"258": "Samoyed, Samoyede",
"259": "Pomeranian",
"260": "chow, chow chow",
"261": "keeshond",
"262": "Brabancon griffon",
"263": "Pembroke, Pembroke Welsh corgi",
"264": "Cardigan, Cardigan Welsh corgi",
"265": "toy poodle",
"266": "miniature poodle",
"267": "standard poodle",
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"270": "white wolf, Arctic wolf, Canis lupus tundrarum",
"271": "red wolf, maned wolf, Canis rufus, Canis niger",
"272": "coyote, prairie wolf, brush wolf, Canis latrans",
"273": "dingo, warrigal, warragal, Canis dingo",
"274": "dhole, Cuon alpinus",
"275": "African hunting dog, hyena dog, Cape hunting dog, Lycaon pictus",
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"277": "red fox, Vulpes vulpes",
"278": "kit fox, Vulpes macrotis",
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concolor",
"287": "lynx, catamount",
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"289": "snow leopard, ounce, Panthera uncia",
"290": "jaguar, panther, Panthera onca, Felis onca",
"291": "lion, king of beasts, Panthera leo",
"292": "tiger, Panthera tigris",
"293": "cheetah, cheta, Acinonyx jubatus",
"294": "brown bear, bruin, Ursus arctos",
"295": "American black bear, black bear, Ursus americanus, Euarctos amer
icanus",
"296": "ice bear, polar bear, Ursus Maritimus, Thalarctos maritimus",
"297": "sloth bear, Melursus ursinus, Ursus ursinus",
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"315": "mantis, mantid",
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"319": "dragonfly, darning needle, devil's darning needle, sewing needl
e, snake feeder, snake doctor, mosquito hawk, skeeter hawk",
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"323": "monarch, monarch butterfly, milkweed butterfly, Danaus plexippu
s",
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"326": "lycaenid, lycaenid butterfly",
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"335": "fox squirrel, eastern fox squirrel, Sciurus niger",
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"342": "wild boar, boar, Sus scrofa",
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Mountain sheep, Ovis canadensis",
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"359": "black-footed ferret, ferret, Mustela nigripes",
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"365": "orangutan, orang, orangutang, Pongo pygmaeus",
"366": "gorilla, Gorilla gorilla",
"367": "chimpanzee, chimp, Pan troglodytes",
"368": "gibbon, Hylobates lar",
"369": "siamang, Hylobates syndactylus, Symphalangus syndactylus",
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"378": "capuchin, ringtail, Cebus capucinus",
"379": "howler monkey, howler",
"380": "titi, titi monkey",
"381": "spider monkey, Ateles geoffroyi",
"382": "squirrel monkey, Saimiri sciureus",
"383": "Madagascar cat, ring-tailed lemur, Lemur catta",
"384": "indri, indris, Indri indri, Indri brevicaudatus",
"385": "Indian elephant, Elephas maximus",
"386": "African elephant, Loxodonta africana",
"387": "lesser panda, red panda, panda, bear cat, cat bear, Ailurus fulg
ens",
"388": "giant panda, panda, panda bear, coon bear, Ailuropoda melanoleuc
a",
"389": "barracouta, snoek",
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kisutch",
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"394": "sturgeon",
"395": "gar, garfish, garpike, billfish, Lepisosteus osseus",
"396": "lionfish",
"397": "puffer, pufferfish, blowfish, globefish",
"398": "abacus",
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"401": "accordion, piano accordion, squeeze box",
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"409": "analog clock",
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in, dustbin, trash barrel, trash bin",
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"414": "backpack, back pack, knapsack, packsack, rucksack, haversack",
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"427": "barrel, cask",
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tion waggon, waggon",
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"460": "breakwater, groin, groyne, mole, bulwark, seawall, jetty",
"461": "breastplate, aegis, egis",
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"463": "bucket, pail",
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"470": "candle, taper, wax light",
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"476": "carousel, carrousel, merry-go-round, roundabout, whirligig",
"477": "carpenter's kit, tool kit",
"478": "carton",
"479": "car wheel",
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"491": "chain saw, chainsaw",
"492": "chest",
"493": "chiffonier, commode",
"494": "chime, bell, gong",
"495": "china cabinet, china closet",
"496": "Christmas stocking",
"497": "church, church building",
"498": "cinema, movie theater, movie theatre, movie house, picture palace",
"499": "cleaver, meat cleaver, chopper",
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"502": "clog, geta, patten, sabot",
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"506": "coil, spiral, volute, whorl, helix",
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"508": "computer keyboard, keypad",
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"510": "container ship, containership, container vessel",
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"513": "cornet, horn, trumpet, trump",
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"521": "Crock Pot",
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"556": "fire screen, fireguard",
"557": "flagpole, flagstaff",
"558": "flute, transverse flute",
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"634": "lumbermill, sawmill",
"635": "magnetic compass",
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"637": "mailbox, letter box",
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"639": "maillot, tank suit",
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"686": "oil filter",
"687": "organ, pipe organ",
"688": "oscilloscope, scope, cathode-ray oscilloscope, CRO",
"689": "overskirt",
"690": "oxcart",
"691": "oxygen mask",
"692": "packet",
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"694": "paddlewheel, paddle wheel",
"695": "padlock",
"696": "paintbrush",
"697": "pajama, pyjama, pj's, jammies",
"698": "palace",
"699": "panpipe, pandean pipe, syrinx",
"700": "paper towel",
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"702": "parallel bars, bars",
"703": "park bench",
"704": "parking meter",
"705": "passenger car, coach, carriage",
"706": "patio, terrace",
"707": "pay-phone, pay-station",
"708": "pedestal, plinth, footstall",
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"710": "pencil sharpener",
"711": "perfume, essence",
"712": "Petri dish",
"713": "photocopier",
"714": "pick, plectrum, plectron",
"715": "pickelhaube",
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"726": "plane, carpenter's plane, woodworking plane",
"727": "planetarium",
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"731": "plunger, plumber's helper",
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"733": "pole",
"734": "police van, police wagon, paddy wagon, patrol wagon, wagon, black Maria",
"735": "poncho",
"736": "pool table, billiard table, snooker table",
"737": "pop bottle, soda bottle",
"738": "pot, flowerpot",
"739": "potter's wheel",
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"742": "printer",
"743": "prison, prison house",
"744": "projectile, missile",
"745": "projector",
"746": "puck, hockey puck",
"747": "punching bag, punch bag, punching ball, punchball",
"748": "purse",
"749": "quill, quill pen",
"750": "quilt, comforter, comfort, puff",
"751": "racer, race car, racing car",
"752": "racket, racquet",
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"754": "radio, wireless",
"755": "radio telescope, radio reflector",
"756": "rain barrel",
"757": "recreational vehicle, RV, R.V.",
"758": "reel",
"759": "reflex camera",
"760": "refrigerator, icebox",
"761": "remote control, remote",
"762": "restaurant, eating house, eating place, eatery",
"763": "revolver, six-gun, six-shooter",
"764": "rifle",
"765": "rocking chair, rocker",
"766": "rotisserie",
"767": "rubber eraser, rubber, pencil eraser",
"768": "rugby ball",
"769": "rule, ruler",
"770": "running shoe",
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"772": "safety pin",
"773": "saltshaker, salt shaker",
"774": "sandal",
"775": "sarong",
"776": "sax, saxophone",
"777": "scabbard",
"778": "scale, weighing machine",
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"779": "school bus",
"780": "schooner",
"781": "scoreboard",
"782": "screen, CRT screen",
"783": "screw",
"784": "screwdriver",
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"786": "sewing machine",
"787": "shield, buckler",
"788": "shoe shop, shoe-shop, shoe store",
"789": "shoji",
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"791": "shopping cart",
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"793": "shower cap",
"794": "shower curtain",
"795": "ski",
"796": "ski mask",
"797": "sleeping bag",
"798": "slide rule, slipstick",
"799": "sliding door",
"800": "slot, one-armed bandit",
"801": "snorkel",
"802": "snowmobile",
"803": "snowplow, snowplough",
"804": "soap dispenser",
"805": "soccer ball",
"806": "sock",
"807": "solar dish, solar collector, solar furnace",
"808": "sombrero",
"809": "soup bowl",
"810": "space bar",
"811": "space heater",
"812": "space shuttle",
"813": "spatula",
"814": "speedboat",
"815": "spider web, spider's web",
"816": "spindle",
"817": "sports car, sport car",
"818": "spotlight, spot",
"819": "stage",
"820": "steam locomotive",
"821": "steel arch bridge",
"822": "steel drum",
"823": "stethoscope",
"824": "stole",
"825": "stone wall",
"826": "stopwatch, stop watch",
"827": "stove",
"828": "strainer",
"829": "streetcar, tram, tramcar, trolley, trolley car",
"830": "stretcher",
"831": "studio couch, day bed",
"832": "stupa, tope",
"833": "submarine, pigboat, sub, U-boat",
"834": "suit, suit of clothes",
"835": "sundial",
"836": "sunglass",
"837": "sunglasses, dark glasses, shades",
"838": "sunscreen, sunblock, sun blocker",
"839": "suspension bridge",
"840": "swab, swob, mop",
"841": "sweatshirt",
"842": "swimming trunks, bathing trunks",
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"843": "swing",
"844": "switch, electric switch, electrical switch",
"845": "syringe",
"846": "table lamp",
"847": "tank, army tank, armored combat vehicle, armoured combat vehicle",
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"849": "teapot",
"850": "teddy, teddy bear",
"851": "television, television system",
"852": "tennis ball",
"853": "thatch, thatched roof",
"854": "theater curtain, theatre curtain",
"855": "thimble",
"856": "thresher, thrasher, threshing machine",
"857": "throne",
"858": "tile roof",
"859": "toaster",
"860": "tobacco shop, tobacconist shop, tobacconist",
"861": "toilet seat",
"862": "torch",
"863": "totem pole",
"864": "tow truck, tow car, wrecker",
"865": "toyshop",
"866": "tractor",
"867": "trailer truck, tractor trailer, trucking rig, rig, articulated lorry, semi",
"868": "tray",
"869": "trench coat",
"870": "tricycle, trike, velocipede",
"871": "trimaran",
"872": "tripod",
"873": "triumphal arch",
"874": "trolleybus, trolley coach, trackless trolley",
"875": "trombone",
"876": "tub, vat",
"877": "turnstile",
"878": "typewriter keyboard",
"879": "umbrella",
"880": "unicycle, monocycle",
"881": "upright, upright piano",
"882": "vacuum, vacuum cleaner",
"883": "vase",
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"jinrikisha, ricksha, rickshaw": 612,
"joystick": 613,
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"kuvasz": 222,
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"leafhopper": 317,
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"leopard, Panthera pardus": 288,
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"liner, ocean liner": 628,
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"lionfish": 396,
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"pinwheel": 723,
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"pomegranate": 957,
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"prison, prison house": 743,
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"projectile, missile": 744,
"projector": 745,
"promontory, headland, head, foreland": 976,
"ptarmigan": 81,
"puck, hockey puck": 746,
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"pug, pug-dog": 254,
"punching bag, punch bag, punching ball, punchball": 747,
"purse": 748,
"quail": 85,
"quill, quill pen": 749,
"quilt, comforter, comfort, puff": 750,
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"racket, racquet": 752,
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"rain barrel": 756,
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"rapeseed": 984,
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"red-breasted merganser, Mergus serrator": 98,
"redbone": 168,
"redshank, Tringa totanus": 141,
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"refrigerator, icebox": 760,
"remote control, remote": 761,
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"scoreboard": 781,
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"sea lion": 150,
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"sea snake": 65,
"sea urchin": 328,
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"shower curtain": 794,
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"sorrel": 339,
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"stupa, tope": 832,
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"toy poodle": 265,
"toy terrier": 158,
"toyshop": 865,
"tractor": 866,
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"trailer truck, tractor trailer, trucking rig, rig, articulated lorry, s
emi": 867,
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"tree frog, tree-frog": 31,
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"turnstile": 877,
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"vacuum, vacuum cleaner": 882,
"valley, vale": 979,
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"vault": 884,
"velvet": 885,
"vending machine": 886,
"vestment": 887,
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"volcano": 980,
"volleyball": 890,
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"waffle iron": 891,
"walking stick, walkingstick, stick insect": 313,
"wall clock": 892,
"wallaby, brush kangaroo": 104,
"wallet, billfold, notecase, pocketbook": 893,
"wardrobe, closet, press": 894,
"warplane, military plane": 895,
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    "washer, automatic washer, washing machine": 897,
    "water bottle": 898,
    "water buffalo, water ox, Asiatic buffalo, Bubalus bubalis": 346,
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    "water snake": 58,
    "water tower": 900,
    "weasel": 356,
    "web site, website, internet site, site": 916,
    "weevil": 307,
    "whippet": 172,
    "whiptail, whiptail lizard": 41,
    "whiskey jug": 901,
    "whistle": 902,
    "white stork, Ciconia ciconia": 127,
    "white wolf, Arctic wolf, Canis lupus tundrarum": 270,
    "wig": 903,
    "wild boar, boar, Sus scrofa": 342,
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    "window shade": 905,
    "wine bottle": 907,
    "wing": 908,
    "wire-haired fox terrier": 188,
    "wok": 909,
    "wolf spider, hunting spider": 77,
    "wombat": 106,
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    "wooden spoon": 910,
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    "wreck": 913,
    "yaw": 914,
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    "zebra": 340,
    "zucchini, courgette": 939
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  "transformers_version": "4.23.1"
}

loading weights file pytorch_model.bin from cache at /home/holy/.cache/huggi
ngface/hub/models--microsoft--resnet-152/snapshots/26958355fd2ec78b3e07b7094
b8778c242907844/pytorch_model.bin
All model checkpoint weights were used when initializing ResNetForImageClass
ification.

All the weights of ResNetForImageClassification were initialized from the mo
del checkpoint at microsoft/resnet-152.
If your task is similar to the task the model of the checkpoint was trained
on, you can already use ResNetForImageClassification for predictions without
further training.

```

In [43]:

```

pretrainer = pretraining(
    exp5_pretraining_model,
    output_dir=f"save/problem2/con__pretrain_{model_name_or_path}_1e-3_su
    train_dataset=proc_pretrain_datasets["train"],
)

```

```
eval_dataset=proc_pretrain_datasets["valid"],  
trainer_class=SkinLesionWithContrastiveLearningTrainer)
```

```
PyTorch: setting up devices  
Using cuda_amp half precision backend  
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o  
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate  
d and will be removed in a future version. Use the PyTorch implementation to  
rch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi  
s warning  
    warnings.warn()  
***** Running training *****  
    Num examples = 1600  
    Num Epochs = 200  
    Instantaneous batch size per device = 32  
    Total train batch size (w. parallel, distributed & accumulation) = 128  
    Gradient Accumulation steps = 4  
    Total optimization steps = 2400  
Automatic Weights & Biases logging enabled, to disable set os.environ["WANDB  
_DISABLED"] = "true"
```

[528/2400 13:21 < 47:32, 0.66 it/s, Epoch 43/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | 10.969400 | 10.695669 | 0.000000 |
| 1 | 11.193500 | 9.758973 | 0.002500 |
| 2 | 10.405200 | 8.093212 | 0.265000 |
| 3 | 9.206100 | 5.459701 | 0.607500 |
| 4 | 5.064100 | 4.423902 | 0.700000 |
| 5 | 4.425800 | 4.119769 | 0.727500 |
| 6 | 4.185500 | 3.886396 | 0.770000 |
| 7 | 4.012500 | 3.872811 | 0.767500 |
| 8 | 3.945600 | 4.154722 | 0.705000 |
| 9 | 3.680100 | 3.942826 | 0.775000 |
| 10 | 3.871800 | 3.951888 | 0.785000 |
| 11 | 3.848600 | 3.820659 | 0.792500 |
| 12 | 3.849800 | 3.898825 | 0.805000 |
| 13 | 3.855900 | 3.866838 | 0.787500 |
| 14 | 3.714500 | 3.952671 | 0.765000 |
| 15 | 3.861900 | 3.838549 | 0.812500 |
| 16 | 3.864700 | 3.830421 | 0.787500 |
| 17 | 3.726100 | 4.168592 | 0.757500 |
| 18 | 3.664900 | 3.761193 | 0.785000 |
| 19 | 3.288400 | 3.891747 | 0.815000 |
| 20 | 3.413100 | 3.873870 | 0.797500 |
| 21 | 3.348800 | 4.238355 | 0.770000 |
| 22 | 3.268800 | 3.574207 | 0.840000 |
| 23 | 3.292500 | 3.772244 | 0.807500 |
| 24 | 3.031600 | 3.725048 | 0.850000 |
| 25 | 3.228600 | 4.025825 | 0.817500 |
| 26 | 3.104700 | 3.833163 | 0.840000 |
| 27 | 3.143200 | 3.830520 | 0.860000 |
| 28 | 3.085800 | 3.980006 | 0.822500 |
| 29 | 2.959300 | 3.966298 | 0.822500 |
| 30 | 3.044600 | 3.809857 | 0.817500 |
| 31 | 2.951200 | 3.974025 | 0.825000 |
| 32 | 3.052700 | 3.849089 | 0.845000 |
| 33 | 2.971700 | 3.581400 | 0.875000 |
| 34 | 2.804900 | 3.827889 | 0.847500 |
| 35 | 2.951900 | 3.700036 | 0.872500 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 36 | 2.959300 | 3.977875 | 0.855000 |
| 37 | 2.907000 | 3.698517 | 0.862500 |
| 38 | 2.877600 | 3.998960 | 0.845000 |
| 39 | 2.752300 | 3.531664 | 0.872500 |
| 40 | 2.854400 | 3.784816 | 0.862500 |
| 41 | 2.878400 | 3.636381 | 0.870000 |
| 42 | 2.910200 | 3.985280 | 0.827500 |
| 43 | 2.799500 | 3.885753 | 0.852500 |

```
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-12/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-24] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-36] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-60
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-60/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
  -3_submitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-60/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
  _1e-3_submitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
```

```
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-72
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-72/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
    Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-84
    Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-84/config.json
    Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-84/pytorch_model.bin
    Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-84/preprocessor_config.json
    Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
    Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-96
    Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-96/config.json
    Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-96/pytorch_model.bin
    Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-96/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
    Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-108
    Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-108/config.json
    Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-108/pytorch_model.bin
    Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-108/preprocessor_config.json
    Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-96] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
    Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-120
    Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-120/config.json
    Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-120/pytorch_model.bin
    Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-120/preprocessor_config.json
    Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-84] due to args.save_total_limit
    Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-108] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-132
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-132/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-132/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-132/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-120] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-144
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-144/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-144/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-144/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-132] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-156
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-156/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-156/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-156/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-144] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-168
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-168/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-168/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-168/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-180
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-180/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3__submitted/checkpoint-180/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-180/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-168] due to args.save_total_limit
***** Running Evaluation *****
```

```
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-192
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-192/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-192/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-192/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-156] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-180] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-204
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-204/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-204/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-204/preprocessor_config.json
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-216
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-216/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-216/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-216/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-204] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-228
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-228/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-228/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-228/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-216] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-240
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-240/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-240/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-240/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-192] due to args.save_total_limit
```

```
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-228] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-252
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-252/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-252/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-252/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-264
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-264/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-264/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-264/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-252] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-276
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-276/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-276/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-276/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-240] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-264] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-288
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-288/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-288/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-288/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 400
  Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-300
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-300/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-300/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-300/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
```

```
__1e-3__submitted/checkpoint-276] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-288] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-312
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-312/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-312/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-312/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-324
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-324/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-324/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-324/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-312] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-336
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-336/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-336/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-336/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-300] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-324] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-348
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-348/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-348/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-348/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-360
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-360/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-360/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-360/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-348] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-372
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-372/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-372/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-372/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-360] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-384
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-384/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-384/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-384/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-372] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-396
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-396/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-396/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-396/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-384] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-408
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-408/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-408/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-408/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-336] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-396] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
__1e-3__submitted/checkpoint-420
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
-3__submitted/checkpoint-420/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152__1e
```

```
-3_submitted/checkpoint-420/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-420/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-432
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-432/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-432/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-432/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-420] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-444
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-444/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-444/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-444/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-432] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-456
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-456/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-456/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-456/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-444] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-468
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-468/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-468/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-468/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-456] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 400
    Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-480
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-480/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-480/pytorch_model.bin
```

```
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-480/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-468] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-492
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-492/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-492/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-492/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-480] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-504
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-504/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-504/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-504/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-492] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-516
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-516/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-516/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-516/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-504] due to args.save_total_limit
***** Running Evaluation *****
Num examples = 400
Batch size = 32
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-528
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-528/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/checkpoint-528/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-528/preprocessor_config.json
Deleting older checkpoint [save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/checkpoint-516] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/models =)

Loading best model from save/problem2/con__pretrain__microsoft/resnet-152_1
e-3_submitted/checkpoint-408 (score: 0.875).

```
Saving model checkpoint to save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted
Configuration saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/config.json
Model weights saved in save/problem2/con__pretrain__microsoft/resnet-152_1e
-3_submitted/pytorch_model.bin
Feature extractor saved in save/problem2/con__pretrain__microsoft/resnet-152
_1e-3_submitted/preprocessor_config.json
```

In [44]:

```
evaluation(
    pretrainer,
    datasets=[proc_pretrain_datasets["valid"], proc_datasets["valid"]],
    eval_names=["ham10000_valid", "problem2_datas_valid"]
)
```

```
***** Running Evaluation *****
Num examples = 400
Batch size = 32
```

[13/13 00:03]

```
***** Running Evaluation *****
Num examples = 99
Batch size = 32
***** ham10000_valid metrics *****
epoch = 43.96
eval_accuracy = 0.875
eval_loss = 3.5814
eval_runtime = 0:00:02.91
eval_samples_per_second = 137.305
eval_steps_per_second = 4.462
***** problem2_datas_valid metrics *****
epoch = 43.96
eval_accuracy = 0.202
eval_loss = 12.6324
eval_runtime = 0:00:01.51
eval_samples_per_second = 65.536
eval_steps_per_second = 2.648
```

Fine-tuning.

In [24]:

```
exp5_finetuning_model = AutoModelForImageClassification.from_pretrained(
    f"save/problem2/con__pretrain_{model_name_or_path}_1e-3_submitted")
```

In [25]:

```
trainer = training(
    exp5_finetuning_model,
    output_dir=f"save/problem2/con__pretrained_1e-3|con_{model_name_or_path}",
    train_dataset=proc_datasets["train"],
    eval_dataset=proc_datasets["valid"],
    trainer_class=SkinLesionWithContrastiveLearningTrainer)
```

```
Using cuda_amp half precision backend
/home/holy/anaconda3/envs/health/lib/python3.10/site-packages/transformers/o
ptimization.py:306: FutureWarning: This implementation of AdamW is deprecate
d and will be removed in a future version. Use the PyTorch implementation to
torch.optim.AdamW instead, or set `no_deprecation_warning=True` to disable thi
s warning
    warnings.warn(
***** Running training *****
    Num examples = 305
    Num Epochs = 200
    Instantaneous batch size per device = 32
    Total train batch size (w. parallel, distributed & accumulation) = 128
    Gradient Accumulation steps = 4
    Total optimization steps = 400
Automatic Weights & Biases logging enabled, to disable set os.environ["WANDB
_DISABLED"] = "true"
wandb: Currently logged in as: holyllovenia. Use `wandb login --relogin` to f
orce relogin
```

Tracking run with wandb version 0.13.4

Run data is saved locally in /home/holy/projects/ai-
healthcare/assignment1/wandb/run-20221015_180001-ku0gshxk

Syncing run [save/problem2/con__pretrained__1e-3|con__microsoft/resnet-152__1e-3__submitted](#) to Weights & Biases (docs)

[78/400 04:06 < 17:24, 0.31 it/s, Epoch 38/200]

| Epoch | Training Loss | Validation Loss | Accuracy |
|-------|---------------|-----------------|----------|
| 0 | No log | 14.676527 | 0.181818 |
| 1 | No log | 14.874621 | 0.171717 |
| 2 | No log | 14.012050 | 0.171717 |
| 3 | No log | 12.130822 | 0.171717 |
| 4 | 18.171800 | 10.656482 | 0.181818 |
| 5 | 18.171800 | 9.065087 | 0.242424 |
| 6 | 18.171800 | 7.702439 | 0.363636 |
| 7 | 18.171800 | 6.523671 | 0.414141 |
| 8 | 18.171800 | 5.483545 | 0.515152 |
| 9 | 9.588300 | 4.603342 | 0.585859 |
| 10 | 9.588300 | 4.075677 | 0.707071 |
| 11 | 9.588300 | 3.766706 | 0.747475 |
| 12 | 9.588300 | 3.615829 | 0.757576 |
| 13 | 9.588300 | 3.557106 | 0.767677 |
| 14 | 4.824200 | 3.472590 | 0.777778 |
| 15 | 4.824200 | 3.571439 | 0.757576 |
| 16 | 4.824200 | 3.665219 | 0.717172 |
| 17 | 4.824200 | 3.544495 | 0.727273 |
| 18 | 4.824200 | 3.335742 | 0.858586 |
| 19 | 4.017700 | 3.321961 | 0.848485 |
| 20 | 4.017700 | 3.400821 | 0.818182 |
| 21 | 4.017700 | 3.521808 | 0.797980 |
| 22 | 4.017700 | 3.561505 | 0.787879 |
| 23 | 4.017700 | 3.570113 | 0.767677 |
| 24 | 3.548700 | 3.625292 | 0.777778 |
| 25 | 3.548700 | 3.551697 | 0.777778 |
| 26 | 3.548700 | 3.539580 | 0.777778 |
| 27 | 3.548700 | 3.736942 | 0.777778 |
| 28 | 3.548700 | 3.957234 | 0.777778 |
| 29 | 3.414900 | 4.082998 | 0.787879 |
| 30 | 3.414900 | 4.071468 | 0.767677 |
| 31 | 3.414900 | 4.011328 | 0.767677 |
| 32 | 3.414900 | 4.222142 | 0.767677 |
| 33 | 3.414900 | 4.538031 | 0.777778 |
| 34 | 3.345200 | 4.906275 | 0.747475 |
| 35 | 3.345200 | 4.722102 | 0.767677 |

| Epoch | Training Loss | Validation Loss | Accuracy |
|--------------|----------------------|------------------------|-----------------|
| 36 | 3.345200 | 4.188487 | 0.797980 |
| 37 | 3.345200 | 4.103572 | 0.767677 |
| 38 | 3.345200 | 4.155442 | 0.757576 |

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-2
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-2/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-4
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-4/preprocessor_config.json
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-6
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-6/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-4] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-8
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-8/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-6] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-10
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-10/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-8] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
```

```
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-12
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-12/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-2] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-10] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-14
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-14/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-12] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-16
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-16/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-14] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-18
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-18/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-16] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-20
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-20/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-18] due to args.save_total_limit
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-22
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-22/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-20] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-24
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-24/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-22] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-26
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-26/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-24] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-28
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-28/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-26] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-30
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-30/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-28] due to args.save_total_limit
```

```
t/resnet-152_1e-3_submitted/checkpoint-28] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-32
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-32/preprocessor_config.json
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-34
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-34/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-32] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-36
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-36/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-34] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-38
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-38/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-30] due to args.save_total_limit
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-36] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-40
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-40/preprocessor_config.json
```

```
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-42
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-42/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-40] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-44
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-44/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-42] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-46
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-46/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-44] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-48
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-48/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-46] due to args.save_total_limit
***** Running Evaluation *****
  Num examples = 99
  Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-50
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-50/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-48] due to args.save_total_limit
```

```
t/resnet-152_1e-3_submitted/checkpoint-48] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-52
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-52/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-52/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-52/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-50] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-54
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-54/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-54/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-54/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-52] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-56
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-56/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-56/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-56/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-54] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-58
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-58/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-58/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-58/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-56] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-60
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-60/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-60/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-60/preprocessor_config.json
```

```
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-58] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-62
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-62/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-60] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-64
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-64/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-62] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-66
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-66/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-64] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-68
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-68/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-66] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-70
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-70/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-70/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-70/preprocessor_config.json
```

```
t/resnet-152_1e-3_submitted/checkpoint-70/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-68] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-72
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-72/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-72/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-72/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-70] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-74
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-74/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-74/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-74/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-72] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-76
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-76/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-76/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-76/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-74] due to args.save_total_limit
***** Running Evaluation *****
    Num examples = 99
    Batch size = 32
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-78
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-78/config.json
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-78/pytorch_model.bin
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-78/preprocessor_config.json
Deleting older checkpoint [save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-76] due to args.save_total_limit
```

Training completed. Do not forget to share your model on huggingface.co/models =)

```
Loading best model from save/problem2/con_pretrained_1e-3|con_microsoft/resnet-152_1e-3_submitted/checkpoint-38 (score: 0.8585858585858586).
Saving model checkpoint to save/problem2/con_pretrained_1e-3|con_microsoft
```

```
t/resnet-152_1e-3_submitted  
Configuration saved in save/problem2/con_pretrained_1e-3|con_microsoft/re  
snet-152_1e-3_submitted/config.json  
Model weights saved in save/problem2/con_pretrained_1e-3|con_microsoft/re  
snet-152_1e-3_submitted/pytorch_model.bin  
Feature extractor saved in save/problem2/con_pretrained_1e-3|con_microsoft/  
t/resnet-152_1e-3_submitted/preprocessor_config.json
```

```
In [26]: evaluation(  
    trainer,  
    datasets=[proc_datasets["valid"]],  
    eval_names=["problem2_datas_valid"]  
)
```

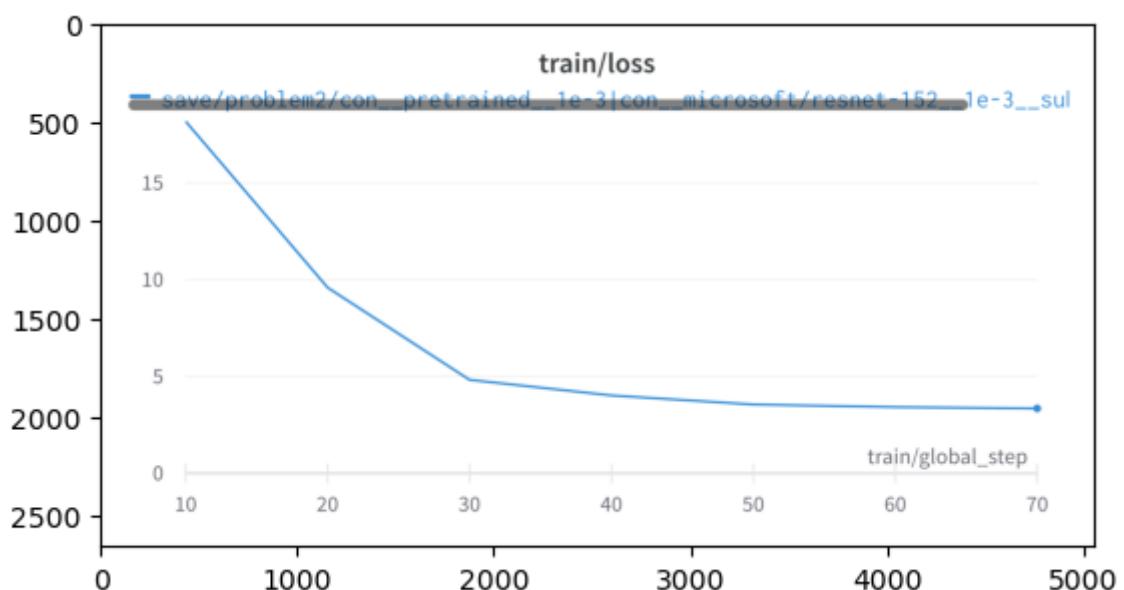
```
***** Running Evaluation *****  
Num examples = 99  
Batch size = 32
```

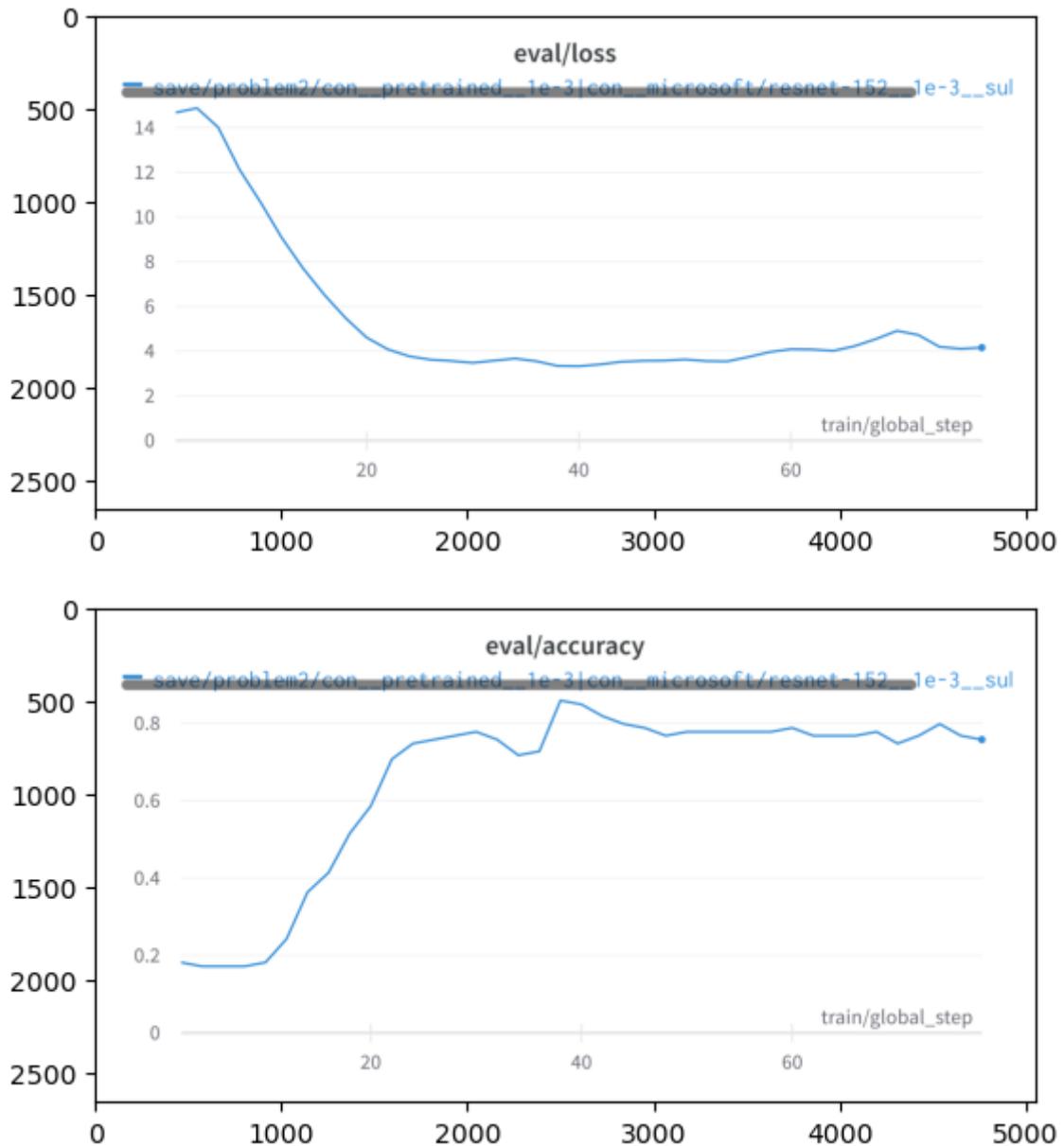
[4/4 00:00]

```
***** problem2_datas_valid metrics *****  
epoch = 38.8  
eval_accuracy = 0.8586  
eval_loss = 3.3357  
eval_runtime = 0:00:01.38  
eval_samples_per_second = 71.357  
eval_steps_per_second = 2.883
```

```
In [28]: plt.figure()  
img = mpimg.imread("./log/problem2/exp5/exp5_train_loss.png")  
plt.imshow(img)  
  
plt.figure()  
img = mpimg.imread("./log/problem2/exp5/exp5_valid_loss.png")  
plt.imshow(img)  
  
plt.figure()  
img = mpimg.imread("./log/problem2/exp5/exp5_valid_acc.png")  
plt.imshow(img)
```

```
Out[28]: <matplotlib.image.AxesImage at 0x7f6d35ddcc10>
```





Conclusion

| Exp. ID | Exp. Setting | Eval. Acc. |
|---------|---|---------------|
| 1 | Cross entropy (CE) loss | 75.76% |
| 2 | Weighted CE loss | 82.83% |
| 3 | Weighted CE loss + pre-training | <u>84.85%</u> |
| 4 | Supervised contrastive (SupCon) loss + weighted CE loss | 79.80% |
| 5 | SupCon loss + weighted CE loss + pre-training | 85.86% |

In this notebook, I have:

- 1) tried out 5 different experiment configurations (including adding a contrastive loss to the cross-entropy loss);
- 2) reported the results (i.e., train loss, eval loss, and eval accuracy); and
- 3) achieved a best performance of 85.86% using ResNet-152 (through Experiment 5) for skin lesion classification.

