Cocktail Classifier/Deep Learning MVP

This project is proceeding nicely. Unfortunately the google_images_download Python package stopped working in May due to Google changing its architecture. As opposed to writing a scraping script to download the images I wanted, I found a google chrome extension that allows large batch downloads from google. Not as technically fancy - but I figured it would be comparable to a direct data set download from kaggle. To clean the images to ensure model accuracy, I am manually scanning each photo, and deleting/cropping images that do not correlate to the correct category. This is ..very time consuming to say the least. For this reason, I decided to try baseline models on just 3 cocktails - mojitos, cosmopolitans, and margaritas. Due to high variance in the amount of photos being deleted for each category, the classes all have different amounts of pictures. While they al started between 7 and 8 hundred, they all now have between 3 and 5 hundred. Below is a photo of my first model with just the first 3 cocktails. This model included just 2 convulsion layers, one global average pooling layer, and 2 dense layers. The model, without much tuning is performing surprisingly well. After seeing the success, I spent the weekend collecting the rest of the 15 cocktails, to complete my dataset. I have also been playing with the difference between flatten/global average pooling. Global max pooling, as well as the difference between conv2D, separableconv2D layers.

```
traindf = keras.preprocessing.image_dataset_from_directory(
    'Data',
    labels = 'inferred',
    label_mode = 'categorical',
    class_names = ['Cosmo','Margarita','Mojito'],
    seed = 7,
    validation_split = .2,
    subset = 'training')

valdf = keras.preprocessing.image_dataset_from_directory(
    'Data',
    labels = 'inferred',
    label_mode = 'categorical',
    class_names = ['Cosmo','Margarita','Mojito'],
    seed = 7,
    validation_split = .2,
    subset = 'validation')
```

```
Found 1412 files belonging to 3 classes.
Using 1130 files for training.
Found 1412 files belonging to 3 classes.
Using 282 files for validation.
```

```
Model: "sequential_11"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
conv2d_25 (Conv2D)           (None, 256, 256, 10)      280
_________________________________________________________________
conv2d_26 (Conv2D)           (None, 256, 256, 20)      1820
_________________________________________________________________
global_average_pooling2d_8 ( (None, 20)                0
_________________________________________________________________
dense_20 (Dense)             (None, 20)                420
_________________________________________________________________
dense_21 (Dense)             (None, 3)                 63
=================================================================
Total params: 2,583
Trainable params: 2,583
Non-trainable params: 0
_________________________________________________________________
Epoch 1/10
36/36 [==============================] - 33s 801ms/step - loss: 2.0906 - accuracy: 0.4047 - val_loss: 0.8920 - val_accuracy: 0.6064
Epoch 2/10
36/36 [==============================] - 30s 826ms/step - loss: 0.8831 - accuracy: 0.6227 - val_loss: 0.7539 - val_accuracy: 0.6950
Epoch 3/10
36/36 [==============================] - 32s 891ms/step - loss: 0.7653 - accuracy: 0.6633 - val_loss: 0.7377 - val_accuracy: 0.6170
Epoch 4/10
36/36 [==============================] - 35s 976ms/step - loss: 0.7799 - accuracy: 0.6540 - val_loss: 0.7873 - val_accuracy: 0.6277
Epoch 5/10
36/36 [==============================] - 33s 922ms/step - loss: 0.7122 - accuracy: 0.7033 - val_loss: 0.7195 - val_accuracy: 0.6879
Epoch 6/10
36/36 [==============================] - 31s 864ms/step - loss: 0.6982 - accuracy: 0.7185 - val_loss: 0.6531 - val_accuracy: 0.7482
Epoch 7/10
36/36 [==============================] - 30s 831ms/step - loss: 0.6934 - accuracy: 0.7243 - val_loss: 0.6554 - val_accuracy: 0.7163
Epoch 8/10
36/36 [==============================] - 39s 1s/step - loss: 0.6433 - accuracy: 0.7396 - val_loss: 0.6954 - val_accuracy: 0.7199
Epoch 9/10
36/36 [==============================] - 29s 815ms/step - loss: 0.6609 - accuracy: 0.7282 - val_loss: 0.7512 - val_accuracy: 0.6809
Epoch 10/10
36/36 [==============================] - 32s 897ms/step - loss: 0.6950 - accuracy: 0.7090 - val_loss: 0.6541 - val_accuracy: 0.7482
<keras.callbacks.History at 0x7f8dd5e72940>
```