

dog_app

November 30, 2018

0.1 Convolutional Neural Networks

0.2 Project: Write an Algorithm for a Dog Identification App

0.2.1 Why We're Here

In this notebook, you will make the first steps towards developing an algorithm that could be used as part of a mobile or web app. At the end of this project, your code will accept any user-supplied image as input. If a dog is detected in the image, it will provide an estimate of the dog's breed. If a human is detected, it will provide an estimate of the dog breed that is most resembling.

In this real-world setting, you will need to piece together a series of models to perform different tasks; for instance, the algorithm that detects humans in an image will be different from the CNN that infers dog breed. There are many points of possible failure, and no perfect algorithm exists. Your imperfect solution will nonetheless create a fun user experience!

0.2.2 The Road Ahead

- Step 0: Import Datasets
- Step 1: Detect Humans
- Step 2: Detect Dogs
- Step 3: Create a CNN to Classify Dog Breeds (from Scratch)
- Step 4: Create a CNN to Classify Dog Breeds (using Transfer Learning)
- Step 5: Write your Algorithm
- Step 6: Test Your Algorithm

0.3 Step 0: Import Datasets

0.3.1 Import Dog Dataset

```
In [1]: from sklearn.datasets import load_files
        from keras.utils import np_utils
        import numpy as np
        from glob import glob

        # function to load train, test, and validation datasets
        def load_dataset(path):
            data = load_files(path)
            dog_files = np.array(data['filenames'])
            dog_targets = np_utils.to_categorical(np.array(data['target']), 133)
```

```

    return dog_files, dog_targets

# load train, test, and validation datasets
train_files, train_targets = load_dataset('data/dogImages/train')
valid_files, valid_targets = load_dataset('data/dogImages/valid')
test_files, test_targets = load_dataset('data/dogImages/test')

# load list of dog names
dog_names = [item[20:-1] for item in sorted(glob("data/dogImages/train/*/"))]

# print statistics about the dataset
print('There are {} total dog categories.'.format(len(dog_names)))
print('There are {} total dog images.\n'.format(len(np.hstack([train_files, valid_files])))
print('There are {} training dog images.'.format(len(train_files)))
print('There are {} validation dog images.'.format(len(valid_files)))
print('There are {} test dog images.'.format(len(test_files)))

```

Using TensorFlow backend.

There are 133 total dog categories.

There are 8351 total dog images.

There are 6680 training dog images.

There are 835 validation dog images.

There are 836 test dog images.

0.3.2 Import Human Dataset

```

In [2]: import random
        random.seed(8675309)

        human_files = np.array(glob("data/lfw/*/"))
        random.shuffle(human_files)
        print('There are {} total human images.'.format(len(human_files)))

```

There are 13233 total human images.

0.4 Step 1: Detect Humans

I use OpenCV's implementation of Haar feature-based cascade classifiers to detect human faces in images.

```

In [3]: import cv2
        import matplotlib.pyplot as plt
        %matplotlib inline

```

```

# extract pre-trained face detector
face_cascade = cv2.CascadeClassifier('haarcascades/haarcascade_frontalface_alt.xml')

# return "True" if at least a face is detected in the image
def human_detector(img_path):
    img = cv2.imread(img_path)
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    faces = face_cascade.detectMultiScale(gray)
    wrong_faces = 0
    for (x,y,w,h) in faces:
        cv2.rectangle(img,(x,y),(x+w,y+h),(255,0,0),2)
        # check if face is smaller than 14% of the image
        # (most wrong detections are caused by this problem)
        img_w, img_h = img.shape[0], img.shape[1]
        if (w * 100 / img_w) < 14. and (h * 100 / img_h) < 14.:
            wrong_faces += 1
    prediction = (len(faces) - wrong_faces) > 0
    return prediction

```

In [4]: # Test the function

```

humans_in_human_images = 0.
humans_in_dog_images = 0.

```

```

for human_file, dog_file in zip(human_files[:100], train_files[:100]):
    if human_detector(human_file):
        humans_in_human_images += 1
    if human_detector(dog_file):
        humans_in_dog_images += 1
print("In 100 human images, {}% are detected as human images".format(humans_in_human_images/100))
print("In 100 dog images, {}% are detected as human images".format(humans_in_dog_images/100))

```

In 100 human images, 100.0% are detected as human images

In 100 dog images, 5.0% are detected as human images

I might improve this results, but mistakes appear only on dog images.

0.5 Step 2: Detect Dogs

I use a pre-trained ResNet-50 model along with weights that have been trained on ImageNet dataset.

Given an image, this pre-trained ResNet-50 model returns a prediction (derived from the available categories in ImageNet) for the object that is contained in the image.

```

In [5]: from keras.applications.resnet50 import ResNet50
        from keras.preprocessing import image
        from tqdm import tqdm

```

```
# define ResNet50 model
ResNet50_model = ResNet50(weights='imagenet')
```

0.5.1 Pre-process the Data

```
In [6]: # loads RGB image and convert it to 4D tensor with shape (1, 224, 224, 3)
def path_to_tensor(img_path):
    img = image.load_img(img_path, target_size=(224, 224))
    x = image.img_to_array(img)
    return np.expand_dims(x, axis=0)

# apply the above function a collection of images path
def paths_to_tensor(img_paths):
    list_of_tensors = [path_to_tensor(img_path) for img_path in tqdm(img_paths)]
    return np.vstack(list_of_tensors)
```

0.5.2 Write a Dog Detector

The model will return the index of the 1000 labels in the ImageNet dataset. The categories corresponding to dogs are between 151 and 268 inclusive.

```
In [7]: from keras.applications.resnet50 import preprocess_input, decode_predictions
```

```
# returns "True" if a dog is detected in the image stored at img_path
def dog_detector(img_path):
    img = preprocess_input(path_to_tensor(img_path))
    prediction = np.argmax(ResNet50_model.predict(img))
    return 151 <= prediction <= 268
```

```
In [8]: # Test the performance of the dog_detector function
```

```
humans_in_human_images = 0.
humans_in_dog_images = 0.

for human_file, dog_file in zip(human_files[:100], train_files[:100]):
    if dog_detector(human_file):
        humans_in_human_images += 1
    if dog_detector(dog_file):
        humans_in_dog_images += 1

print("In 100 human images, {}% are detected as dog images".format(humans_in_human_images/100))
print("In 100 dog images, {}% are detected as dog images".format(humans_in_dog_images/100))
```

```
In 100 human images, 1.0% are detected as dog images
```

```
In 100 dog images, 100.0% are detected as dog images
```

0.6 Step 3: Create a CNN to Classify Dog Breeds (from Scratch)

The task of assigning breed to dogs from images is considered exceptionally challenging. To see why, consider that *even a human* would have great difficulty in distinguishing between a Brittany and a Welsh Springer Spaniel.

Brittany	Welsh Springer Spaniel
----------	------------------------

It is not difficult to find other dog breed pairs with minimal inter-class variation (for instance, Curly-Coated Retrievers and American Water Spaniels).

Curly-Coated Retriever	American Water Spaniel
------------------------	------------------------

Likewise, recall that labradors come in yellow, chocolate, and black. Your vision-based algorithm will have to conquer this high intra-class variation to determine how to classify all of these different shades as the same breed.

Yellow Labrador	Chocolate Labrador
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A random chance presents an exceptionally low bar: setting aside the fact that the classes are slightly imbalanced, a random guess will provide a correct answer roughly 1 in 133 times, which corresponds to an accuracy of less than 1%.

0.6.1 Pre-process the Data

```
In [9]: from PIL import ImageFile
        ImageFile.LOAD_TRUNCATED_IMAGES = True

        # pre-process the data for Keras by converting every value in range 0 - 1
        train_tensors = paths_to_tensor(train_files).astype('float32')/255
        valid_tensors = paths_to_tensor(valid_files).astype('float32')/255
        test_tensors = paths_to_tensor(test_files).astype('float32')/255

100%| 6680/6680 [00:23<00:00, 280.93it/s]
100%| 835/835 [00:02<00:00, 332.74it/s]
100%| 836/836 [00:02<00:00, 326.70it/s]
```

0.6.2 Model Architecture

I have alternated Conv2D layers with Pooling layers in order to gradually convert the matrix into a long vector. The layers are alternated like in the VGG16/VGG19 model but with less filters and layers in order to have less parameters to train and make the train process faster.

```
In [10]: from keras.layers import Conv2D, MaxPooling2D, GlobalAveragePooling2D
        from keras.layers import Dropout, Flatten, Dense
        from keras.models import Sequential

        model = Sequential()
        model.add(Conv2D(32, 3, activation="relu", input_shape=(224, 224, 3)))
        model.add(MaxPooling2D(2))
        model.add(Conv2D(64, 3, activation="relu"))
        model.add(MaxPooling2D(2))
        model.add(Conv2D(128, 3, activation="relu"))
        model.add(MaxPooling2D(2))
        model.add(Conv2D(128, 3, activation="relu"))
        model.add(MaxPooling2D(2))
        model.add(Conv2D(128, 3, activation="relu"))
        model.add(GlobalAveragePooling2D())
        model.add(Dense(133, activation='softmax'))
        model.summary()
```

Layer (type)	Output Shape	Param #
conv2d_1 (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d_2 (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_2 (Conv2D)	(None, 109, 109, 64)	18496
max_pooling2d_3 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_3 (Conv2D)	(None, 52, 52, 128)	73856
max_pooling2d_4 (MaxPooling2D)	(None, 26, 26, 128)	0
conv2d_4 (Conv2D)	(None, 24, 24, 128)	147584
max_pooling2d_5 (MaxPooling2D)	(None, 12, 12, 128)	0
conv2d_5 (Conv2D)	(None, 10, 10, 128)	147584
global_average_pooling2d_1 (GlobalAveragePooling2D)	(None, 128)	0
dense_1 (Dense)	(None, 133)	17157

Total params: 405,573
 Trainable params: 405,573
 Non-trainable params: 0

0.6.3 Compile and Train the Model

```
In [11]: from keras.callbacks import ModelCheckpoint
```

```
model.compile(optimizer='rmsprop', loss='categorical_crossentropy', metrics=['accuracy'])

checkpointer = ModelCheckpoint(filepath='saved_models/weights.best.from_scratch.hdf5',
                               verbose=1, save_best_only=True)

model.fit(train_tensors, train_targets,
          validation_data=(valid_tensors, valid_targets),
          epochs=5, batch_size=20, callbacks=[checkpointer], verbose=1)
```

Train on 6680 samples, validate on 835 samples

Epoch 1/5

6680/6680 [=====] - 307s 46ms/step - loss: 4.8797 - acc: 0.0085 - val_loss: 4.82097

Epoch 00001: val_loss improved from inf to 4.82097, saving model to saved_models/weights.best.from_scratch.hdf5

Epoch 2/5

6680/6680 [=====] - 310s 46ms/step - loss: 4.7561 - acc: 0.0189 - val_loss: 4.67051

Epoch 00002: val_loss improved from 4.82097 to 4.67051, saving model to saved_models/weights.best.from_scratch.hdf5

Epoch 3/5

6680/6680 [=====] - 330s 49ms/step - loss: 4.5845 - acc: 0.0314 - val_loss: 4.58012

Epoch 00003: val_loss improved from 4.67051 to 4.58012, saving model to saved_models/weights.best.from_scratch.hdf5

Epoch 4/5

6680/6680 [=====] - 316s 47ms/step - loss: 4.4293 - acc: 0.0442 - val_loss: 4.34785

Epoch 00004: val_loss improved from 4.58012 to 4.34785, saving model to saved_models/weights.best.from_scratch.hdf5

Epoch 5/5

6680/6680 [=====] - 323s 48ms/step - loss: 4.2614 - acc: 0.0528 - val_loss: 4.34785

Epoch 00005: val_loss did not improve from 4.34785

```
Out[11]: <keras.callbacks.History at 0x7f5fc8507a20>
```

0.6.4 Load the Model with the Best Validation Loss

```
In [12]: model.load_weights('saved_models/weights.best.from_scratch.hdf5')
```

0.6.5 Test the Model

```
In [13]: # get index of predicted dog breed for each image in test set
```

```
dog_breed_predictions = [np.argmax(model.predict(np.expand_dims(tensor, axis=0))) for tensor in test_images]
```

```
test_accuracy = 100*np.sum(np.array(dog_breed_predictions)==np.argmax(test_targets, axis=-1))/len(test_targets)
print('Test accuracy: %.4f%%' % test_accuracy)
```

Test accuracy: 6.4593%

The accuracy of the model is very low, let's improve it by using transfer learning.

0.7 Step 4: Create a CNN to Classify Dog Breeds (using Transfer Learning)

I will now use transfer learning to create a CNN that can identify dog breed from images. I will use - [Xception](#) bottleneck features for this purpose.

0.7.1 Obtain Bottleneck Features

```
In [14]: bottleneck_features = np.load('bottleneck_features/DogXceptionData.npz')
        train_Xception = bottleneck_features['train']
        valid_Xception = bottleneck_features['valid']
        test_Xception = bottleneck_features['test']
```

0.7.2 Model Architecture

```
In [15]: Xception_model = Sequential()
        Xception_model.add(GlobalAveragePooling2D(input_shape=(7, 7, 2048)))
        Xception_model.add(Dense(133, activation='softmax'))
        Xception_model.summary()
```

Layer (type)	Output Shape	Param #
global_average_pooling2d_2 ((None, 2048)		0
dense_2 (Dense)	(None, 133)	272517

Total params: 272,517
 Trainable params: 272,517
 Non-trainable params: 0

0.7.3 Compile the Model

```
In [16]: Xception_model.compile(loss='categorical_hinge', optimizer='SGD', metrics=['accuracy'])
```

0.7.4 Train the Model

```
In [20]: checkpointer = ModelCheckpoint(filepath='saved_models/Xception_model.weights.best.hdf5',
        save_best_only=True)
        Xception_model.fit(train_Xception, train_targets, epochs=3000, validation_data=(valid_Xception, valid_targets),
        callbacks=[checker], verbose=0, shuffle=True)
```


Epoch 00001: val_loss improved from inf to 0.31477, saving model to saved_models/Xception_model.h5

Epoch 00002: val_loss did not improve from 0.31477

Epoch 00003: val_loss did not improve from 0.31477

Epoch 00004: val_loss improved from 0.31477 to 0.31476, saving model to saved_models/Xception_model.h5

Epoch 00005: val_loss did not improve from 0.31476

Epoch 00006: val_loss did not improve from 0.31476

Epoch 00007: val_loss improved from 0.31476 to 0.31472, saving model to saved_models/Xception_model.h5

Epoch 00008: val_loss did not improve from 0.31472

Epoch 00009: val_loss did not improve from 0.31472

Epoch 00010: val_loss did not improve from 0.31472

Epoch 00011: val_loss did not improve from 0.31472

Epoch 00012: val_loss improved from 0.31472 to 0.31464, saving model to saved_models/Xception_model.h5

Epoch 00013: val_loss did not improve from 0.31464

Epoch 00014: val_loss did not improve from 0.31464

Epoch 00015: val_loss did not improve from 0.31464

Epoch 00016: val_loss did not improve from 0.31464

Epoch 00017: val_loss did not improve from 0.31464

Epoch 00018: val_loss did not improve from 0.31464

Epoch 00019: val_loss did not improve from 0.31464

Epoch 00020: val_loss did not improve from 0.31464

Epoch 00021: val_loss did not improve from 0.31464

Epoch 00022: val_loss did not improve from 0.31464

Epoch 00023: val_loss improved from 0.31464 to 0.31461, saving model to saved_models/Xception_model.h5

Epoch 00024: val_loss did not improve from 0.31461

Epoch 00025: val_loss did not improve from 0.31461

Epoch 00026: val_loss improved from 0.31461 to 0.31455, saving model to saved_models/Xception_r

Epoch 00027: val_loss did not improve from 0.31455

Epoch 00028: val_loss did not improve from 0.31455

Epoch 00029: val_loss did not improve from 0.31455

Epoch 00030: val_loss did not improve from 0.31455

Epoch 00031: val_loss did not improve from 0.31455

Epoch 00032: val_loss did not improve from 0.31455

Epoch 00033: val_loss did not improve from 0.31455

Epoch 00034: val_loss did not improve from 0.31455

Epoch 00035: val_loss did not improve from 0.31455

Epoch 00036: val_loss improved from 0.31455 to 0.31452, saving model to saved_models/Xception_r

Epoch 00037: val_loss did not improve from 0.31452

Epoch 00038: val_loss did not improve from 0.31452

Epoch 00039: val_loss did not improve from 0.31452

Epoch 00040: val_loss did not improve from 0.31452

Epoch 00041: val_loss did not improve from 0.31452

Epoch 00042: val_loss did not improve from 0.31452

Epoch 00043: val_loss did not improve from 0.31452

Epoch 00044: val_loss did not improve from 0.31452

Epoch 00045: val_loss improved from 0.31452 to 0.31447, saving model to saved_models/Xception_r

Epoch 00046: val_loss did not improve from 0.31447

Epoch 00047: val_loss did not improve from 0.31447

Epoch 00048: val_loss did not improve from 0.31447

Epoch 00049: val_loss did not improve from 0.31447

Epoch 00050: val_loss did not improve from 0.31447

Epoch 00051: val_loss improved from 0.31447 to 0.31444, saving model to saved_models/Xception_r

Epoch 00052: val_loss did not improve from 0.31444

Epoch 00053: val_loss improved from 0.31444 to 0.31438, saving model to saved_models/Xception_r

Epoch 00054: val_loss did not improve from 0.31438

Epoch 00055: val_loss did not improve from 0.31438

Epoch 00056: val_loss did not improve from 0.31438

Epoch 00057: val_loss did not improve from 0.31438

Epoch 00058: val_loss did not improve from 0.31438

Epoch 00059: val_loss did not improve from 0.31438

Epoch 00060: val_loss did not improve from 0.31438

Epoch 00061: val_loss did not improve from 0.31438

Epoch 00062: val_loss did not improve from 0.31438

Epoch 00063: val_loss did not improve from 0.31438

Epoch 00064: val_loss improved from 0.31438 to 0.31438, saving model to saved_models/Xception_r

Epoch 00065: val_loss did not improve from 0.31438

Epoch 00066: val_loss improved from 0.31438 to 0.31435, saving model to saved_models/Xception_r

Epoch 00067: val_loss improved from 0.31435 to 0.31434, saving model to saved_models/Xception_r

Epoch 00068: val_loss improved from 0.31434 to 0.31430, saving model to saved_models/Xception_r

Epoch 00069: val_loss did not improve from 0.31430

Epoch 00070: val_loss improved from 0.31430 to 0.31429, saving model to saved_models/Xception_r

Epoch 00071: val_loss did not improve from 0.31429

Epoch 00072: val_loss did not improve from 0.31429

Epoch 00073: val_loss did not improve from 0.31429

Epoch 00074: val_loss improved from 0.31429 to 0.31428, saving model to saved_models/Xception_r

Epoch 00075: val_loss did not improve from 0.31428

Epoch 00076: val_loss improved from 0.31428 to 0.31427, saving model to saved_models/Xception_r

Epoch 00077: val_loss did not improve from 0.31427

Epoch 00078: val_loss improved from 0.31427 to 0.31425, saving model to saved_models/Xception_r

Epoch 00079: val_loss did not improve from 0.31425

Epoch 00080: val_loss did not improve from 0.31425

Epoch 00081: val_loss did not improve from 0.31425

Epoch 00082: val_loss did not improve from 0.31425

Epoch 00083: val_loss did not improve from 0.31425

Epoch 00084: val_loss improved from 0.31425 to 0.31421, saving model to saved_models/Xception_r

Epoch 00085: val_loss did not improve from 0.31421

Epoch 00086: val_loss did not improve from 0.31421

Epoch 00087: val_loss did not improve from 0.31421

Epoch 00088: val_loss improved from 0.31421 to 0.31420, saving model to saved_models/Xception_r

Epoch 00089: val_loss did not improve from 0.31420

Epoch 00090: val_loss did not improve from 0.31420

Epoch 00091: val_loss did not improve from 0.31420

Epoch 00092: val_loss did not improve from 0.31420

Epoch 00093: val_loss improved from 0.31420 to 0.31411, saving model to saved_models/Xception_r

Epoch 00094: val_loss did not improve from 0.31411

Epoch 00095: val_loss did not improve from 0.31411

Epoch 00096: val_loss did not improve from 0.31411

Epoch 00097: val_loss did not improve from 0.31411

Epoch 00098: val_loss did not improve from 0.31411

Epoch 00099: val_loss did not improve from 0.31411

Epoch 00100: val_loss did not improve from 0.31411

Epoch 00101: val_loss did not improve from 0.31411

Epoch 00102: val_loss improved from 0.31411 to 0.31407, saving model to saved_models/Xception_r

Epoch 00103: val_loss did not improve from 0.31407

Epoch 00104: val_loss did not improve from 0.31407

Epoch 00105: val_loss did not improve from 0.31407

Epoch 00106: val_loss did not improve from 0.31407

Epoch 00107: val_loss did not improve from 0.31407

Epoch 00108: val_loss did not improve from 0.31407

Epoch 00109: val_loss did not improve from 0.31407

Epoch 00110: val_loss improved from 0.31407 to 0.31403, saving model to saved_models/Xception_r

Epoch 00111: val_loss did not improve from 0.31403

Epoch 00112: val_loss did not improve from 0.31403

Epoch 00113: val_loss did not improve from 0.31403

Epoch 00114: val_loss did not improve from 0.31403

Epoch 00115: val_loss did not improve from 0.31403

Epoch 00116: val_loss did not improve from 0.31403

Epoch 00117: val_loss improved from 0.31403 to 0.31399, saving model to saved_models/Xception_r

Epoch 00118: val_loss did not improve from 0.31399

Epoch 00119: val_loss did not improve from 0.31399

Epoch 00120: val_loss did not improve from 0.31399

Epoch 00121: val_loss did not improve from 0.31399

Epoch 00122: val_loss improved from 0.31399 to 0.31394, saving model to saved_models/Xception_r

Epoch 00123: val_loss did not improve from 0.31394

Epoch 00124: val_loss did not improve from 0.31394

Epoch 00125: val_loss did not improve from 0.31394

Epoch 00126: val_loss did not improve from 0.31394

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Epoch 00129: val_loss did not improve from 0.31394

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Epoch 00132: val_loss did not improve from 0.31394

Epoch 00133: val_loss did not improve from 0.31394

Epoch 00134: val_loss did not improve from 0.31394

Epoch 00135: val_loss did not improve from 0.31394

Epoch 00136: val_loss improved from 0.31394 to 0.31390, saving model to saved_models/Xception_r

Epoch 00137: val_loss did not improve from 0.31390

Epoch 00138: val_loss improved from 0.31390 to 0.31389, saving model to saved_models/Xception_r

Epoch 00139: val_loss did not improve from 0.31389

Epoch 00140: val_loss improved from 0.31389 to 0.31384, saving model to saved_models/Xception_r

Epoch 00141: val_loss did not improve from 0.31384

Epoch 00142: val_loss did not improve from 0.31384

Epoch 00143: val_loss did not improve from 0.31384

Epoch 00144: val_loss did not improve from 0.31384

Epoch 00145: val_loss did not improve from 0.31384

Epoch 00146: val_loss did not improve from 0.31384

Epoch 00147: val_loss did not improve from 0.31384

Epoch 00148: val_loss did not improve from 0.31384

Epoch 00149: val_loss did not improve from 0.31384

Epoch 00150: val_loss did not improve from 0.31384

Epoch 00151: val_loss did not improve from 0.31384

Epoch 00152: val_loss did not improve from 0.31384

Epoch 00153: val_loss did not improve from 0.31384

Epoch 00154: val_loss improved from 0.31384 to 0.31378, saving model to saved_models/Xception_r

Epoch 00155: val_loss did not improve from 0.31378

Epoch 00156: val_loss did not improve from 0.31378

Epoch 00157: val_loss did not improve from 0.31378

Epoch 00158: val_loss did not improve from 0.31378

Epoch 00159: val_loss did not improve from 0.31378

Epoch 00160: val_loss did not improve from 0.31378

Epoch 00161: val_loss did not improve from 0.31378

Epoch 00162: val_loss did not improve from 0.31378

Epoch 00163: val_loss did not improve from 0.31378

Epoch 00164: val_loss did not improve from 0.31378

Epoch 00165: val_loss did not improve from 0.31378

Epoch 00166: val_loss did not improve from 0.31378

Epoch 00167: val_loss did not improve from 0.31378

Epoch 00168: val_loss did not improve from 0.31378

Epoch 00169: val_loss did not improve from 0.31378

Epoch 00170: val_loss did not improve from 0.31378

Epoch 00171: val_loss improved from 0.31378 to 0.31376, saving model to saved_models/Xception_r

Epoch 00172: val_loss did not improve from 0.31376

Epoch 00173: val_loss did not improve from 0.31376

Epoch 00174: val_loss did not improve from 0.31376

Epoch 00175: val_loss did not improve from 0.31376

Epoch 00176: val_loss did not improve from 0.31376

Epoch 00177: val_loss did not improve from 0.31376

Epoch 00178: val_loss did not improve from 0.31376

Epoch 00179: val_loss did not improve from 0.31376

Epoch 00180: val_loss did not improve from 0.31376

Epoch 00181: val_loss did not improve from 0.31376

Epoch 00182: val_loss did not improve from 0.31376

Epoch 00183: val_loss did not improve from 0.31376

Epoch 00184: val_loss did not improve from 0.31376

Epoch 00185: val_loss did not improve from 0.31376

Epoch 00186: val_loss did not improve from 0.31376

Epoch 00187: val_loss did not improve from 0.31376

Epoch 00188: val_loss did not improve from 0.31376

Epoch 00189: val_loss improved from 0.31376 to 0.31375, saving model to saved_models/Xception_r

Epoch 00190: val_loss did not improve from 0.31375

Epoch 00191: val_loss did not improve from 0.31375

Epoch 00192: val_loss did not improve from 0.31375

Epoch 00193: val_loss did not improve from 0.31375

Epoch 00194: val_loss did not improve from 0.31375

Epoch 00195: val_loss did not improve from 0.31375

Epoch 00196: val_loss did not improve from 0.31375

Epoch 00197: val_loss did not improve from 0.31375

Epoch 00198: val_loss did not improve from 0.31375

Epoch 00199: val_loss improved from 0.31375 to 0.31374, saving model to saved_models/Xception_r

Epoch 00200: val_loss improved from 0.31374 to 0.31371, saving model to saved_models/Xception_r

Epoch 00201: val_loss did not improve from 0.31371

Epoch 00202: val_loss did not improve from 0.31371

Epoch 00203: val_loss did not improve from 0.31371

Epoch 00204: val_loss did not improve from 0.31371

Epoch 00205: val_loss did not improve from 0.31371

Epoch 00206: val_loss did not improve from 0.31371

Epoch 00207: val_loss improved from 0.31371 to 0.31369, saving model to saved_models/Xception_r

Epoch 00208: val_loss did not improve from 0.31369

Epoch 00209: val_loss did not improve from 0.31369

Epoch 00210: val_loss improved from 0.31369 to 0.31369, saving model to saved_models/Xception_r

Epoch 00211: val_loss did not improve from 0.31369

Epoch 00212: val_loss improved from 0.31369 to 0.31368, saving model to saved_models/Xception_r

Epoch 00213: val_loss did not improve from 0.31368

Epoch 00214: val_loss did not improve from 0.31368

Epoch 00215: val_loss did not improve from 0.31368

Epoch 00216: val_loss did not improve from 0.31368

Epoch 00217: val_loss did not improve from 0.31368

Epoch 00218: val_loss did not improve from 0.31368

Epoch 00219: val_loss did not improve from 0.31368

Epoch 00220: val_loss did not improve from 0.31368

Epoch 00221: val_loss did not improve from 0.31368

Epoch 00222: val_loss did not improve from 0.31368

Epoch 00223: val_loss did not improve from 0.31368

Epoch 00224: val_loss did not improve from 0.31368

Epoch 00225: val_loss improved from 0.31368 to 0.31367, saving model to saved_models/Xception_r

Epoch 00226: val_loss did not improve from 0.31367

Epoch 00227: val_loss did not improve from 0.31367

Epoch 00228: val_loss did not improve from 0.31367

Epoch 00229: val_loss did not improve from 0.31367

Epoch 00230: val_loss did not improve from 0.31367

Epoch 00231: val_loss did not improve from 0.31367

Epoch 00232: val_loss did not improve from 0.31367

Epoch 00233: val_loss improved from 0.31367 to 0.31365, saving model to saved_models/Xception_r

Epoch 00234: val_loss did not improve from 0.31365

Epoch 00235: val_loss did not improve from 0.31365

Epoch 00236: val_loss did not improve from 0.31365

Epoch 00237: val_loss did not improve from 0.31365

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Epoch 00243: val_loss did not improve from 0.31365

Epoch 00244: val_loss did not improve from 0.31365

Epoch 00245: val_loss did not improve from 0.31365

Epoch 00246: val_loss improved from 0.31365 to 0.31360, saving model to saved_models/Xception_r

Epoch 00247: val_loss did not improve from 0.31360

Epoch 00248: val_loss did not improve from 0.31360

Epoch 00249: val_loss did not improve from 0.31360

Epoch 00250: val_loss did not improve from 0.31360

Epoch 00251: val_loss did not improve from 0.31360

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Epoch 00253: val_loss did not improve from 0.31360

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Epoch 00256: val_loss did not improve from 0.31360

Epoch 00257: val_loss did not improve from 0.31360

Epoch 00258: val_loss did not improve from 0.31360

Epoch 00259: val_loss did not improve from 0.31360

Epoch 00260: val_loss improved from 0.31360 to 0.31357, saving model to saved_models/Xception_r

Epoch 00261: val_loss did not improve from 0.31357

Epoch 00262: val_loss improved from 0.31357 to 0.31353, saving model to saved_models/Xception_r

Epoch 00263: val_loss did not improve from 0.31353

Epoch 00264: val_loss did not improve from 0.31353

Epoch 00265: val_loss did not improve from 0.31353

Epoch 00266: val_loss did not improve from 0.31353

Epoch 00267: val_loss did not improve from 0.31353

Epoch 00268: val_loss did not improve from 0.31353

Epoch 00269: val_loss did not improve from 0.31353

Epoch 00270: val_loss improved from 0.31353 to 0.31350, saving model to saved_models/Xception_r

Epoch 00271: val_loss did not improve from 0.31350

Epoch 00272: val_loss did not improve from 0.31350

Epoch 00273: val_loss did not improve from 0.31350

Epoch 00274: val_loss did not improve from 0.31350

Epoch 00275: val_loss did not improve from 0.31350

Epoch 00276: val_loss did not improve from 0.31350

Epoch 00277: val_loss improved from 0.31350 to 0.31347, saving model to saved_models/Xception_r

Epoch 00278: val_loss did not improve from 0.31347

Epoch 00279: val_loss did not improve from 0.31347

Epoch 00280: val_loss did not improve from 0.31347

Epoch 00281: val_loss did not improve from 0.31347

Epoch 00282: val_loss did not improve from 0.31347

Epoch 00283: val_loss did not improve from 0.31347

Epoch 00284: val_loss did not improve from 0.31347

Epoch 00285: val_loss did not improve from 0.31347

Epoch 00286: val_loss did not improve from 0.31347

Epoch 00287: val_loss improved from 0.31347 to 0.31347, saving model to saved_models/Xception_r

Epoch 00288: val_loss improved from 0.31347 to 0.31347, saving model to saved_models/Xception_r

Epoch 00289: val_loss did not improve from 0.31347

Epoch 00290: val_loss did not improve from 0.31347

Epoch 00291: val_loss did not improve from 0.31347

Epoch 00292: val_loss improved from 0.31347 to 0.31346, saving model to saved_models/Xception_r

Epoch 00293: val_loss improved from 0.31346 to 0.31346, saving model to saved_models/Xception_r

Epoch 00294: val_loss did not improve from 0.31346

Epoch 00295: val_loss improved from 0.31346 to 0.31341, saving model to saved_models/Xception_r

Epoch 00296: val_loss did not improve from 0.31341

Epoch 00297: val_loss did not improve from 0.31341

Epoch 00298: val_loss did not improve from 0.31341

Epoch 00299: val_loss did not improve from 0.31341

Epoch 00300: val_loss did not improve from 0.31341

Epoch 00301: val_loss did not improve from 0.31341

Epoch 00302: val_loss did not improve from 0.31341

Epoch 00303: val_loss did not improve from 0.31341

Epoch 00304: val_loss improved from 0.31341 to 0.31337, saving model to saved_models/Xception_r

Epoch 00305: val_loss did not improve from 0.31337

Epoch 00306: val_loss did not improve from 0.31337

Epoch 00307: val_loss did not improve from 0.31337

Epoch 00308: val_loss did not improve from 0.31337

Epoch 00309: val_loss improved from 0.31337 to 0.31336, saving model to saved_models/Xception_r

Epoch 00310: val_loss improved from 0.31336 to 0.31334, saving model to saved_models/Xception_r

Epoch 00311: val_loss did not improve from 0.31334

Epoch 00312: val_loss improved from 0.31334 to 0.31331, saving model to saved_models/Xception_r

Epoch 00313: val_loss did not improve from 0.31331

Epoch 00314: val_loss did not improve from 0.31331

Epoch 00315: val_loss did not improve from 0.31331

Epoch 00316: val_loss improved from 0.31331 to 0.31327, saving model to saved_models/Xception_r

Epoch 00317: val_loss did not improve from 0.31327

Epoch 00318: val_loss did not improve from 0.31327

Epoch 00319: val_loss did not improve from 0.31327

Epoch 00320: val_loss did not improve from 0.31327

Epoch 00321: val_loss improved from 0.31327 to 0.31327, saving model to saved_models/Xception_r

Epoch 00322: val_loss did not improve from 0.31327

Epoch 00323: val_loss did not improve from 0.31327

Epoch 00324: val_loss improved from 0.31327 to 0.31324, saving model to saved_models/Xception_r

Epoch 00325: val_loss did not improve from 0.31324

Epoch 00326: val_loss did not improve from 0.31324

Epoch 00327: val_loss did not improve from 0.31324

Epoch 00328: val_loss did not improve from 0.31324

Epoch 00329: val_loss improved from 0.31324 to 0.31324, saving model to saved_models/Xception_r

Epoch 00330: val_loss did not improve from 0.31324

Epoch 00331: val_loss did not improve from 0.31324

Epoch 00332: val_loss improved from 0.31324 to 0.31323, saving model to saved_models/Xception_r

Epoch 00333: val_loss did not improve from 0.31323

Epoch 00334: val_loss improved from 0.31323 to 0.31320, saving model to saved_models/Xception_r

Epoch 00335: val_loss did not improve from 0.31320

Epoch 00336: val_loss did not improve from 0.31320

Epoch 00337: val_loss did not improve from 0.31320

Epoch 00338: val_loss improved from 0.31320 to 0.31318, saving model to saved_models/Xception_r

Epoch 00339: val_loss did not improve from 0.31318

Epoch 00340: val_loss improved from 0.31318 to 0.31317, saving model to saved_models/Xception_r

Epoch 00341: val_loss did not improve from 0.31317

Epoch 00342: val_loss did not improve from 0.31317

Epoch 00343: val_loss did not improve from 0.31317

Epoch 00344: val_loss improved from 0.31317 to 0.31317, saving model to saved_models/Xception_r

Epoch 00345: val_loss did not improve from 0.31317

Epoch 00346: val_loss improved from 0.31317 to 0.31313, saving model to saved_models/Xception_r

Epoch 00347: val_loss did not improve from 0.31313

Epoch 00348: val_loss did not improve from 0.31313

Epoch 00349: val_loss did not improve from 0.31313

Epoch 00350: val_loss improved from 0.31313 to 0.31310, saving model to saved_models/Xception_r

Epoch 00351: val_loss did not improve from 0.31310

Epoch 00352: val_loss improved from 0.31310 to 0.31307, saving model to saved_models/Xception_r

Epoch 00353: val_loss did not improve from 0.31307

Epoch 00354: val_loss improved from 0.31307 to 0.31300, saving model to saved_models/Xception_r

Epoch 00355: val_loss did not improve from 0.31300

Epoch 00356: val_loss did not improve from 0.31300

Epoch 00357: val_loss did not improve from 0.31300

Epoch 00358: val_loss did not improve from 0.31300

Epoch 00359: val_loss did not improve from 0.31300

Epoch 00360: val_loss did not improve from 0.31300

Epoch 00361: val_loss did not improve from 0.31300

Epoch 00362: val_loss did not improve from 0.31300

Epoch 00363: val_loss did not improve from 0.31300

Epoch 00364: val_loss did not improve from 0.31300

Epoch 00365: val_loss did not improve from 0.31300

Epoch 00366: val_loss improved from 0.31300 to 0.31297, saving model to saved_models/Xception_r

Epoch 00367: val_loss improved from 0.31297 to 0.31295, saving model to saved_models/Xception_r

Epoch 00368: val_loss improved from 0.31295 to 0.31291, saving model to saved_models/Xception_r

Epoch 00369: val_loss did not improve from 0.31291

Epoch 00370: val_loss improved from 0.31291 to 0.31289, saving model to saved_models/Xception_r

Epoch 00371: val_loss improved from 0.31289 to 0.31288, saving model to saved_models/Xception_r

Epoch 00372: val_loss improved from 0.31288 to 0.31282, saving model to saved_models/Xception_r

Epoch 00373: val_loss did not improve from 0.31282

Epoch 00374: val_loss improved from 0.31282 to 0.31282, saving model to saved_models/Xception_r

Epoch 00375: val_loss improved from 0.31282 to 0.31274, saving model to saved_models/Xception_r

Epoch 00376: val_loss improved from 0.31274 to 0.31273, saving model to saved_models/Xception_r

Epoch 00377: val_loss improved from 0.31273 to 0.31250, saving model to saved_models/Xception_r

Epoch 00378: val_loss improved from 0.31250 to 0.31238, saving model to saved_models/Xception_r

Epoch 00379: val_loss improved from 0.31238 to 0.31225, saving model to saved_models/Xception_r

Epoch 00380: val_loss improved from 0.31225 to 0.31212, saving model to saved_models/Xception_r

Epoch 00381: val_loss improved from 0.31212 to 0.31195, saving model to saved_models/Xception_r

Epoch 00382: val_loss improved from 0.31195 to 0.31182, saving model to saved_models/Xception_r

Epoch 00383: val_loss improved from 0.31182 to 0.31165, saving model to saved_models/Xception_r

Epoch 00384: val_loss improved from 0.31165 to 0.31154, saving model to saved_models/Xception_r

Epoch 00385: val_loss improved from 0.31154 to 0.31142, saving model to saved_models/Xception_r

Epoch 00386: val_loss improved from 0.31142 to 0.31133, saving model to saved_models/Xception_r

Epoch 00387: val_loss improved from 0.31133 to 0.31129, saving model to saved_models/Xception_r

Epoch 00388: val_loss improved from 0.31129 to 0.31113, saving model to saved_models/Xception_r

Epoch 00389: val_loss did not improve from 0.31113

Epoch 00390: val_loss improved from 0.31113 to 0.31104, saving model to saved_models/Xception_r

Epoch 00391: val_loss improved from 0.31104 to 0.31101, saving model to saved_models/Xception_r

Epoch 00392: val_loss improved from 0.31101 to 0.31095, saving model to saved_models/Xception_r

Epoch 00393: val_loss improved from 0.31095 to 0.31094, saving model to saved_models/Xception_r

Epoch 00394: val_loss improved from 0.31094 to 0.31090, saving model to saved_models/Xception_r

Epoch 00395: val_loss improved from 0.31090 to 0.31085, saving model to saved_models/Xception_r

Epoch 00396: val_loss improved from 0.31085 to 0.31078, saving model to saved_models/Xception_r

Epoch 00397: val_loss improved from 0.31078 to 0.31073, saving model to saved_models/Xception_r

Epoch 00398: val_loss improved from 0.31073 to 0.31071, saving model to saved_models/Xception_r

Epoch 00399: val_loss improved from 0.31071 to 0.31069, saving model to saved_models/Xception_r

Epoch 00400: val_loss improved from 0.31069 to 0.31066, saving model to saved_models/Xception_r

Epoch 00401: val_loss improved from 0.31066 to 0.31060, saving model to saved_models/Xception_r

Epoch 00402: val_loss improved from 0.31060 to 0.31057, saving model to saved_models/Xception_r

Epoch 00403: val_loss improved from 0.31057 to 0.31050, saving model to saved_models/Xception_r

Epoch 00404: val_loss did not improve from 0.31050

Epoch 00405: val_loss did not improve from 0.31050

Epoch 00406: val_loss improved from 0.31050 to 0.31049, saving model to saved_models/Xception_r

Epoch 00407: val_loss did not improve from 0.31049

Epoch 00408: val_loss improved from 0.31049 to 0.31037, saving model to saved_models/Xception_r

Epoch 00409: val_loss did not improve from 0.31037

Epoch 00410: val_loss improved from 0.31037 to 0.31028, saving model to saved_models/Xception_r

Epoch 00411: val_loss did not improve from 0.31028

Epoch 00412: val_loss did not improve from 0.31028

Epoch 00413: val_loss improved from 0.31028 to 0.31020, saving model to saved_models/Xception_r

Epoch 00414: val_loss improved from 0.31020 to 0.31016, saving model to saved_models/Xception_r

Epoch 00415: val_loss did not improve from 0.31016

Epoch 00416: val_loss improved from 0.31016 to 0.31006, saving model to saved_models/Xception_r

Epoch 00417: val_loss did not improve from 0.31006

Epoch 00418: val_loss improved from 0.31006 to 0.31004, saving model to saved_models/Xception_r

Epoch 00419: val_loss did not improve from 0.31004

Epoch 00420: val_loss did not improve from 0.31004

Epoch 00421: val_loss improved from 0.31004 to 0.30998, saving model to saved_models/Xception_r

Epoch 00422: val_loss did not improve from 0.30998

Epoch 00423: val_loss improved from 0.30998 to 0.30996, saving model to saved_models/Xception_r

Epoch 00424: val_loss did not improve from 0.30996

Epoch 00425: val_loss improved from 0.30996 to 0.30992, saving model to saved_models/Xception_r

Epoch 00426: val_loss did not improve from 0.30992

Epoch 00427: val_loss did not improve from 0.30992

Epoch 00428: val_loss improved from 0.30992 to 0.30985, saving model to saved_models/Xception_r

Epoch 00429: val_loss did not improve from 0.30985

Epoch 00430: val_loss did not improve from 0.30985

Epoch 00431: val_loss did not improve from 0.30985

Epoch 00432: val_loss improved from 0.30985 to 0.30983, saving model to saved_models/Xception_r

Epoch 00433: val_loss improved from 0.30983 to 0.30976, saving model to saved_models/Xception_r

Epoch 00434: val_loss improved from 0.30976 to 0.30975, saving model to saved_models/Xception_r

Epoch 00435: val_loss improved from 0.30975 to 0.30971, saving model to saved_models/Xception_r

Epoch 00436: val_loss improved from 0.30971 to 0.30968, saving model to saved_models/Xception_r

Epoch 00437: val_loss did not improve from 0.30968

Epoch 00438: val_loss did not improve from 0.30968

Epoch 00439: val_loss improved from 0.30968 to 0.30966, saving model to saved_models/Xception_r

Epoch 00440: val_loss did not improve from 0.30966

Epoch 00441: val_loss improved from 0.30966 to 0.30953, saving model to saved_models/Xception_r

Epoch 00442: val_loss did not improve from 0.30953

Epoch 00443: val_loss did not improve from 0.30953

Epoch 00444: val_loss did not improve from 0.30953

Epoch 00445: val_loss did not improve from 0.30953

Epoch 00446: val_loss did not improve from 0.30953

Epoch 00447: val_loss improved from 0.30953 to 0.30949, saving model to saved_models/Xception_r

Epoch 00448: val_loss improved from 0.30949 to 0.30945, saving model to saved_models/Xception_r

Epoch 00449: val_loss did not improve from 0.30945

Epoch 00450: val_loss did not improve from 0.30945

Epoch 00451: val_loss improved from 0.30945 to 0.30943, saving model to saved_models/Xception_r

Epoch 00452: val_loss did not improve from 0.30943

Epoch 00453: val_loss improved from 0.30943 to 0.30943, saving model to saved_models/Xception_r

Epoch 00454: val_loss improved from 0.30943 to 0.30939, saving model to saved_models/Xception_r

Epoch 00455: val_loss improved from 0.30939 to 0.30937, saving model to saved_models/Xception_r

Epoch 00456: val_loss improved from 0.30937 to 0.30934, saving model to saved_models/Xception_r

Epoch 00457: val_loss did not improve from 0.30934

Epoch 00458: val_loss improved from 0.30934 to 0.30932, saving model to saved_models/Xception_r

Epoch 00459: val_loss did not improve from 0.30932

Epoch 00460: val_loss did not improve from 0.30932

Epoch 00461: val_loss did not improve from 0.30932

Epoch 00462: val_loss improved from 0.30932 to 0.30930, saving model to saved_models/Xception_r

Epoch 00463: val_loss improved from 0.30930 to 0.30928, saving model to saved_models/Xception_r

Epoch 00464: val_loss improved from 0.30928 to 0.30918, saving model to saved_models/Xception_r

Epoch 00465: val_loss did not improve from 0.30918

Epoch 00466: val_loss improved from 0.30918 to 0.30917, saving model to saved_models/Xception_r

Epoch 00467: val_loss did not improve from 0.30917

Epoch 00468: val_loss improved from 0.30917 to 0.30910, saving model to saved_models/Xception_r

Epoch 00469: val_loss did not improve from 0.30910

Epoch 00470: val_loss did not improve from 0.30910

Epoch 00471: val_loss did not improve from 0.30910

Epoch 00472: val_loss improved from 0.30910 to 0.30903, saving model to saved_models/Xception_r

Epoch 00473: val_loss did not improve from 0.30903

Epoch 00474: val_loss did not improve from 0.30903

Epoch 00475: val_loss did not improve from 0.30903

Epoch 00476: val_loss improved from 0.30903 to 0.30902, saving model to saved_models/Xception_r

Epoch 00477: val_loss did not improve from 0.30902

Epoch 00478: val_loss improved from 0.30902 to 0.30902, saving model to saved_models/Xception_r

Epoch 00479: val_loss did not improve from 0.30902

Epoch 00480: val_loss improved from 0.30902 to 0.30895, saving model to saved_models/Xception_r

Epoch 00481: val_loss did not improve from 0.30895

Epoch 00482: val_loss improved from 0.30895 to 0.30891, saving model to saved_models/Xception_r

Epoch 00483: val_loss did not improve from 0.30891

Epoch 00484: val_loss did not improve from 0.30891

Epoch 00485: val_loss did not improve from 0.30891

Epoch 00486: val_loss did not improve from 0.30891

Epoch 00487: val_loss did not improve from 0.30891

Epoch 00488: val_loss improved from 0.30891 to 0.30890, saving model to saved_models/Xception_r

Epoch 00489: val_loss did not improve from 0.30890

Epoch 00490: val_loss improved from 0.30890 to 0.30886, saving model to saved_models/Xception_r

Epoch 00491: val_loss did not improve from 0.30886

Epoch 00492: val_loss improved from 0.30886 to 0.30883, saving model to saved_models/Xception_r

Epoch 00493: val_loss improved from 0.30883 to 0.30881, saving model to saved_models/Xception_r

Epoch 00494: val_loss did not improve from 0.30881

Epoch 00495: val_loss did not improve from 0.30881

Epoch 00496: val_loss improved from 0.30881 to 0.30875, saving model to saved_models/Xception_r

Epoch 00497: val_loss did not improve from 0.30875

Epoch 00498: val_loss did not improve from 0.30875

Epoch 00499: val_loss did not improve from 0.30875

Epoch 00500: val_loss did not improve from 0.30875

Epoch 00501: val_loss did not improve from 0.30875

Epoch 00502: val_loss did not improve from 0.30875

Epoch 00503: val_loss improved from 0.30875 to 0.30874, saving model to saved_models/Xception_r

Epoch 00504: val_loss did not improve from 0.30874

Epoch 00505: val_loss improved from 0.30874 to 0.30873, saving model to saved_models/Xception_r

Epoch 00506: val_loss improved from 0.30873 to 0.30869, saving model to saved_models/Xception_r

Epoch 00507: val_loss did not improve from 0.30869

Epoch 00508: val_loss improved from 0.30869 to 0.30860, saving model to saved_models/Xception_r

Epoch 00509: val_loss did not improve from 0.30860

Epoch 00510: val_loss did not improve from 0.30860

Epoch 00511: val_loss did not improve from 0.30860

Epoch 00512: val_loss did not improve from 0.30860

Epoch 00513: val_loss did not improve from 0.30860

Epoch 00514: val_loss improved from 0.30860 to 0.30858, saving model to saved_models/Xception_r

Epoch 00515: val_loss did not improve from 0.30858

Epoch 00516: val_loss did not improve from 0.30858

Epoch 00517: val_loss did not improve from 0.30858

Epoch 00518: val_loss did not improve from 0.30858

Epoch 00519: val_loss did not improve from 0.30858

Epoch 00520: val_loss improved from 0.30858 to 0.30853, saving model to saved_models/Xception_r

Epoch 00521: val_loss did not improve from 0.30853

Epoch 00522: val_loss improved from 0.30853 to 0.30852, saving model to saved_models/Xception_r

Epoch 00523: val_loss did not improve from 0.30852

Epoch 00524: val_loss did not improve from 0.30852

Epoch 00525: val_loss did not improve from 0.30852

Epoch 00526: val_loss did not improve from 0.30852

Epoch 00527: val_loss improved from 0.30852 to 0.30848, saving model to saved_models/Xception_r

Epoch 00528: val_loss improved from 0.30848 to 0.30845, saving model to saved_models/Xception_r

Epoch 00529: val_loss did not improve from 0.30845

Epoch 00530: val_loss improved from 0.30845 to 0.30838, saving model to saved_models/Xception_r

Epoch 00531: val_loss did not improve from 0.30838

Epoch 00532: val_loss did not improve from 0.30838

Epoch 00533: val_loss did not improve from 0.30838

Epoch 00534: val_loss did not improve from 0.30838

Epoch 00535: val_loss did not improve from 0.30838

Epoch 00536: val_loss did not improve from 0.30838

Epoch 00537: val_loss did not improve from 0.30838

Epoch 00538: val_loss did not improve from 0.30838

Epoch 00539: val_loss improved from 0.30838 to 0.30832, saving model to saved_models/Xception_r

Epoch 00540: val_loss did not improve from 0.30832

Epoch 00541: val_loss did not improve from 0.30832

Epoch 00542: val_loss did not improve from 0.30832

Epoch 00543: val_loss did not improve from 0.30832

Epoch 00544: val_loss did not improve from 0.30832

Epoch 00545: val_loss did not improve from 0.30832

Epoch 00546: val_loss did not improve from 0.30832

Epoch 00547: val_loss did not improve from 0.30832

Epoch 00548: val_loss improved from 0.30832 to 0.30832, saving model to saved_models/Xception_r

Epoch 00549: val_loss did not improve from 0.30832

Epoch 00550: val_loss improved from 0.30832 to 0.30829, saving model to saved_models/Xception_r

Epoch 00551: val_loss did not improve from 0.30829

Epoch 00552: val_loss did not improve from 0.30829

Epoch 00553: val_loss improved from 0.30829 to 0.30827, saving model to saved_models/Xception_r

Epoch 00554: val_loss did not improve from 0.30827

Epoch 00555: val_loss did not improve from 0.30827

Epoch 00556: val_loss did not improve from 0.30827

Epoch 00557: val_loss improved from 0.30827 to 0.30824, saving model to saved_models/Xception_r

Epoch 00558: val_loss did not improve from 0.30824

Epoch 00559: val_loss improved from 0.30824 to 0.30818, saving model to saved_models/Xception_r

Epoch 00560: val_loss did not improve from 0.30818

Epoch 00561: val_loss did not improve from 0.30818

Epoch 00562: val_loss improved from 0.30818 to 0.30817, saving model to saved_models/Xception_r

Epoch 00563: val_loss did not improve from 0.30817

Epoch 00564: val_loss improved from 0.30817 to 0.30816, saving model to saved_models/Xception_r

Epoch 00565: val_loss did not improve from 0.30816

Epoch 00566: val_loss improved from 0.30816 to 0.30814, saving model to saved_models/Xception_r

Epoch 00567: val_loss did not improve from 0.30814

Epoch 00568: val_loss did not improve from 0.30814

Epoch 00569: val_loss did not improve from 0.30814

Epoch 00570: val_loss improved from 0.30814 to 0.30811, saving model to saved_models/Xception_r

Epoch 00571: val_loss did not improve from 0.30811

Epoch 00572: val_loss improved from 0.30811 to 0.30810, saving model to saved_models/Xception_r

Epoch 00573: val_loss did not improve from 0.30810

Epoch 00574: val_loss improved from 0.30810 to 0.30809, saving model to saved_models/Xception_r

Epoch 00575: val_loss did not improve from 0.30809

Epoch 00576: val_loss did not improve from 0.30809

Epoch 00577: val_loss did not improve from 0.30809

Epoch 00578: val_loss improved from 0.30809 to 0.30805, saving model to saved_models/Xception_r

Epoch 00579: val_loss did not improve from 0.30805

Epoch 00580: val_loss did not improve from 0.30805

Epoch 00581: val_loss did not improve from 0.30805

Epoch 00582: val_loss improved from 0.30805 to 0.30799, saving model to saved_models/Xception_r

Epoch 00583: val_loss did not improve from 0.30799

Epoch 00584: val_loss did not improve from 0.30799

Epoch 00585: val_loss did not improve from 0.30799

Epoch 00586: val_loss did not improve from 0.30799

Epoch 00587: val_loss did not improve from 0.30799

Epoch 00588: val_loss did not improve from 0.30799

Epoch 00589: val_loss did not improve from 0.30799

Epoch 00590: val_loss did not improve from 0.30799

Epoch 00591: val_loss improved from 0.30799 to 0.30798, saving model to saved_models/Xception_r

Epoch 00592: val_loss improved from 0.30798 to 0.30797, saving model to saved_models/Xception_r

Epoch 00593: val_loss did not improve from 0.30797

Epoch 00594: val_loss did not improve from 0.30797

Epoch 00595: val_loss improved from 0.30797 to 0.30795, saving model to saved_models/Xception_r

Epoch 00596: val_loss did not improve from 0.30795

Epoch 00597: val_loss improved from 0.30795 to 0.30792, saving model to saved_models/Xception_r

Epoch 00598: val_loss did not improve from 0.30792

Epoch 00599: val_loss improved from 0.30792 to 0.30789, saving model to saved_models/Xception_r

Epoch 00600: val_loss did not improve from 0.30789

Epoch 00601: val_loss did not improve from 0.30789

Epoch 00602: val_loss did not improve from 0.30789

Epoch 00603: val_loss did not improve from 0.30789

Epoch 00604: val_loss improved from 0.30789 to 0.30782, saving model to saved_models/Xception_r

Epoch 00605: val_loss did not improve from 0.30782

Epoch 00606: val_loss improved from 0.30782 to 0.30781, saving model to saved_models/Xception_r

Epoch 00607: val_loss did not improve from 0.30781

Epoch 00608: val_loss did not improve from 0.30781

Epoch 00609: val_loss did not improve from 0.30781

Epoch 00610: val_loss did not improve from 0.30781

Epoch 00611: val_loss did not improve from 0.30781

Epoch 00612: val_loss did not improve from 0.30781

Epoch 00613: val_loss did not improve from 0.30781

Epoch 00614: val_loss did not improve from 0.30781

Epoch 00615: val_loss did not improve from 0.30781

Epoch 00616: val_loss did not improve from 0.30781

Epoch 00617: val_loss did not improve from 0.30781

Epoch 00618: val_loss improved from 0.30781 to 0.30772, saving model to saved_models/Xception_r

Epoch 00619: val_loss did not improve from 0.30772

Epoch 00620: val_loss did not improve from 0.30772

Epoch 00621: val_loss did not improve from 0.30772

Epoch 00622: val_loss did not improve from 0.30772

Epoch 00623: val_loss did not improve from 0.30772

Epoch 00624: val_loss did not improve from 0.30772

Epoch 00625: val_loss did not improve from 0.30772

Epoch 00626: val_loss did not improve from 0.30772

Epoch 00627: val_loss did not improve from 0.30772

Epoch 00628: val_loss did not improve from 0.30772

Epoch 00629: val_loss did not improve from 0.30772

Epoch 00630: val_loss did not improve from 0.30772

Epoch 00631: val_loss did not improve from 0.30772

Epoch 00632: val_loss improved from 0.30772 to 0.30770, saving model to saved_models/Xception_r

Epoch 00633: val_loss did not improve from 0.30770

Epoch 00634: val_loss did not improve from 0.30770

Epoch 00635: val_loss did not improve from 0.30770

Epoch 00636: val_loss did not improve from 0.30770

Epoch 00637: val_loss did not improve from 0.30770

Epoch 00638: val_loss did not improve from 0.30770

Epoch 00639: val_loss did not improve from 0.30770

Epoch 00640: val_loss did not improve from 0.30770

Epoch 00641: val_loss did not improve from 0.30770

Epoch 00642: val_loss did not improve from 0.30770

Epoch 00643: val_loss improved from 0.30770 to 0.30770, saving model to saved_models/Xception_r

Epoch 00644: val_loss did not improve from 0.30770

Epoch 00645: val_loss improved from 0.30770 to 0.30767, saving model to saved_models/Xception_r

Epoch 00646: val_loss did not improve from 0.30767

Epoch 00647: val_loss improved from 0.30767 to 0.30763, saving model to saved_models/Xception_r

Epoch 00648: val_loss did not improve from 0.30763

Epoch 00649: val_loss did not improve from 0.30763

Epoch 00650: val_loss did not improve from 0.30763

Epoch 00651: val_loss did not improve from 0.30763

Epoch 00652: val_loss improved from 0.30763 to 0.30761, saving model to saved_models/Xception_r

Epoch 00653: val_loss did not improve from 0.30761

Epoch 00654: val_loss did not improve from 0.30761

Epoch 00655: val_loss did not improve from 0.30761

Epoch 00656: val_loss did not improve from 0.30761

Epoch 00657: val_loss did not improve from 0.30761

Epoch 00658: val_loss did not improve from 0.30761

Epoch 00659: val_loss improved from 0.30761 to 0.30761, saving model to saved_models/Xception_r

Epoch 00660: val_loss improved from 0.30761 to 0.30757, saving model to saved_models/Xception_r

Epoch 00661: val_loss did not improve from 0.30757

Epoch 00662: val_loss did not improve from 0.30757

Epoch 00663: val_loss did not improve from 0.30757

Epoch 00664: val_loss did not improve from 0.30757

Epoch 00665: val_loss improved from 0.30757 to 0.30752, saving model to saved_models/Xception_r

Epoch 00666: val_loss did not improve from 0.30752

Epoch 00667: val_loss improved from 0.30752 to 0.30751, saving model to saved_models/Xception_r

Epoch 00668: val_loss improved from 0.30751 to 0.30750, saving model to saved_models/Xception_r

Epoch 00669: val_loss did not improve from 0.30750

Epoch 00670: val_loss did not improve from 0.30750

Epoch 00671: val_loss did not improve from 0.30750

Epoch 00672: val_loss did not improve from 0.30750

Epoch 00673: val_loss improved from 0.30750 to 0.30749, saving model to saved_models/Xception_r

Epoch 00674: val_loss did not improve from 0.30749

Epoch 00675: val_loss improved from 0.30749 to 0.30746, saving model to saved_models/Xception_r

Epoch 00676: val_loss did not improve from 0.30746

Epoch 00677: val_loss improved from 0.30746 to 0.30741, saving model to saved_models/Xception_r

Epoch 00678: val_loss did not improve from 0.30741

Epoch 00679: val_loss did not improve from 0.30741

Epoch 00680: val_loss did not improve from 0.30741

Epoch 00681: val_loss did not improve from 0.30741

Epoch 00682: val_loss did not improve from 0.30741

Epoch 00683: val_loss improved from 0.30741 to 0.30740, saving model to saved_models/Xception_r

Epoch 00684: val_loss did not improve from 0.30740

Epoch 00685: val_loss did not improve from 0.30740

Epoch 00686: val_loss did not improve from 0.30740

Epoch 00687: val_loss improved from 0.30740 to 0.30737, saving model to saved_models/Xception_r

Epoch 00688: val_loss did not improve from 0.30737

Epoch 00689: val_loss did not improve from 0.30737

Epoch 00690: val_loss did not improve from 0.30737

Epoch 00691: val_loss improved from 0.30737 to 0.30736, saving model to saved_models/Xception_r

Epoch 00692: val_loss did not improve from 0.30736

Epoch 00693: val_loss did not improve from 0.30736

Epoch 00694: val_loss did not improve from 0.30736

Epoch 00695: val_loss did not improve from 0.30736

Epoch 00696: val_loss did not improve from 0.30736

Epoch 00697: val_loss did not improve from 0.30736

Epoch 00698: val_loss did not improve from 0.30736

Epoch 00699: val_loss did not improve from 0.30736

Epoch 00700: val_loss improved from 0.30736 to 0.30729, saving model to saved_models/Xception_r

Epoch 00701: val_loss did not improve from 0.30729

Epoch 00702: val_loss did not improve from 0.30729

Epoch 00703: val_loss did not improve from 0.30729

Epoch 00704: val_loss did not improve from 0.30729

Epoch 00705: val_loss improved from 0.30729 to 0.30724, saving model to saved_models/Xception_r

Epoch 00706: val_loss did not improve from 0.30724

Epoch 00707: val_loss did not improve from 0.30724

Epoch 00708: val_loss did not improve from 0.30724

Epoch 00709: val_loss did not improve from 0.30724

Epoch 00710: val_loss did not improve from 0.30724

Epoch 00711: val_loss did not improve from 0.30724

Epoch 00712: val_loss did not improve from 0.30724

Epoch 00713: val_loss did not improve from 0.30724

Epoch 00714: val_loss did not improve from 0.30724

Epoch 00715: val_loss improved from 0.30724 to 0.30719, saving model to saved_models/Xception_r

Epoch 00716: val_loss did not improve from 0.30719

Epoch 00717: val_loss did not improve from 0.30719

Epoch 00718: val_loss did not improve from 0.30719

Epoch 00719: val_loss did not improve from 0.30719

Epoch 00720: val_loss did not improve from 0.30719

Epoch 00721: val_loss improved from 0.30719 to 0.30717, saving model to saved_models/Xception_r

Epoch 00722: val_loss improved from 0.30717 to 0.30717, saving model to saved_models/Xception_r

Epoch 00723: val_loss improved from 0.30717 to 0.30714, saving model to saved_models/Xception_r

Epoch 00724: val_loss did not improve from 0.30714

Epoch 00725: val_loss did not improve from 0.30714

Epoch 00726: val_loss did not improve from 0.30714

Epoch 00727: val_loss did not improve from 0.30714

Epoch 00728: val_loss did not improve from 0.30714

Epoch 00729: val_loss did not improve from 0.30714

Epoch 00730: val_loss did not improve from 0.30714

Epoch 00731: val_loss did not improve from 0.30714

Epoch 00732: val_loss did not improve from 0.30714

Epoch 00733: val_loss improved from 0.30714 to 0.30710, saving model to saved_models/Xception_r

Epoch 00734: val_loss did not improve from 0.30710

Epoch 00735: val_loss did not improve from 0.30710

Epoch 00736: val_loss did not improve from 0.30710

Epoch 00737: val_loss improved from 0.30710 to 0.30706, saving model to saved_models/Xception_r

Epoch 00738: val_loss did not improve from 0.30706

Epoch 00739: val_loss did not improve from 0.30706

Epoch 00740: val_loss did not improve from 0.30706

Epoch 00741: val_loss did not improve from 0.30706

Epoch 00742: val_loss did not improve from 0.30706

Epoch 00743: val_loss improved from 0.30706 to 0.30705, saving model to saved_models/Xception_r

Epoch 00744: val_loss improved from 0.30705 to 0.30705, saving model to saved_models/Xception_r

Epoch 00745: val_loss did not improve from 0.30705

Epoch 00746: val_loss did not improve from 0.30705

Epoch 00747: val_loss improved from 0.30705 to 0.30702, saving model to saved_models/Xception_r

Epoch 00748: val_loss did not improve from 0.30702

Epoch 00749: val_loss did not improve from 0.30702

Epoch 00750: val_loss did not improve from 0.30702

Epoch 00751: val_loss did not improve from 0.30702

Epoch 00752: val_loss did not improve from 0.30702

Epoch 00753: val_loss improved from 0.30702 to 0.30702, saving model to saved_models/Xception_r

Epoch 00754: val_loss did not improve from 0.30702

Epoch 00755: val_loss did not improve from 0.30702

Epoch 00756: val_loss did not improve from 0.30702

Epoch 00757: val_loss improved from 0.30702 to 0.30696, saving model to saved_models/Xception_r

Epoch 00758: val_loss did not improve from 0.30696

Epoch 00759: val_loss improved from 0.30696 to 0.30688, saving model to saved_models/Xception_r

Epoch 00760: val_loss did not improve from 0.30688

Epoch 00761: val_loss did not improve from 0.30688

Epoch 00762: val_loss did not improve from 0.30688

Epoch 00763: val_loss did not improve from 0.30688

Epoch 00764: val_loss did not improve from 0.30688

Epoch 00765: val_loss did not improve from 0.30688

Epoch 00766: val_loss did not improve from 0.30688

Epoch 00767: val_loss did not improve from 0.30688

Epoch 00768: val_loss did not improve from 0.30688

Epoch 00769: val_loss did not improve from 0.30688

Epoch 00770: val_loss did not improve from 0.30688

Epoch 00771: val_loss improved from 0.30688 to 0.30680, saving model to saved_models/Xception_r

Epoch 00772: val_loss did not improve from 0.30680

Epoch 00773: val_loss did not improve from 0.30680

Epoch 00774: val_loss did not improve from 0.30680

Epoch 00775: val_loss improved from 0.30680 to 0.30678, saving model to saved_models/Xception_r

Epoch 00776: val_loss did not improve from 0.30678

Epoch 00777: val_loss did not improve from 0.30678

Epoch 00778: val_loss did not improve from 0.30678

Epoch 00779: val_loss did not improve from 0.30678

Epoch 00780: val_loss did not improve from 0.30678

Epoch 00781: val_loss did not improve from 0.30678

Epoch 00782: val_loss improved from 0.30678 to 0.30677, saving model to saved_models/Xception_r

Epoch 00783: val_loss did not improve from 0.30677

Epoch 00784: val_loss did not improve from 0.30677

Epoch 00785: val_loss did not improve from 0.30677

Epoch 00786: val_loss improved from 0.30677 to 0.30675, saving model to saved_models/Xception_r

Epoch 00787: val_loss did not improve from 0.30675

Epoch 00788: val_loss improved from 0.30675 to 0.30675, saving model to saved_models/Xception_r

Epoch 00789: val_loss did not improve from 0.30675

Epoch 00790: val_loss improved from 0.30675 to 0.30670, saving model to saved_models/Xception_r

Epoch 00791: val_loss did not improve from 0.30670

Epoch 00792: val_loss did not improve from 0.30670

Epoch 00793: val_loss did not improve from 0.30670

Epoch 00794: val_loss improved from 0.30670 to 0.30667, saving model to saved_models/Xception_r

Epoch 00795: val_loss did not improve from 0.30667

Epoch 00796: val_loss did not improve from 0.30667

Epoch 00797: val_loss did not improve from 0.30667

Epoch 00798: val_loss did not improve from 0.30667

Epoch 00799: val_loss improved from 0.30667 to 0.30666, saving model to saved_models/Xception_r

Epoch 00800: val_loss improved from 0.30666 to 0.30664, saving model to saved_models/Xception_r

Epoch 00801: val_loss did not improve from 0.30664

Epoch 00802: val_loss improved from 0.30664 to 0.30661, saving model to saved_models/Xception_r

Epoch 00803: val_loss improved from 0.30661 to 0.30650, saving model to saved_models/Xception_r

Epoch 00804: val_loss did not improve from 0.30650

Epoch 00805: val_loss did not improve from 0.30650

Epoch 00806: val_loss did not improve from 0.30650

Epoch 00807: val_loss did not improve from 0.30650

Epoch 00808: val_loss did not improve from 0.30650

Epoch 00809: val_loss did not improve from 0.30650

Epoch 00810: val_loss did not improve from 0.30650

Epoch 00811: val_loss did not improve from 0.30650

Epoch 00812: val_loss improved from 0.30650 to 0.30650, saving model to saved_models/Xception_r

Epoch 00813: val_loss improved from 0.30650 to 0.30647, saving model to saved_models/Xception_r

Epoch 00814: val_loss did not improve from 0.30647

Epoch 00815: val_loss did not improve from 0.30647

Epoch 00816: val_loss did not improve from 0.30647

Epoch 00817: val_loss did not improve from 0.30647

Epoch 00818: val_loss did not improve from 0.30647

Epoch 00819: val_loss did not improve from 0.30647

Epoch 00820: val_loss did not improve from 0.30647

Epoch 00821: val_loss improved from 0.30647 to 0.30645, saving model to saved_models/Xception_r

Epoch 00822: val_loss did not improve from 0.30645

Epoch 00823: val_loss did not improve from 0.30645

Epoch 00824: val_loss improved from 0.30645 to 0.30643, saving model to saved_models/Xception_r

Epoch 00825: val_loss did not improve from 0.30643

Epoch 00826: val_loss did not improve from 0.30643

Epoch 00827: val_loss did not improve from 0.30643

Epoch 00828: val_loss improved from 0.30643 to 0.30642, saving model to saved_models/Xception_r

Epoch 00829: val_loss did not improve from 0.30642

Epoch 00830: val_loss improved from 0.30642 to 0.30636, saving model to saved_models/Xception_r

Epoch 00831: val_loss did not improve from 0.30636

Epoch 00832: val_loss did not improve from 0.30636

Epoch 00833: val_loss improved from 0.30636 to 0.30634, saving model to saved_models/Xception_r

Epoch 00834: val_loss improved from 0.30634 to 0.30632, saving model to saved_models/Xception_r

Epoch 00835: val_loss did not improve from 0.30632

Epoch 00836: val_loss did not improve from 0.30632

Epoch 00837: val_loss did not improve from 0.30632

Epoch 00838: val_loss did not improve from 0.30632

Epoch 00839: val_loss improved from 0.30632 to 0.30632, saving model to saved_models/Xception_r

Epoch 00840: val_loss improved from 0.30632 to 0.30632, saving model to saved_models/Xception_r

Epoch 00841: val_loss did not improve from 0.30632

Epoch 00842: val_loss improved from 0.30632 to 0.30623, saving model to saved_models/Xception_r

Epoch 00843: val_loss did not improve from 0.30623

Epoch 00844: val_loss did not improve from 0.30623

Epoch 00845: val_loss did not improve from 0.30623

Epoch 00846: val_loss improved from 0.30623 to 0.30621, saving model to saved_models/Xception_r

Epoch 00847: val_loss did not improve from 0.30621

Epoch 00848: val_loss improved from 0.30621 to 0.30620, saving model to saved_models/Xception_r

Epoch 00849: val_loss did not improve from 0.30620

Epoch 00850: val_loss did not improve from 0.30620

Epoch 00851: val_loss did not improve from 0.30620

Epoch 00852: val_loss did not improve from 0.30620

Epoch 00853: val_loss did not improve from 0.30620

Epoch 00854: val_loss did not improve from 0.30620

Epoch 00855: val_loss did not improve from 0.30620

Epoch 00856: val_loss did not improve from 0.30620

Epoch 00857: val_loss did not improve from 0.30620

Epoch 00858: val_loss improved from 0.30620 to 0.30619, saving model to saved_models/Xception_r

Epoch 00859: val_loss did not improve from 0.30619

Epoch 00860: val_loss improved from 0.30619 to 0.30619, saving model to saved_models/Xception_r

Epoch 00861: val_loss did not improve from 0.30619

Epoch 00862: val_loss did not improve from 0.30619

Epoch 00863: val_loss improved from 0.30619 to 0.30616, saving model to saved_models/Xception_r

Epoch 00864: val_loss did not improve from 0.30616

Epoch 00865: val_loss did not improve from 0.30616

Epoch 00866: val_loss improved from 0.30616 to 0.30612, saving model to saved_models/Xception_r

Epoch 00867: val_loss did not improve from 0.30612

Epoch 00868: val_loss did not improve from 0.30612

Epoch 00869: val_loss did not improve from 0.30612

Epoch 00870: val_loss did not improve from 0.30612

Epoch 00871: val_loss did not improve from 0.30612

Epoch 00872: val_loss improved from 0.30612 to 0.30607, saving model to saved_models/Xception_r

Epoch 00873: val_loss did not improve from 0.30607

Epoch 00874: val_loss did not improve from 0.30607

Epoch 00875: val_loss did not improve from 0.30607

Epoch 00876: val_loss improved from 0.30607 to 0.30606, saving model to saved_models/Xception_r

Epoch 00877: val_loss did not improve from 0.30606

Epoch 00878: val_loss did not improve from 0.30606

Epoch 00879: val_loss did not improve from 0.30606

Epoch 00880: val_loss did not improve from 0.30606

Epoch 00881: val_loss did not improve from 0.30606

Epoch 00882: val_loss improved from 0.30606 to 0.30605, saving model to saved_models/Xception_r

Epoch 00883: val_loss improved from 0.30605 to 0.30603, saving model to saved_models/Xception_r

Epoch 00884: val_loss did not improve from 0.30603

Epoch 00885: val_loss did not improve from 0.30603

Epoch 00886: val_loss did not improve from 0.30603

Epoch 00887: val_loss did not improve from 0.30603

Epoch 00888: val_loss improved from 0.30603 to 0.30602, saving model to saved_models/Xception_r

Epoch 00889: val_loss did not improve from 0.30602

Epoch 00890: val_loss did not improve from 0.30602

Epoch 00891: val_loss did not improve from 0.30602

Epoch 00892: val_loss did not improve from 0.30602

Epoch 00893: val_loss did not improve from 0.30602

Epoch 00894: val_loss did not improve from 0.30602

Epoch 00895: val_loss did not improve from 0.30602

Epoch 00896: val_loss improved from 0.30602 to 0.30600, saving model to saved_models/Xception_r

Epoch 00897: val_loss did not improve from 0.30600

Epoch 00898: val_loss improved from 0.30600 to 0.30597, saving model to saved_models/Xception_r

Epoch 00899: val_loss did not improve from 0.30597

Epoch 00900: val_loss did not improve from 0.30597

Epoch 00901: val_loss did not improve from 0.30597

Epoch 00902: val_loss did not improve from 0.30597

Epoch 00903: val_loss did not improve from 0.30597

Epoch 00904: val_loss did not improve from 0.30597

Epoch 00905: val_loss did not improve from 0.30597

Epoch 00906: val_loss improved from 0.30597 to 0.30594, saving model to saved_models/Xception_r

Epoch 00907: val_loss did not improve from 0.30594

Epoch 00908: val_loss did not improve from 0.30594

Epoch 00909: val_loss did not improve from 0.30594

Epoch 00910: val_loss did not improve from 0.30594

Epoch 00911: val_loss did not improve from 0.30594

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Epoch 00913: val_loss did not improve from 0.30594

Epoch 00914: val_loss did not improve from 0.30594

Epoch 00915: val_loss did not improve from 0.30594

Epoch 00916: val_loss did not improve from 0.30594

Epoch 00917: val_loss improved from 0.30594 to 0.30593, saving model to saved_models/Xception_r

Epoch 00918: val_loss did not improve from 0.30593

Epoch 00919: val_loss did not improve from 0.30593

Epoch 00920: val_loss did not improve from 0.30593

Epoch 00921: val_loss did not improve from 0.30593

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Epoch 00929: val_loss did not improve from 0.30593

Epoch 00930: val_loss did not improve from 0.30593

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Epoch 00935: val_loss did not improve from 0.30593

Epoch 00936: val_loss did not improve from 0.30593

Epoch 00937: val_loss did not improve from 0.30593

Epoch 00938: val_loss did not improve from 0.30593

Epoch 00939: val_loss improved from 0.30593 to 0.30593, saving model to saved_models/Xception_r

Epoch 00940: val_loss improved from 0.30593 to 0.30591, saving model to saved_models/Xception_r

Epoch 00941: val_loss did not improve from 0.30591

Epoch 00942: val_loss did not improve from 0.30591

Epoch 00943: val_loss did not improve from 0.30591

Epoch 00944: val_loss did not improve from 0.30591

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Epoch 00950: val_loss did not improve from 0.30591

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Epoch 00961: val_loss did not improve from 0.30591

Epoch 00962: val_loss did not improve from 0.30591

Epoch 00963: val_loss did not improve from 0.30591

Epoch 00964: val_loss improved from 0.30591 to 0.30590, saving model to saved_models/Xception_r

Epoch 00965: val_loss did not improve from 0.30590

Epoch 00966: val_loss did not improve from 0.30590

Epoch 00967: val_loss did not improve from 0.30590

Epoch 00968: val_loss did not improve from 0.30590

Epoch 00969: val_loss did not improve from 0.30590

Epoch 00970: val_loss did not improve from 0.30590

Epoch 00971: val_loss did not improve from 0.30590

Epoch 00972: val_loss improved from 0.30590 to 0.30585, saving model to saved_models/Xception_r

Epoch 00973: val_loss did not improve from 0.30585

Epoch 00974: val_loss did not improve from 0.30585

Epoch 00975: val_loss did not improve from 0.30585

Epoch 00976: val_loss did not improve from 0.30585

Epoch 00977: val_loss did not improve from 0.30585

Epoch 00978: val_loss did not improve from 0.30585

Epoch 00979: val_loss did not improve from 0.30585

Epoch 00980: val_loss improved from 0.30585 to 0.30584, saving model to saved_models/Xception_r

Epoch 00981: val_loss did not improve from 0.30584

Epoch 00982: val_loss did not improve from 0.30584

Epoch 00983: val_loss did not improve from 0.30584

Epoch 00984: val_loss did not improve from 0.30584

Epoch 00985: val_loss did not improve from 0.30584
Epoch 00986: val_loss did not improve from 0.30584
Epoch 00987: val_loss did not improve from 0.30584
Epoch 00988: val_loss did not improve from 0.30584
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Epoch 00990: val_loss did not improve from 0.30584
Epoch 00991: val_loss did not improve from 0.30584
Epoch 00992: val_loss did not improve from 0.30584
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Epoch 00998: val_loss did not improve from 0.30584
Epoch 00999: val_loss did not improve from 0.30584
Epoch 01000: val_loss did not improve from 0.30584
Epoch 01001: val_loss did not improve from 0.30584
Epoch 01002: val_loss did not improve from 0.30584
Epoch 01003: val_loss did not improve from 0.30584
Epoch 01004: val_loss did not improve from 0.30584
Epoch 01005: val_loss did not improve from 0.30584
Epoch 01006: val_loss did not improve from 0.30584
Epoch 01007: val_loss did not improve from 0.30584
Epoch 01008: val_loss improved from 0.30584 to 0.30583, saving model to saved_models/Xception_r

Epoch 01009: val_loss did not improve from 0.30583

Epoch 01010: val_loss did not improve from 0.30583

Epoch 01011: val_loss did not improve from 0.30583

Epoch 01012: val_loss did not improve from 0.30583

Epoch 01013: val_loss did not improve from 0.30583

Epoch 01014: val_loss did not improve from 0.30583

Epoch 01015: val_loss did not improve from 0.30583

Epoch 01016: val_loss did not improve from 0.30583

Epoch 01017: val_loss did not improve from 0.30583

Epoch 01018: val_loss did not improve from 0.30583

Epoch 01019: val_loss did not improve from 0.30583

Epoch 01020: val_loss did not improve from 0.30583

Epoch 01021: val_loss improved from 0.30583 to 0.30581, saving model to saved_models/Xception_r

Epoch 01022: val_loss did not improve from 0.30581

Epoch 01023: val_loss did not improve from 0.30581

Epoch 01024: val_loss did not improve from 0.30581

Epoch 01025: val_loss did not improve from 0.30581

Epoch 01026: val_loss did not improve from 0.30581

Epoch 01027: val_loss did not improve from 0.30581

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Epoch 01031: val_loss did not improve from 0.30581

Epoch 01032: val_loss did not improve from 0.30581

Epoch 01033: val_loss did not improve from 0.30581

Epoch 01034: val_loss did not improve from 0.30581

Epoch 01035: val_loss improved from 0.30581 to 0.30580, saving model to saved_models/Xception_r

Epoch 01036: val_loss did not improve from 0.30580

Epoch 01037: val_loss did not improve from 0.30580

Epoch 01038: val_loss did not improve from 0.30580

Epoch 01039: val_loss did not improve from 0.30580

Epoch 01040: val_loss did not improve from 0.30580

Epoch 01041: val_loss improved from 0.30580 to 0.30575, saving model to saved_models/Xception_r

Epoch 01042: val_loss did not improve from 0.30575

Epoch 01043: val_loss did not improve from 0.30575

Epoch 01044: val_loss did not improve from 0.30575

Epoch 01045: val_loss did not improve from 0.30575

Epoch 01046: val_loss did not improve from 0.30575

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Epoch 01060: val_loss did not improve from 0.30575

Epoch 01061: val_loss did not improve from 0.30575

Epoch 01062: val_loss did not improve from 0.30575

Epoch 01063: val_loss did not improve from 0.30575

Epoch 01064: val_loss improved from 0.30575 to 0.30574, saving model to saved_models/Xception_r

Epoch 01065: val_loss did not improve from 0.30574

Epoch 01066: val_loss improved from 0.30574 to 0.30569, saving model to saved_models/Xception_r

Epoch 01067: val_loss did not improve from 0.30569

Epoch 01068: val_loss did not improve from 0.30569

Epoch 01069: val_loss did not improve from 0.30569

Epoch 01070: val_loss did not improve from 0.30569

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Epoch 01080: val_loss did not improve from 0.30569

Epoch 01081: val_loss did not improve from 0.30569

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Epoch 01097: val_loss did not improve from 0.30569

Epoch 01098: val_loss did not improve from 0.30569

Epoch 01099: val_loss improved from 0.30569 to 0.30566, saving model to saved_models/Xception_r

Epoch 01100: val_loss did not improve from 0.30566

Epoch 01101: val_loss improved from 0.30566 to 0.30565, saving model to saved_models/Xception_r

Epoch 01102: val_loss did not improve from 0.30565

Epoch 01103: val_loss did not improve from 0.30565

Epoch 01104: val_loss did not improve from 0.30565

Epoch 01105: val_loss did not improve from 0.30565

Epoch 01106: val_loss did not improve from 0.30565

Epoch 01107: val_loss did not improve from 0.30565

Epoch 01108: val_loss did not improve from 0.30565

Epoch 01109: val_loss did not improve from 0.30565

Epoch 01110: val_loss did not improve from 0.30565

Epoch 01111: val_loss did not improve from 0.30565

Epoch 01112: val_loss did not improve from 0.30565

Epoch 01113: val_loss improved from 0.30565 to 0.30564, saving model to saved_models/Xception_r

Epoch 01114: val_loss did not improve from 0.30564

Epoch 01115: val_loss did not improve from 0.30564

Epoch 01116: val_loss did not improve from 0.30564

Epoch 01117: val_loss did not improve from 0.30564

Epoch 01118: val_loss did not improve from 0.30564

Epoch 01119: val_loss did not improve from 0.30564

Epoch 01120: val_loss did not improve from 0.30564

Epoch 01121: val_loss did not improve from 0.30564

Epoch 01122: val_loss did not improve from 0.30564

Epoch 01123: val_loss did not improve from 0.30564

Epoch 01124: val_loss did not improve from 0.30564

Epoch 01125: val_loss did not improve from 0.30564

Epoch 01126: val_loss did not improve from 0.30564

Epoch 01127: val_loss did not improve from 0.30564

Epoch 01128: val_loss did not improve from 0.30564

Epoch 01129: val_loss did not improve from 0.30564

Epoch 01130: val_loss did not improve from 0.30564

Epoch 01131: val_loss did not improve from 0.30564

Epoch 01132: val_loss did not improve from 0.30564

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Epoch 01139: val_loss did not improve from 0.30564

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Epoch 01141: val_loss did not improve from 0.30564

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Epoch 01145: val_loss did not improve from 0.30564

Epoch 01146: val_loss did not improve from 0.30564

Epoch 01147: val_loss improved from 0.30564 to 0.30563, saving model to saved_models/Xception_r

Epoch 01148: val_loss did not improve from 0.30563

Epoch 01149: val_loss did not improve from 0.30563

Epoch 01150: val_loss did not improve from 0.30563

Epoch 01151: val_loss did not improve from 0.30563

Epoch 01152: val_loss did not improve from 0.30563

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Epoch 01160: val_loss did not improve from 0.30563

Epoch 01161: val_loss did not improve from 0.30563

Epoch 01162: val_loss did not improve from 0.30563

Epoch 01163: val_loss did not improve from 0.30563

Epoch 01164: val_loss did not improve from 0.30563

Epoch 01165: val_loss did not improve from 0.30563

Epoch 01166: val_loss did not improve from 0.30563

Epoch 01167: val_loss did not improve from 0.30563

Epoch 01168: val_loss did not improve from 0.30563

Epoch 01169: val_loss did not improve from 0.30563

Epoch 01170: val_loss did not improve from 0.30563

Epoch 01171: val_loss did not improve from 0.30563

Epoch 01172: val_loss did not improve from 0.30563

Epoch 01173: val_loss did not improve from 0.30563

Epoch 01174: val_loss did not improve from 0.30563

Epoch 01175: val_loss improved from 0.30563 to 0.30563, saving model to saved_models/Xception_r

Epoch 01176: val_loss improved from 0.30563 to 0.30560, saving model to saved_models/Xception_r

Epoch 01177: val_loss did not improve from 0.30560

Epoch 01178: val_loss did not improve from 0.30560

Epoch 01179: val_loss did not improve from 0.30560

Epoch 01180: val_loss improved from 0.30560 to 0.30556, saving model to saved_models/Xception_r

Epoch 01181: val_loss did not improve from 0.30556

Epoch 01182: val_loss did not improve from 0.30556

Epoch 01183: val_loss did not improve from 0.30556

Epoch 01184: val_loss did not improve from 0.30556

Epoch 01185: val_loss did not improve from 0.30556

Epoch 01186: val_loss did not improve from 0.30556

Epoch 01187: val_loss did not improve from 0.30556

Epoch 01188: val_loss improved from 0.30556 to 0.30555, saving model to saved_models/Xception_r

Epoch 01189: val_loss did not improve from 0.30555

Epoch 01190: val_loss did not improve from 0.30555

Epoch 01191: val_loss did not improve from 0.30555

Epoch 01192: val_loss did not improve from 0.30555

Epoch 01193: val_loss did not improve from 0.30555

Epoch 01194: val_loss did not improve from 0.30555

Epoch 01195: val_loss did not improve from 0.30555

Epoch 01196: val_loss did not improve from 0.30555

Epoch 01197: val_loss did not improve from 0.30555

Epoch 01198: val_loss did not improve from 0.30555

Epoch 01199: val_loss did not improve from 0.30555

Epoch 01200: val_loss did not improve from 0.30555

Epoch 01201: val_loss did not improve from 0.30555

Epoch 01202: val_loss did not improve from 0.30555

Epoch 01203: val_loss did not improve from 0.30555

Epoch 01204: val_loss did not improve from 0.30555

Epoch 01205: val_loss did not improve from 0.30555

Epoch 01206: val_loss did not improve from 0.30555

Epoch 01207: val_loss did not improve from 0.30555

Epoch 01208: val_loss did not improve from 0.30555

Epoch 01209: val_loss improved from 0.30555 to 0.30555, saving model to saved_models/Xception_r

Epoch 01210: val_loss did not improve from 0.30555

Epoch 01211: val_loss improved from 0.30555 to 0.30550, saving model to saved_models/Xception_r

Epoch 01212: val_loss did not improve from 0.30550

Epoch 01213: val_loss did not improve from 0.30550

Epoch 01214: val_loss did not improve from 0.30550

Epoch 01215: val_loss improved from 0.30550 to 0.30549, saving model to saved_models/Xception_r

Epoch 01216: val_loss did not improve from 0.30549

Epoch 01217: val_loss improved from 0.30549 to 0.30547, saving model to saved_models/Xception_r

Epoch 01218: val_loss did not improve from 0.30547

Epoch 01219: val_loss did not improve from 0.30547

Epoch 01220: val_loss did not improve from 0.30547

Epoch 01221: val_loss did not improve from 0.30547

Epoch 01222: val_loss improved from 0.30547 to 0.30546, saving model to saved_models/Xception_r

Epoch 01223: val_loss did not improve from 0.30546

Epoch 01224: val_loss did not improve from 0.30546

Epoch 01225: val_loss did not improve from 0.30546

Epoch 01226: val_loss did not improve from 0.30546

Epoch 01227: val_loss improved from 0.30546 to 0.30545, saving model to saved_models/Xception_r

Epoch 01228: val_loss did not improve from 0.30545

Epoch 01229: val_loss did not improve from 0.30545

Epoch 01230: val_loss did not improve from 0.30545

Epoch 01231: val_loss did not improve from 0.30545

Epoch 01232: val_loss improved from 0.30545 to 0.30539, saving model to saved_models/Xception_r

Epoch 01233: val_loss did not improve from 0.30539

Epoch 01234: val_loss did not improve from 0.30539

Epoch 01235: val_loss did not improve from 0.30539

Epoch 01236: val_loss improved from 0.30539 to 0.30539, saving model to saved_models/Xception_r

Epoch 01237: val_loss did not improve from 0.30539

Epoch 01238: val_loss did not improve from 0.30539

Epoch 01239: val_loss did not improve from 0.30539

Epoch 01240: val_loss improved from 0.30539 to 0.30536, saving model to saved_models/Xception_r

Epoch 01241: val_loss did not improve from 0.30536

Epoch 01242: val_loss did not improve from 0.30536

Epoch 01243: val_loss did not improve from 0.30536

Epoch 01244: val_loss did not improve from 0.30536

Epoch 01245: val_loss did not improve from 0.30536

Epoch 01246: val_loss did not improve from 0.30536

Epoch 01247: val_loss did not improve from 0.30536

Epoch 01248: val_loss did not improve from 0.30536

Epoch 01249: val_loss did not improve from 0.30536

Epoch 01250: val_loss improved from 0.30536 to 0.30534, saving model to saved_models/Xception_r

Epoch 01251: val_loss did not improve from 0.30534

Epoch 01252: val_loss did not improve from 0.30534

Epoch 01253: val_loss did not improve from 0.30534

Epoch 01254: val_loss improved from 0.30534 to 0.30533, saving model to saved_models/Xception_r

Epoch 01255: val_loss did not improve from 0.30533

Epoch 01256: val_loss improved from 0.30533 to 0.30532, saving model to saved_models/Xception_r

Epoch 01257: val_loss did not improve from 0.30532

Epoch 01258: val_loss did not improve from 0.30532

Epoch 01259: val_loss did not improve from 0.30532

Epoch 01260: val_loss improved from 0.30532 to 0.30529, saving model to saved_models/Xception_r

Epoch 01261: val_loss did not improve from 0.30529

Epoch 01262: val_loss did not improve from 0.30529

Epoch 01263: val_loss did not improve from 0.30529

Epoch 01264: val_loss did not improve from 0.30529

Epoch 01265: val_loss did not improve from 0.30529

Epoch 01266: val_loss did not improve from 0.30529

Epoch 01267: val_loss did not improve from 0.30529

Epoch 01268: val_loss improved from 0.30529 to 0.30527, saving model to saved_models/Xception_r

Epoch 01269: val_loss did not improve from 0.30527

Epoch 01270: val_loss did not improve from 0.30527

Epoch 01271: val_loss improved from 0.30527 to 0.30526, saving model to saved_models/Xception_r

Epoch 01272: val_loss did not improve from 0.30526

Epoch 01273: val_loss improved from 0.30526 to 0.30524, saving model to saved_models/Xception_r

Epoch 01274: val_loss did not improve from 0.30524

Epoch 01275: val_loss did not improve from 0.30524

Epoch 01276: val_loss did not improve from 0.30524

Epoch 01277: val_loss improved from 0.30524 to 0.30522, saving model to saved_models/Xception_r

Epoch 01278: val_loss did not improve from 0.30522

Epoch 01279: val_loss did not improve from 0.30522

Epoch 01280: val_loss did not improve from 0.30522

Epoch 01281: val_loss did not improve from 0.30522

Epoch 01282: val_loss did not improve from 0.30522

Epoch 01283: val_loss did not improve from 0.30522

Epoch 01284: val_loss did not improve from 0.30522

Epoch 01285: val_loss did not improve from 0.30522

Epoch 01286: val_loss did not improve from 0.30522

Epoch 01287: val_loss did not improve from 0.30522

Epoch 01288: val_loss did not improve from 0.30522

Epoch 01289: val_loss improved from 0.30522 to 0.30520, saving model to saved_models/Xception_r

Epoch 01290: val_loss did not improve from 0.30520

Epoch 01291: val_loss did not improve from 0.30520

Epoch 01292: val_loss did not improve from 0.30520

Epoch 01293: val_loss did not improve from 0.30520

Epoch 01294: val_loss did not improve from 0.30520

Epoch 01295: val_loss did not improve from 0.30520

Epoch 01296: val_loss improved from 0.30520 to 0.30513, saving model to saved_models/Xception_r

Epoch 01297: val_loss did not improve from 0.30513

Epoch 01298: val_loss did not improve from 0.30513

Epoch 01299: val_loss did not improve from 0.30513

Epoch 01300: val_loss did not improve from 0.30513

Epoch 01301: val_loss did not improve from 0.30513

Epoch 01302: val_loss improved from 0.30513 to 0.30511, saving model to saved_models/Xception_r

Epoch 01303: val_loss did not improve from 0.30511

Epoch 01304: val_loss did not improve from 0.30511

Epoch 01305: val_loss did not improve from 0.30511

Epoch 01306: val_loss improved from 0.30511 to 0.30509, saving model to saved_models/Xception_r

Epoch 01307: val_loss did not improve from 0.30509

Epoch 01308: val_loss did not improve from 0.30509

Epoch 01309: val_loss did not improve from 0.30509

Epoch 01310: val_loss did not improve from 0.30509

Epoch 01311: val_loss did not improve from 0.30509

Epoch 01312: val_loss did not improve from 0.30509

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Epoch 01323: val_loss did not improve from 0.30509

Epoch 01324: val_loss did not improve from 0.30509

Epoch 01325: val_loss did not improve from 0.30509

Epoch 01326: val_loss improved from 0.30509 to 0.30509, saving model to saved_models/Xception_r

Epoch 01327: val_loss did not improve from 0.30509

Epoch 01328: val_loss improved from 0.30509 to 0.30508, saving model to saved_models/Xception_r

Epoch 01329: val_loss did not improve from 0.30508

Epoch 01330: val_loss did not improve from 0.30508

Epoch 01331: val_loss did not improve from 0.30508

Epoch 01332: val_loss did not improve from 0.30508

Epoch 01333: val_loss did not improve from 0.30508

Epoch 01334: val_loss improved from 0.30508 to 0.30507, saving model to saved_models/Xception_r

Epoch 01335: val_loss did not improve from 0.30507

Epoch 01336: val_loss did not improve from 0.30507

Epoch 01337: val_loss improved from 0.30507 to 0.30504, saving model to saved_models/Xception_r

Epoch 01338: val_loss did not improve from 0.30504

Epoch 01339: val_loss did not improve from 0.30504

Epoch 01340: val_loss did not improve from 0.30504

Epoch 01341: val_loss did not improve from 0.30504

Epoch 01342: val_loss improved from 0.30504 to 0.30501, saving model to saved_models/Xception_r

Epoch 01343: val_loss did not improve from 0.30501

Epoch 01344: val_loss did not improve from 0.30501

Epoch 01345: val_loss did not improve from 0.30501

Epoch 01346: val_loss did not improve from 0.30501

Epoch 01347: val_loss did not improve from 0.30501

Epoch 01348: val_loss did not improve from 0.30501

Epoch 01349: val_loss did not improve from 0.30501

Epoch 01350: val_loss did not improve from 0.30501

Epoch 01351: val_loss improved from 0.30501 to 0.30501, saving model to saved_models/Xception_r

Epoch 01352: val_loss did not improve from 0.30501

Epoch 01353: val_loss improved from 0.30501 to 0.30498, saving model to saved_models/Xception_r

Epoch 01354: val_loss did not improve from 0.30498

Epoch 01355: val_loss did not improve from 0.30498

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Epoch 01361: val_loss did not improve from 0.30498

Epoch 01362: val_loss did not improve from 0.30498

Epoch 01363: val_loss did not improve from 0.30498

Epoch 01364: val_loss improved from 0.30498 to 0.30497, saving model to saved_models/Xception_r

Epoch 01365: val_loss did not improve from 0.30497

Epoch 01366: val_loss did not improve from 0.30497

Epoch 01367: val_loss did not improve from 0.30497

Epoch 01368: val_loss did not improve from 0.30497

Epoch 01369: val_loss did not improve from 0.30497

Epoch 01370: val_loss improved from 0.30497 to 0.30496, saving model to saved_models/Xception_r

Epoch 01371: val_loss did not improve from 0.30496

Epoch 01372: val_loss improved from 0.30496 to 0.30495, saving model to saved_models/Xception_r

Epoch 01373: val_loss did not improve from 0.30495

Epoch 01374: val_loss did not improve from 0.30495

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Epoch 01379: val_loss did not improve from 0.30495

Epoch 01380: val_loss improved from 0.30495 to 0.30490, saving model to saved_models/Xception_r

Epoch 01381: val_loss did not improve from 0.30490

Epoch 01382: val_loss did not improve from 0.30490

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Epoch 01388: val_loss did not improve from 0.30490

Epoch 01389: val_loss did not improve from 0.30490

Epoch 01390: val_loss did not improve from 0.30490

Epoch 01391: val_loss improved from 0.30490 to 0.30488, saving model to saved_models/Xception_r

Epoch 01392: val_loss did not improve from 0.30488

Epoch 01393: val_loss did not improve from 0.30488

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Epoch 01397: val_loss did not improve from 0.30488

Epoch 01398: val_loss did not improve from 0.30488

Epoch 01399: val_loss improved from 0.30488 to 0.30488, saving model to saved_models/Xception_r

Epoch 01400: val_loss did not improve from 0.30488

Epoch 01401: val_loss improved from 0.30488 to 0.30484, saving model to saved_models/Xception_r

Epoch 01402: val_loss did not improve from 0.30484

Epoch 01403: val_loss did not improve from 0.30484

Epoch 01404: val_loss did not improve from 0.30484

Epoch 01405: val_loss did not improve from 0.30484

Epoch 01406: val_loss did not improve from 0.30484

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Epoch 01408: val_loss did not improve from 0.30484

Epoch 01409: val_loss did not improve from 0.30484

Epoch 01410: val_loss did not improve from 0.30484

Epoch 01411: val_loss improved from 0.30484 to 0.30483, saving model to saved_models/Xception_r

Epoch 01412: val_loss did not improve from 0.30483

Epoch 01413: val_loss improved from 0.30483 to 0.30483, saving model to saved_models/Xception_r

Epoch 01414: val_loss did not improve from 0.30483

Epoch 01415: val_loss did not improve from 0.30483

Epoch 01416: val_loss did not improve from 0.30483

Epoch 01417: val_loss improved from 0.30483 to 0.30482, saving model to saved_models/Xception_r

Epoch 01418: val_loss did not improve from 0.30482

Epoch 01419: val_loss improved from 0.30482 to 0.30482, saving model to saved_models/Xception_r

Epoch 01420: val_loss did not improve from 0.30482

Epoch 01421: val_loss improved from 0.30482 to 0.30481, saving model to saved_models/Xception_r

Epoch 01422: val_loss did not improve from 0.30481

Epoch 01423: val_loss did not improve from 0.30481

Epoch 01424: val_loss did not improve from 0.30481

Epoch 01425: val_loss improved from 0.30481 to 0.30478, saving model to saved_models/Xception_r

Epoch 01426: val_loss did not improve from 0.30478

Epoch 01427: val_loss did not improve from 0.30478

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Epoch 01441: val_loss did not improve from 0.30478

Epoch 01442: val_loss did not improve from 0.30478

Epoch 01443: val_loss improved from 0.30478 to 0.30476, saving model to saved_models/Xception_r

Epoch 01444: val_loss did not improve from 0.30476

Epoch 01445: val_loss did not improve from 0.30476

Epoch 01446: val_loss did not improve from 0.30476

Epoch 01447: val_loss did not improve from 0.30476

Epoch 01448: val_loss did not improve from 0.30476

Epoch 01449: val_loss improved from 0.30476 to 0.30475, saving model to saved_models/Xception_r

Epoch 01450: val_loss improved from 0.30475 to 0.30472, saving model to saved_models/Xception_r

Epoch 01451: val_loss did not improve from 0.30472

Epoch 01452: val_loss did not improve from 0.30472

Epoch 01453: val_loss did not improve from 0.30472

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Epoch 01461: val_loss did not improve from 0.30472

Epoch 01462: val_loss improved from 0.30472 to 0.30470, saving model to saved_models/Xception_r

Epoch 01463: val_loss did not improve from 0.30470

Epoch 01464: val_loss did not improve from 0.30470

Epoch 01465: val_loss did not improve from 0.30470

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Epoch 01471: val_loss did not improve from 0.30470

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Epoch 01484: val_loss did not improve from 0.30470

Epoch 01485: val_loss improved from 0.30470 to 0.30468, saving model to saved_models/Xception_r

Epoch 01486: val_loss did not improve from 0.30468

Epoch 01487: val_loss improved from 0.30468 to 0.30467, saving model to saved_models/Xception_r

Epoch 01488: val_loss did not improve from 0.30467

Epoch 01489: val_loss did not improve from 0.30467

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Epoch 01491: val_loss did not improve from 0.30467

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Epoch 01494: val_loss did not improve from 0.30467

Epoch 01495: val_loss improved from 0.30467 to 0.30465, saving model to saved_models/Xception_r

Epoch 01496: val_loss did not improve from 0.30465

Epoch 01497: val_loss improved from 0.30465 to 0.30459, saving model to saved_models/Xception_r

Epoch 01498: val_loss did not improve from 0.30459

Epoch 01499: val_loss did not improve from 0.30459

Epoch 01500: val_loss did not improve from 0.30459

Epoch 01501: val_loss did not improve from 0.30459

Epoch 01502: val_loss did not improve from 0.30459

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Epoch 01506: val_loss did not improve from 0.30459

Epoch 01507: val_loss improved from 0.30459 to 0.30458, saving model to saved_models/Xception_r

Epoch 01508: val_loss did not improve from 0.30458

Epoch 01509: val_loss did not improve from 0.30458

Epoch 01510: val_loss did not improve from 0.30458

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Epoch 01532: val_loss did not improve from 0.30458

Epoch 01533: val_loss did not improve from 0.30458

Epoch 01534: val_loss improved from 0.30458 to 0.30457, saving model to saved_models/Xception_r

Epoch 01535: val_loss did not improve from 0.30457

Epoch 01536: val_loss improved from 0.30457 to 0.30454, saving model to saved_models/Xception_r

Epoch 01537: val_loss did not improve from 0.30454

Epoch 01538: val_loss did not improve from 0.30454

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Epoch 01547: val_loss did not improve from 0.30454

Epoch 01548: val_loss did not improve from 0.30454

Epoch 01549: val_loss improved from 0.30454 to 0.30454, saving model to saved_models/Xception_r

Epoch 01550: val_loss did not improve from 0.30454

Epoch 01551: val_loss did not improve from 0.30454

Epoch 01552: val_loss did not improve from 0.30454

Epoch 01553: val_loss improved from 0.30454 to 0.30453, saving model to saved_models/Xception_r

Epoch 01554: val_loss improved from 0.30453 to 0.30453, saving model to saved_models/Xception_r

Epoch 01555: val_loss improved from 0.30453 to 0.30451, saving model to saved_models/Xception_r

Epoch 01556: val_loss did not improve from 0.30451

Epoch 01557: val_loss did not improve from 0.30451

Epoch 01558: val_loss improved from 0.30451 to 0.30450, saving model to saved_models/Xception_r

Epoch 01559: val_loss did not improve from 0.30450

Epoch 01560: val_loss did not improve from 0.30450

Epoch 01561: val_loss improved from 0.30450 to 0.30446, saving model to saved_models/Xception_r

Epoch 01562: val_loss did not improve from 0.30446

Epoch 01563: val_loss did not improve from 0.30446

Epoch 01564: val_loss did not improve from 0.30446

Epoch 01565: val_loss did not improve from 0.30446

Epoch 01566: val_loss did not improve from 0.30446

Epoch 01567: val_loss did not improve from 0.30446

Epoch 01568: val_loss did not improve from 0.30446

Epoch 01569: val_loss improved from 0.30446 to 0.30443, saving model to saved_models/Xception_r

Epoch 01570: val_loss did not improve from 0.30443

Epoch 01571: val_loss did not improve from 0.30443

Epoch 01572: val_loss did not improve from 0.30443

Epoch 01573: val_loss did not improve from 0.30443

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Epoch 01580: val_loss did not improve from 0.30443

Epoch 01581: val_loss improved from 0.30443 to 0.30442, saving model to saved_models/Xception_r

Epoch 01582: val_loss did not improve from 0.30442

Epoch 01583: val_loss improved from 0.30442 to 0.30441, saving model to saved_models/Xception_r

Epoch 01584: val_loss improved from 0.30441 to 0.30439, saving model to saved_models/Xception_r

Epoch 01585: val_loss improved from 0.30439 to 0.30437, saving model to saved_models/Xception_r

Epoch 01586: val_loss did not improve from 0.30437

Epoch 01587: val_loss did not improve from 0.30437

Epoch 01588: val_loss did not improve from 0.30437

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Epoch 01600: val_loss did not improve from 0.30437

Epoch 01601: val_loss did not improve from 0.30437

Epoch 01602: val_loss did not improve from 0.30437

Epoch 01603: val_loss did not improve from 0.30437

Epoch 01604: val_loss did not improve from 0.30437

Epoch 01605: val_loss improved from 0.30437 to 0.30435, saving model to saved_models/Xception_r

Epoch 01606: val_loss improved from 0.30435 to 0.30435, saving model to saved_models/Xception_r

Epoch 01607: val_loss improved from 0.30435 to 0.30434, saving model to saved_models/Xception_r

Epoch 01608: val_loss did not improve from 0.30434

Epoch 01609: val_loss did not improve from 0.30434

Epoch 01610: val_loss improved from 0.30434 to 0.30433, saving model to saved_models/Xception_r

Epoch 01611: val_loss did not improve from 0.30433

Epoch 01612: val_loss did not improve from 0.30433

Epoch 01613: val_loss did not improve from 0.30433

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Epoch 01622: val_loss did not improve from 0.30433

Epoch 01623: val_loss improved from 0.30433 to 0.30433, saving model to saved_models/Xception_r

Epoch 01624: val_loss did not improve from 0.30433

Epoch 01625: val_loss did not improve from 0.30433

Epoch 01626: val_loss did not improve from 0.30433

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Epoch 01631: val_loss did not improve from 0.30433

Epoch 01632: val_loss did not improve from 0.30433

Epoch 01633: val_loss improved from 0.30433 to 0.30431, saving model to saved_models/Xception_r

Epoch 01634: val_loss did not improve from 0.30431

Epoch 01635: val_loss did not improve from 0.30431

Epoch 01636: val_loss did not improve from 0.30431

Epoch 01637: val_loss did not improve from 0.30431

Epoch 01638: val_loss did not improve from 0.30431

Epoch 01639: val_loss did not improve from 0.30431

Epoch 01640: val_loss did not improve from 0.30431

Epoch 01641: val_loss improved from 0.30431 to 0.30429, saving model to saved_models/Xception_r

Epoch 01642: val_loss did not improve from 0.30429

Epoch 01643: val_loss improved from 0.30429 to 0.30426, saving model to saved_models/Xception_r

Epoch 01644: val_loss did not improve from 0.30426

Epoch 01645: val_loss improved from 0.30426 to 0.30425, saving model to saved_models/Xception_r

Epoch 01646: val_loss did not improve from 0.30425

Epoch 01647: val_loss did not improve from 0.30425

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Epoch 01659: val_loss did not improve from 0.30425

Epoch 01660: val_loss did not improve from 0.30425

Epoch 01661: val_loss improved from 0.30425 to 0.30425, saving model to saved_models/Xception_r

Epoch 01662: val_loss did not improve from 0.30425

Epoch 01663: val_loss did not improve from 0.30425

Epoch 01664: val_loss did not improve from 0.30425

Epoch 01665: val_loss did not improve from 0.30425

Epoch 01666: val_loss did not improve from 0.30425

Epoch 01667: val_loss did not improve from 0.30425

Epoch 01668: val_loss did not improve from 0.30425

Epoch 01669: val_loss improved from 0.30425 to 0.30423, saving model to saved_models/Xception_r

Epoch 01670: val_loss improved from 0.30423 to 0.30422, saving model to saved_models/Xception_r

Epoch 01671: val_loss did not improve from 0.30422

Epoch 01672: val_loss improved from 0.30422 to 0.30420, saving model to saved_models/Xception_r

Epoch 01673: val_loss did not improve from 0.30420

Epoch 01674: val_loss did not improve from 0.30420

Epoch 01675: val_loss did not improve from 0.30420

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Epoch 01681: val_loss did not improve from 0.30420

Epoch 01682: val_loss improved from 0.30420 to 0.30420, saving model to saved_models/Xception_r

Epoch 01683: val_loss did not improve from 0.30420

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Epoch 01697: val_loss did not improve from 0.30420

Epoch 01698: val_loss improved from 0.30420 to 0.30418, saving model to saved_models/Xception_r

Epoch 01699: val_loss did not improve from 0.30418

Epoch 01700: val_loss did not improve from 0.30418

Epoch 01701: val_loss improved from 0.30418 to 0.30417, saving model to saved_models/Xception_r

Epoch 01702: val_loss did not improve from 0.30417

Epoch 01703: val_loss improved from 0.30417 to 0.30416, saving model to saved_models/Xception_r

Epoch 01704: val_loss did not improve from 0.30416

Epoch 01705: val_loss did not improve from 0.30416
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Epoch 01730: val_loss improved from 0.30416 to 0.30416, saving model to saved_models/Xception_r

Epoch 01731: val_loss did not improve from 0.30416

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Epoch 01740: val_loss improved from 0.30416 to 0.30413, saving model to saved_models/Xception_r

Epoch 01741: val_loss did not improve from 0.30413

Epoch 01742: val_loss improved from 0.30413 to 0.30410, saving model to saved_models/Xception_r

Epoch 01743: val_loss did not improve from 0.30410

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Epoch 01766: val_loss improved from 0.30410 to 0.30408, saving model to saved_models/Xception_r

Epoch 01767: val_loss did not improve from 0.30408

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Epoch 01785: val_loss did not improve from 0.30408
Epoch 01786: val_loss improved from 0.30408 to 0.30403, saving model to saved_models/Xception_r
Epoch 01787: val_loss did not improve from 0.30403
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Epoch 01853: val_loss improved from 0.30403 to 0.30403, saving model to saved_models/Xception_r

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Epoch 01878: val_loss improved from 0.30403 to 0.30401, saving model to saved_models/Xception_r

Epoch 01879: val_loss did not improve from 0.30401

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Epoch 01902: val_loss improved from 0.30401 to 0.30400, saving model to saved_models/Xception_r

Epoch 01903: val_loss did not improve from 0.30400

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Epoch 01912: val_loss improved from 0.30400 to 0.30398, saving model to saved_models/Xception_r

Epoch 01913: val_loss did not improve from 0.30398

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Epoch 01934: val_loss improved from 0.30398 to 0.30398, saving model to saved_models/Xception_r

Epoch 01935: val_loss did not improve from 0.30398

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Epoch 01944: val_loss improved from 0.30398 to 0.30396, saving model to saved_models/Xception_r

Epoch 01945: val_loss did not improve from 0.30396
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Epoch 01995: val_loss improved from 0.30396 to 0.30396, saving model to saved_models/Xception_r

Epoch 01996: val_loss did not improve from 0.30396

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Epoch 02018: val_loss did not improve from 0.30396

Epoch 02019: val_loss improved from 0.30396 to 0.30394, saving model to saved_models/Xception_r

Epoch 02020: val_loss did not improve from 0.30394

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Epoch 02031: val_loss improved from 0.30394 to 0.30392, saving model to saved_models/Xception_r

Epoch 02032: val_loss did not improve from 0.30392

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Epoch 02063: val_loss improved from 0.30392 to 0.30391, saving model to saved_models/Xception_r

Epoch 02064: val_loss did not improve from 0.30391

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Epoch 02071: val_loss improved from 0.30391 to 0.30390, saving model to saved_models/Xception_r

Epoch 02072: val_loss did not improve from 0.30390

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Epoch 02081: val_loss did not improve from 0.30390

Epoch 02082: val_loss did not improve from 0.30390

Epoch 02083: val_loss improved from 0.30390 to 0.30387, saving model to saved_models/Xception_r

Epoch 02084: val_loss did not improve from 0.30387

Epoch 02085: val_loss did not improve from 0.30387

Epoch 02086: val_loss did not improve from 0.30387

Epoch 02087: val_loss did not improve from 0.30387

Epoch 02088: val_loss did not improve from 0.30387

Epoch 02089: val_loss did not improve from 0.30387
Epoch 02090: val_loss did not improve from 0.30387
Epoch 02091: val_loss did not improve from 0.30387
Epoch 02092: val_loss did not improve from 0.30387
Epoch 02093: val_loss did not improve from 0.30387
Epoch 02094: val_loss did not improve from 0.30387
Epoch 02095: val_loss did not improve from 0.30387
Epoch 02096: val_loss did not improve from 0.30387
Epoch 02097: val_loss did not improve from 0.30387
Epoch 02098: val_loss did not improve from 0.30387
Epoch 02099: val_loss did not improve from 0.30387
Epoch 02100: val_loss did not improve from 0.30387
Epoch 02101: val_loss did not improve from 0.30387
Epoch 02102: val_loss did not improve from 0.30387
Epoch 02103: val_loss did not improve from 0.30387
Epoch 02104: val_loss did not improve from 0.30387
Epoch 02105: val_loss did not improve from 0.30387
Epoch 02106: val_loss did not improve from 0.30387
Epoch 02107: val_loss did not improve from 0.30387
Epoch 02108: val_loss did not improve from 0.30387
Epoch 02109: val_loss did not improve from 0.30387
Epoch 02110: val_loss did not improve from 0.30387
Epoch 02111: val_loss did not improve from 0.30387
Epoch 02112: val_loss did not improve from 0.30387

Epoch 02113: val_loss did not improve from 0.30387

Epoch 02114: val_loss did not improve from 0.30387

Epoch 02115: val_loss did not improve from 0.30387

Epoch 02116: val_loss did not improve from 0.30387

Epoch 02117: val_loss did not improve from 0.30387

Epoch 02118: val_loss did not improve from 0.30387

Epoch 02119: val_loss did not improve from 0.30387

Epoch 02120: val_loss did not improve from 0.30387

Epoch 02121: val_loss improved from 0.30387 to 0.30386, saving model to saved_models/Xception_r

Epoch 02122: val_loss did not improve from 0.30386

Epoch 02123: val_loss did not improve from 0.30386

Epoch 02124: val_loss did not improve from 0.30386

Epoch 02125: val_loss improved from 0.30386 to 0.30384, saving model to saved_models/Xception_r

Epoch 02126: val_loss did not improve from 0.30384

Epoch 02127: val_loss improved from 0.30384 to 0.30382, saving model to saved_models/Xception_r

Epoch 02128: val_loss did not improve from 0.30382

Epoch 02129: val_loss did not improve from 0.30382

Epoch 02130: val_loss did not improve from 0.30382

Epoch 02131: val_loss improved from 0.30382 to 0.30382, saving model to saved_models/Xception_r

Epoch 02132: val_loss did not improve from 0.30382

Epoch 02133: val_loss did not improve from 0.30382

Epoch 02134: val_loss did not improve from 0.30382

Epoch 02135: val_loss did not improve from 0.30382

Epoch 02136: val_loss did not improve from 0.30382

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Epoch 02147: val_loss did not improve from 0.30382

Epoch 02148: val_loss did not improve from 0.30382

Epoch 02149: val_loss improved from 0.30382 to 0.30380, saving model to saved_models/Xception_r

Epoch 02150: val_loss did not improve from 0.30380

Epoch 02151: val_loss did not improve from 0.30380

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Epoch 02166: val_loss did not improve from 0.30380

Epoch 02167: val_loss did not improve from 0.30380

Epoch 02168: val_loss improved from 0.30380 to 0.30376, saving model to saved_models/Xception_r

Epoch 02169: val_loss did not improve from 0.30376

Epoch 02170: val_loss did not improve from 0.30376

Epoch 02171: val_loss did not improve from 0.30376

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Epoch 02200: val_loss did not improve from 0.30376

Epoch 02201: val_loss did not improve from 0.30376

Epoch 02202: val_loss did not improve from 0.30376

Epoch 02203: val_loss did not improve from 0.30376

Epoch 02204: val_loss improved from 0.30376 to 0.30375, saving model to saved_models/Xception_r

Epoch 02205: val_loss did not improve from 0.30375

Epoch 02206: val_loss did not improve from 0.30375

Epoch 02207: val_loss did not improve from 0.30375

Epoch 02208: val_loss did not improve from 0.30375

Epoch 02209: val_loss did not improve from 0.30375

Epoch 02210: val_loss did not improve from 0.30375

Epoch 02211: val_loss did not improve from 0.30375

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Epoch 02222: val_loss did not improve from 0.30375

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Epoch 02226: val_loss did not improve from 0.30375

Epoch 02227: val_loss did not improve from 0.30375

Epoch 02228: val_loss improved from 0.30375 to 0.30370, saving model to saved_models/Xception_r

Epoch 02229: val_loss did not improve from 0.30370

Epoch 02230: val_loss did not improve from 0.30370

Epoch 02231: val_loss improved from 0.30370 to 0.30370, saving model to saved_models/Xception_r

Epoch 02232: val_loss did not improve from 0.30370

Epoch 02233: val_loss did not improve from 0.30370

Epoch 02234: val_loss did not improve from 0.30370

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Epoch 02240: val_loss did not improve from 0.30370

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Epoch 02250: val_loss did not improve from 0.30370

Epoch 02251: val_loss did not improve from 0.30370

Epoch 02252: val_loss improved from 0.30370 to 0.30368, saving model to saved_models/Xception_r

Epoch 02253: val_loss did not improve from 0.30368

Epoch 02254: val_loss did not improve from 0.30368

Epoch 02255: val_loss did not improve from 0.30368

Epoch 02256: val_loss did not improve from 0.30368

Epoch 02257: val_loss did not improve from 0.30368

Epoch 02258: val_loss improved from 0.30368 to 0.30368, saving model to saved_models/Xception_r

Epoch 02259: val_loss did not improve from 0.30368

Epoch 02260: val_loss did not improve from 0.30368

Epoch 02261: val_loss did not improve from 0.30368

Epoch 02262: val_loss did not improve from 0.30368

Epoch 02263: val_loss did not improve from 0.30368

Epoch 02264: val_loss did not improve from 0.30368

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Epoch 02267: val_loss did not improve from 0.30368

Epoch 02268: val_loss did not improve from 0.30368

Epoch 02269: val_loss did not improve from 0.30368

Epoch 02270: val_loss improved from 0.30368 to 0.30367, saving model to saved_models/Xception_r

Epoch 02271: val_loss did not improve from 0.30367

Epoch 02272: val_loss did not improve from 0.30367

Epoch 02273: val_loss did not improve from 0.30367

Epoch 02274: val_loss did not improve from 0.30367

Epoch 02275: val_loss did not improve from 0.30367

Epoch 02276: val_loss improved from 0.30367 to 0.30366, saving model to saved_models/Xception_r

Epoch 02277: val_loss did not improve from 0.30366

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Epoch 02281: val_loss did not improve from 0.30366

Epoch 02282: val_loss did not improve from 0.30366

Epoch 02283: val_loss improved from 0.30366 to 0.30362, saving model to saved_models/Xception_r

Epoch 02284: val_loss did not improve from 0.30362

Epoch 02285: val_loss did not improve from 0.30362

Epoch 02286: val_loss did not improve from 0.30362

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Epoch 02298: val_loss did not improve from 0.30362

Epoch 02299: val_loss did not improve from 0.30362

Epoch 02300: val_loss did not improve from 0.30362

Epoch 02301: val_loss did not improve from 0.30362

Epoch 02302: val_loss improved from 0.30362 to 0.30360, saving model to saved_models/Xception_r

Epoch 02303: val_loss did not improve from 0.30360

Epoch 02304: val_loss did not improve from 0.30360

Epoch 02305: val_loss did not improve from 0.30360

Epoch 02306: val_loss did not improve from 0.30360

Epoch 02307: val_loss did not improve from 0.30360

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Epoch 02309: val_loss did not improve from 0.30360

Epoch 02310: val_loss did not improve from 0.30360

Epoch 02311: val_loss did not improve from 0.30360

Epoch 02312: val_loss did not improve from 0.30360

Epoch 02313: val_loss did not improve from 0.30360

Epoch 02314: val_loss improved from 0.30360 to 0.30357, saving model to saved_models/Xception_r

Epoch 02315: val_loss did not improve from 0.30357

Epoch 02316: val_loss improved from 0.30357 to 0.30357, saving model to saved_models/Xception_r

Epoch 02317: val_loss did not improve from 0.30357

Epoch 02318: val_loss did not improve from 0.30357

Epoch 02319: val_loss did not improve from 0.30357

Epoch 02320: val_loss did not improve from 0.30357

Epoch 02321: val_loss did not improve from 0.30357

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Epoch 02323: val_loss did not improve from 0.30357

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Epoch 02325: val_loss did not improve from 0.30357

Epoch 02326: val_loss did not improve from 0.30357

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Epoch 02329: val_loss did not improve from 0.30357
Epoch 02330: val_loss did not improve from 0.30357
Epoch 02331: val_loss did not improve from 0.30357
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Epoch 02341: val_loss did not improve from 0.30357
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Epoch 02349: val_loss did not improve from 0.30357
Epoch 02350: val_loss did not improve from 0.30357
Epoch 02351: val_loss did not improve from 0.30357
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Epoch 02359: val_loss did not improve from 0.30357

Epoch 02360: val_loss improved from 0.30357 to 0.30357, saving model to saved_models/Xception_r

Epoch 02361: val_loss did not improve from 0.30357

Epoch 02362: val_loss did not improve from 0.30357

Epoch 02363: val_loss did not improve from 0.30357

Epoch 02364: val_loss did not improve from 0.30357

Epoch 02365: val_loss did not improve from 0.30357

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Epoch 02367: val_loss did not improve from 0.30357

Epoch 02368: val_loss did not improve from 0.30357

Epoch 02369: val_loss did not improve from 0.30357

Epoch 02370: val_loss improved from 0.30357 to 0.30356, saving model to saved_models/Xception_r

Epoch 02371: val_loss did not improve from 0.30356

Epoch 02372: val_loss did not improve from 0.30356

Epoch 02373: val_loss did not improve from 0.30356

Epoch 02374: val_loss did not improve from 0.30356

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Epoch 02381: val_loss did not improve from 0.30356

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Epoch 02383: val_loss did not improve from 0.30356

Epoch 02384: val_loss did not improve from 0.30356

Epoch 02385: val_loss did not improve from 0.30356

Epoch 02386: val_loss improved from 0.30356 to 0.30354, saving model to saved_models/Xception_r

Epoch 02387: val_loss did not improve from 0.30354

Epoch 02388: val_loss did not improve from 0.30354

Epoch 02389: val_loss did not improve from 0.30354

Epoch 02390: val_loss improved from 0.30354 to 0.30352, saving model to saved_models/Xception_r

Epoch 02391: val_loss did not improve from 0.30352

Epoch 02392: val_loss did not improve from 0.30352

Epoch 02393: val_loss did not improve from 0.30352

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Epoch 02398: val_loss did not improve from 0.30352

Epoch 02399: val_loss did not improve from 0.30352

Epoch 02400: val_loss did not improve from 0.30352

Epoch 02401: val_loss did not improve from 0.30352

Epoch 02402: val_loss improved from 0.30352 to 0.30352, saving model to saved_models/Xception_r

Epoch 02403: val_loss did not improve from 0.30352

Epoch 02404: val_loss did not improve from 0.30352

Epoch 02405: val_loss did not improve from 0.30352

Epoch 02406: val_loss improved from 0.30352 to 0.30344, saving model to saved_models/Xception_r

Epoch 02407: val_loss did not improve from 0.30344

Epoch 02408: val_loss did not improve from 0.30344

Epoch 02409: val_loss did not improve from 0.30344

Epoch 02410: val_loss did not improve from 0.30344

Epoch 02411: val_loss did not improve from 0.30344

Epoch 02412: val_loss did not improve from 0.30344

Epoch 02413: val_loss did not improve from 0.30344

Epoch 02414: val_loss did not improve from 0.30344

Epoch 02415: val_loss did not improve from 0.30344

Epoch 02416: val_loss did not improve from 0.30344

Epoch 02417: val_loss did not improve from 0.30344

Epoch 02418: val_loss improved from 0.30344 to 0.30341, saving model to saved_models/Xception_r

Epoch 02419: val_loss did not improve from 0.30341

Epoch 02420: val_loss did not improve from 0.30341

Epoch 02421: val_loss did not improve from 0.30341

Epoch 02422: val_loss did not improve from 0.30341

Epoch 02423: val_loss did not improve from 0.30341

Epoch 02424: val_loss did not improve from 0.30341

Epoch 02425: val_loss did not improve from 0.30341

Epoch 02426: val_loss improved from 0.30341 to 0.30339, saving model to saved_models/Xception_r

Epoch 02427: val_loss improved from 0.30339 to 0.30338, saving model to saved_models/Xception_r

Epoch 02428: val_loss did not improve from 0.30338

Epoch 02429: val_loss did not improve from 0.30338

Epoch 02430: val_loss did not improve from 0.30338

Epoch 02431: val_loss improved from 0.30338 to 0.30338, saving model to saved_models/Xception_r

Epoch 02432: val_loss improved from 0.30338 to 0.30337, saving model to saved_models/Xception_r

Epoch 02433: val_loss improved from 0.30337 to 0.30333, saving model to saved_models/Xception_r

Epoch 02434: val_loss did not improve from 0.30333

Epoch 02435: val_loss improved from 0.30333 to 0.30332, saving model to saved_models/Xception_r

Epoch 02436: val_loss did not improve from 0.30332

Epoch 02437: val_loss did not improve from 0.30332

Epoch 02438: val_loss improved from 0.30332 to 0.30331, saving model to saved_models/Xception_r

Epoch 02439: val_loss improved from 0.30331 to 0.30330, saving model to saved_models/Xception_r

Epoch 02440: val_loss did not improve from 0.30330

Epoch 02441: val_loss did not improve from 0.30330

Epoch 02442: val_loss improved from 0.30330 to 0.30330, saving model to saved_models/Xception_r

Epoch 02443: val_loss improved from 0.30330 to 0.30321, saving model to saved_models/Xception_r

Epoch 02444: val_loss did not improve from 0.30321

Epoch 02445: val_loss did not improve from 0.30321

Epoch 02446: val_loss did not improve from 0.30321

Epoch 02447: val_loss did not improve from 0.30321

Epoch 02448: val_loss improved from 0.30321 to 0.30319, saving model to saved_models/Xception_r

Epoch 02449: val_loss did not improve from 0.30319

Epoch 02450: val_loss did not improve from 0.30319

Epoch 02451: val_loss did not improve from 0.30319

Epoch 02452: val_loss did not improve from 0.30319

Epoch 02453: val_loss did not improve from 0.30319

Epoch 02454: val_loss improved from 0.30319 to 0.30307, saving model to saved_models/Xception_r

Epoch 02455: val_loss did not improve from 0.30307

Epoch 02456: val_loss did not improve from 0.30307

Epoch 02457: val_loss did not improve from 0.30307

Epoch 02458: val_loss improved from 0.30307 to 0.30303, saving model to saved_models/Xception_r

Epoch 02459: val_loss did not improve from 0.30303

Epoch 02460: val_loss improved from 0.30303 to 0.30302, saving model to saved_models/Xception_r

Epoch 02461: val_loss did not improve from 0.30302

Epoch 02462: val_loss improved from 0.30302 to 0.30301, saving model to saved_models/Xception_r

Epoch 02463: val_loss did not improve from 0.30301

Epoch 02464: val_loss did not improve from 0.30301

Epoch 02465: val_loss did not improve from 0.30301

Epoch 02466: val_loss improved from 0.30301 to 0.30295, saving model to saved_models/Xception_r

Epoch 02467: val_loss did not improve from 0.30295

Epoch 02468: val_loss did not improve from 0.30295

Epoch 02469: val_loss improved from 0.30295 to 0.30294, saving model to saved_models/Xception_r

Epoch 02470: val_loss improved from 0.30294 to 0.30293, saving model to saved_models/Xception_r

Epoch 02471: val_loss did not improve from 0.30293

Epoch 02472: val_loss improved from 0.30293 to 0.30290, saving model to saved_models/Xception_r

Epoch 02473: val_loss improved from 0.30290 to 0.30289, saving model to saved_models/Xception_r

Epoch 02474: val_loss improved from 0.30289 to 0.30283, saving model to saved_models/Xception_r

Epoch 02475: val_loss did not improve from 0.30283

Epoch 02476: val_loss did not improve from 0.30283

Epoch 02477: val_loss did not improve from 0.30283

Epoch 02478: val_loss improved from 0.30283 to 0.30280, saving model to saved_models/Xception_r

Epoch 02479: val_loss did not improve from 0.30280

Epoch 02480: val_loss improved from 0.30280 to 0.30273, saving model to saved_models/Xception_r

Epoch 02481: val_loss did not improve from 0.30273

Epoch 02482: val_loss did not improve from 0.30273

Epoch 02483: val_loss did not improve from 0.30273

Epoch 02484: val_loss improved from 0.30273 to 0.30270, saving model to saved_models/Xception_r

Epoch 02485: val_loss did not improve from 0.30270

Epoch 02486: val_loss improved from 0.30270 to 0.30265, saving model to saved_models/Xception_r

Epoch 02487: val_loss did not improve from 0.30265

Epoch 02488: val_loss did not improve from 0.30265

Epoch 02489: val_loss did not improve from 0.30265

Epoch 02490: val_loss improved from 0.30265 to 0.30262, saving model to saved_models/Xception_r

Epoch 02491: val_loss did not improve from 0.30262

Epoch 02492: val_loss improved from 0.30262 to 0.30256, saving model to saved_models/Xception_r

Epoch 02493: val_loss improved from 0.30256 to 0.30253, saving model to saved_models/Xception_r

Epoch 02494: val_loss did not improve from 0.30253

Epoch 02495: val_loss did not improve from 0.30253

Epoch 02496: val_loss improved from 0.30253 to 0.30250, saving model to saved_models/Xception_r

Epoch 02497: val_loss did not improve from 0.30250

Epoch 02498: val_loss did not improve from 0.30250

Epoch 02499: val_loss did not improve from 0.30250

Epoch 02500: val_loss improved from 0.30250 to 0.30247, saving model to saved_models/Xception_r

Epoch 02501: val_loss did not improve from 0.30247

Epoch 02502: val_loss improved from 0.30247 to 0.30246, saving model to saved_models/Xception_r

Epoch 02503: val_loss improved from 0.30246 to 0.30246, saving model to saved_models/Xception_r

Epoch 02504: val_loss did not improve from 0.30246

Epoch 02505: val_loss improved from 0.30246 to 0.30242, saving model to saved_models/Xception_r

Epoch 02506: val_loss improved from 0.30242 to 0.30239, saving model to saved_models/Xception_r

Epoch 02507: val_loss did not improve from 0.30239

Epoch 02508: val_loss did not improve from 0.30239

Epoch 02509: val_loss improved from 0.30239 to 0.30235, saving model to saved_models/Xception_r

Epoch 02510: val_loss did not improve from 0.30235

Epoch 02511: val_loss did not improve from 0.30235

Epoch 02512: val_loss did not improve from 0.30235

Epoch 02513: val_loss improved from 0.30235 to 0.30233, saving model to saved_models/Xception_r

Epoch 02514: val_loss did not improve from 0.30233

Epoch 02515: val_loss did not improve from 0.30233

Epoch 02516: val_loss did not improve from 0.30233

Epoch 02517: val_loss improved from 0.30233 to 0.30230, saving model to saved_models/Xception_r

Epoch 02518: val_loss did not improve from 0.30230

Epoch 02519: val_loss improved from 0.30230 to 0.30226, saving model to saved_models/Xception_r

Epoch 02520: val_loss did not improve from 0.30226

Epoch 02521: val_loss did not improve from 0.30226

Epoch 02522: val_loss did not improve from 0.30226

Epoch 02523: val_loss did not improve from 0.30226

Epoch 02524: val_loss did not improve from 0.30226

Epoch 02525: val_loss improved from 0.30226 to 0.30226, saving model to saved_models/Xception_r

Epoch 02526: val_loss did not improve from 0.30226

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Epoch 02534: val_loss did not improve from 0.30226

Epoch 02535: val_loss improved from 0.30226 to 0.30218, saving model to saved_models/Xception_r

Epoch 02536: val_loss did not improve from 0.30218

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Epoch 03000: val_loss did not improve from 0.30218

```
Out[20]: <keras.callbacks.History at 0x7f5fc369a9b0>
```

0.7.5 Load the Model with the Best Validation Loss

```
In [21]: Xception_model.load_weights('saved_models/Xception_model.weights.best.hdf5')
```

0.7.6 Test the Model

```
In [22]: # get index of predicted dog breed for each image in test set
Xception_predictions = [np.argmax(Xception_model.predict(np.expand_dims(feature, axis=0))) for feature in test_features]

test_accuracy = 100*np.sum(np.array(Xception_predictions)==np.argmax(test_targets, axis=0))/len(test_targets)
print('Test accuracy: %.4f%%' % test_accuracy)
```

Test accuracy: 85.7656%

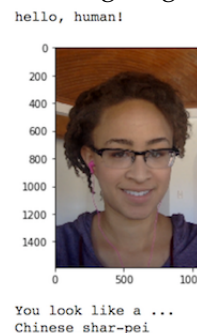
0.7.7 Predict Dog Breed with the Model

```
In [29]: from extract_bottleneck_features import *

# return dog breed from image path
def Xception_predict_breed(img_path):
    bottleneck_feature = extract_Xception(path_to_tensor(img_path))
    predicted_vector = Xception_model.predict(bottleneck_feature)
    return dog_names[np.argmax(predicted_vector)].split(".")[1]
```

0.8 Step 5: Write your Algorithm

Write an algorithm that accepts a file path to an image and first determines whether the image contains a human, dog, or neither. Then, - if a **dog** is detected in the image, return the predicted breed. - if a **human** is detected in the image, return the resembling dog breed. - if **neither** is



detected in the image, provide output that indicates an error.

```
In [30]: import os
```

```
#check if the provided path exist and has a supported extension
```

```

def check_file_path(img_path):
    if not os.path.isfile(img_path):
        return False, "The provided path doesn't exist!"
    extensions = [".jpg", ".jpeg", ".png", ".bmp"]
    for ext in extensions:
        if img_path.endswith(ext):
            return True, ""
    return False, 'The file is not supported, only "jpg", "jpeg", "png" and "bmp" are

def show_image(image_path):
    img = cv2.imread(image_path)
    img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
    plt.imshow(img)
    plt.show()

def dog_breed_prediction(image_path):
    path_is_ok, outputstring = check_file_path(image_path)
    if not path_is_ok:
        print(outputstring, "\n")
        return None
    is_human = human_detector(image_path)
    is_dog = dog_detector(image_path)
    if is_dog:
        print("Hello, dog!")
        breed = Xception_predict_breed(image_path)
        show_image(image_path)
        print("This is a {}".format(breed))
    elif is_human:
        print("Hello, human!")
        breed = Xception_predict_breed(image_path)
        show_image(image_path)
        print("You look like a ...\n{}".format(breed))
    else:
        print("Error, not able to detect humans or dogs in the provided picture!")
        show_image(image_path)

```

0.9 Step 6: Test Your Algorithm

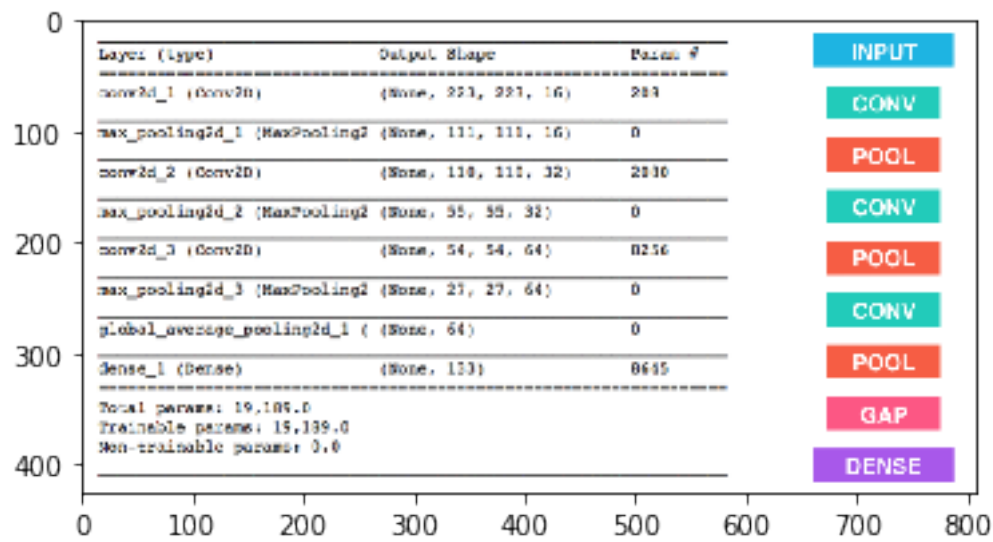
Test your algorithm at least six images on your computer. Feel free to use any images you like.

```

In [31]: for img in os.listdir("images"):
        dog_breed_prediction(os.path.join("images", img))
        print("It was a {}\n\n".format(img))

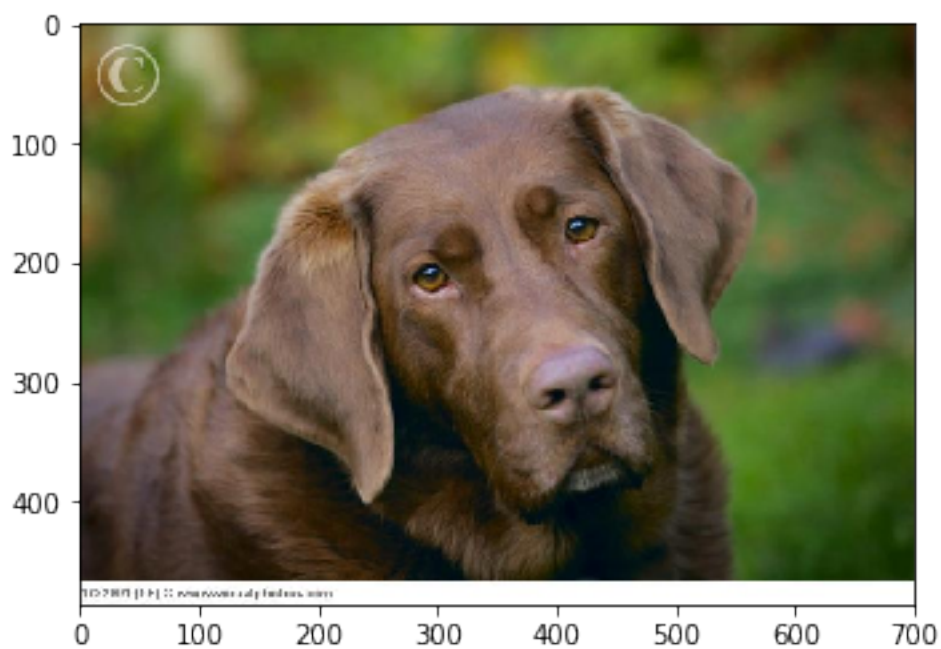
```

Error, not able to detect humans or dogs in the provided picture!



It was a sample_cnn.png

Hello, dog!



This is a Chesapeake_bay_retriever!
It was a Labrador_retriever_06455.jpg

Hello, dog!



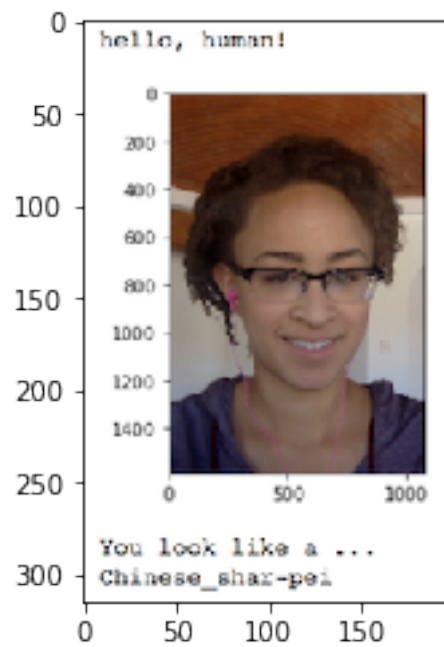
This is a Labrador_retriever!
It was a Labrador_retriever_06449.jpg

Hello, dog!



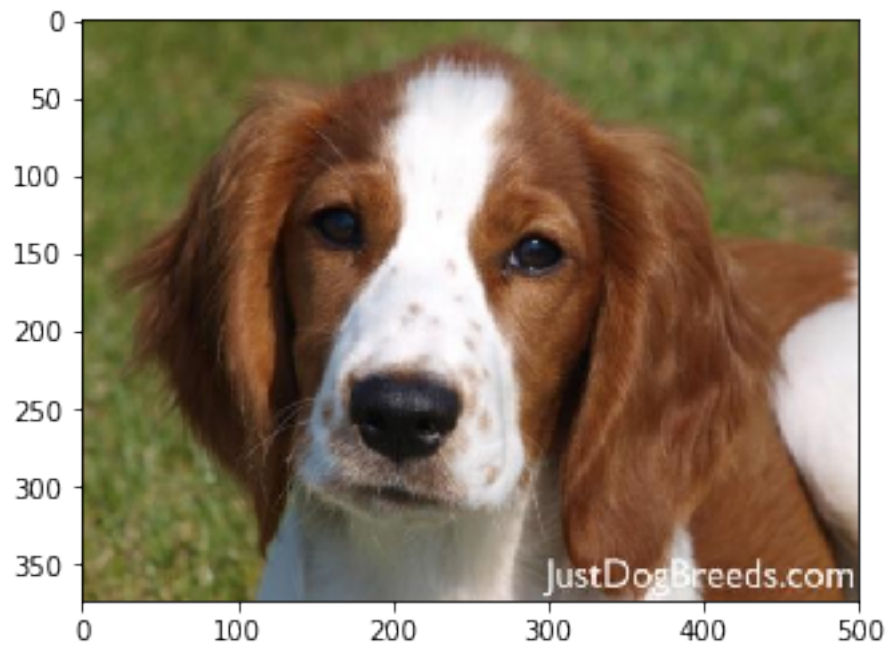
This is a Curly-coated_retriever!
 It was a American_water_spaniel_00648.jpg

Hello, human!



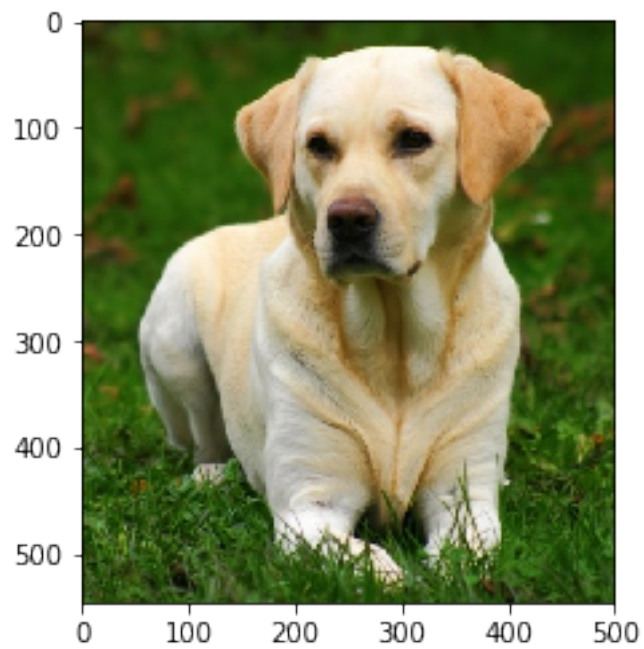
You look like a ...
American_staffordshire_terrier!
It was a sample_human_output.png

Hello, dog!



This is a Welsh_springer_spaniel!
It was a Welsh_springer_spaniel_08203.jpg

Hello, dog!



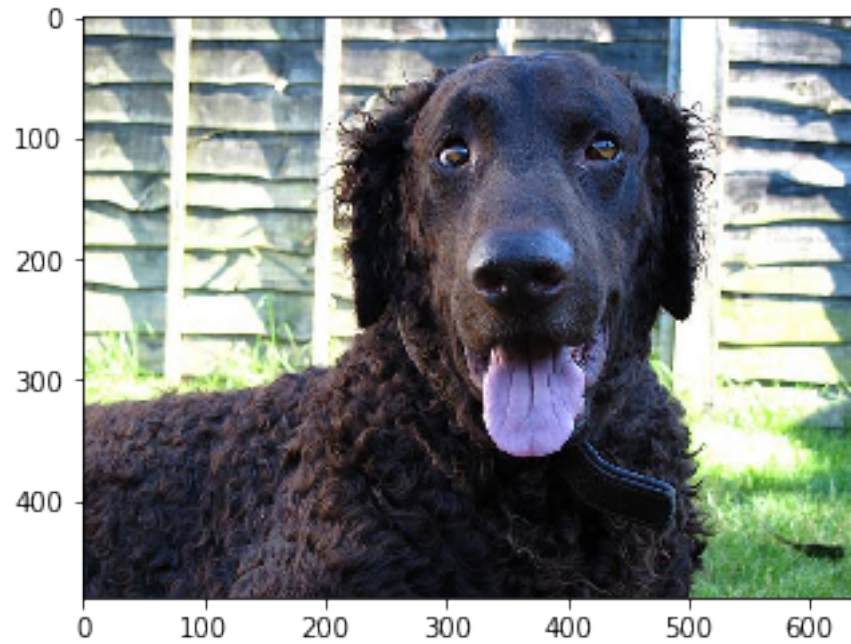
This is a Labrador_retriever!
It was a Labrador_retriever_06457.jpg

Hello, dog!



This is a Brittany!
It was a Brittany_02625.jpg

Hello, dog!



This is a Curly-coated_retriever!
It was a Curly-coated_retriever_03896.jpg

In []: