**Using TensorFlow’s *convolutional neural network* called inception**

Apply previous learning from a previous inception training session to a new session/dataset (transfer learning)

* First installed Docker.
* Now downloading a .tgz file of flowers\_photos that I will manipulate on my computer. Contains:
* Daisy
* Dandelion
* Rose
* Tulip
* Sunflower
* Set up docker in terminal. Got up to trying to get flower files into the docker container, but the prompt from the tutorial is outdated, I think.
  + Docker ‘run’ command has a lot of adjustments:
* -it stands for interactive, but isn’t working on my computer right now.
* Images and containers:
  + An **image** is an executable package that includes everything needed to run an application--the code, a runtime, libraries, environment variables, and configuration files.
  + A container is launched by running an image. A **container** is a runtime instance of an image--what the image becomes in memory when executed (that is, an image with state, or a user process). You can see a list of your running containers with the command, docker ps, just as you would in Linux.
  + So tensorflow is more specifically a type of *image*, which can be run in a container in docker
* Uploaded tensorflow/tensorflow by downloading the .zip all of the image files and training scripts from the ~official~ GitHub repo
* MAIN SCRIPT: LABEL\_IMAGE.PY. unsure of how this connects to docker either.
* Issue: after running retrain.py still have this error: AttributeError: module 'tensorflow.\_api.v1.io.gfile' has no attribute 'FastGFile'
* (Just needed to update to gfile.GFile, I don’t know why it do it when it updated all the other functions to be version 2-compatible…)

RUN WITH A NEW ERROR:

maris-macbook:FCC\_flowers marisilva$ python labelImage.py

Include the path to the image you'd like to identify:

/Users/marisilva/Documents/GitHub/FCC\_flowers/C\_tinctoria\_fake\_daisy.jpg

Traceback (most recent call last):

File "labelImage.py", line 18, in <module>

in tf.io.gfile.GFile("tf\_files/flower\_labels.txt")]

File "labelImage.py", line 17, in <listcomp>

label\_lines = [line.rstrip() for line

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 226, in \_\_next\_\_

return self.next()

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 220, in next

retval = self.readline()

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 183, in readline

self.\_preread\_check()

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 85, in \_preread\_check

compat.as\_bytes(self.\_\_name), 1024 \* 512, status)

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/framework/errors\_impl.py", line 548, in \_\_exit\_\_

c\_api.TF\_GetCode(self.status.status))

tensorflow.python.framework.errors\_impl.NotFoundError: tf\_files/flower\_labels.txt; No such file or directory

Where do I need to stick my flower labels?? Trying next: rplace tf\_files with ., since my cd is where labelImage AND flower\_labels are. This works.

But now we have a new issue:

maris-macbook:FCC\_flowers marisilva$ python labelImage.py

Include the path to the image you'd like to identify:

/Users/marisilva/Documents/GitHub/FCC\_flowers/C\_tinctoria\_fake\_daisy.jpg

Traceback (most recent call last):

File "labelImage.py", line 23, in <module>

graph\_def.ParseFromString(f.read())

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 125, in read

self.\_preread\_check()

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/lib/io/file\_io.py", line 85, in \_preread\_check

compat.as\_bytes(self.\_\_name), 1024 \* 512, status)

File "/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.7/site-packages/tensorflow/python/framework/errors\_impl.py", line 548, in \_\_exit\_\_

c\_api.TF\_GetCode(self.status.status))

tensorflow.python.framework.errors\_impl.NotFoundError: tf\_files/retrained\_graph.pb; No such file or directory

Some things got a little muddy with labelImage.py, so I’m starting with a clean(ish) slate.

1. Make a directory (called tf\_files) in home directory (why not in GitHub dir?) to store pics.

maris-macbook:FCC\_flowers marisilva$ cd /Users/marisilva

maris-macbook:~ marisilva$ mkdir tf\_files

maris-macbook:~ marisilva$ mkdir tf\_files/flowers

maris-macbook:~ marisilva$ cd tf\_files/flowers

1. Now we want to connect the directory with Docker: docker run -it -v $HOME/tf\_files:/flowers tensorflow/tensorflow
2. And since the tensorflow people are nerds, we get this:
3. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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WARNING: You are running this container as root, which can cause new files in

mounted volumes to be created as the root user on your host machine.

To avoid this, run the container by specifying your user's userid:

$ docker run -u $(id -u):$(id -g) args...

root@f2c1969c44df:/# (interactive session)

1. This linked the flowers file with the TensorFlow image.

If you want to run something permanently, use dokcer **exec** -it [container name].

I didn’t name my container anything, so right now it’s called focused\_allen.

To log out, just type exit.

To log back in, first do docker start [container name]. THEN say docker exec -it [container name] /bin/bash

POTENTIAL SOURCE OF ERROR: IN ORDER TO GET INTO THE TENSORFLOW DIRECTORY I NEEDED TO TYPE: cd /usr/local/lib/python2.7/dist-packages/tensorflow, WHICH SAYS “PYTHON2.7” IN IT AND I HAVE PYTHON 3 LOCALLY ON MY COMPUTER… WE SHALL SEE

Also, I think I might have an issue with this (a comment from another GitHUb user who did something similar): “while typing the command, make sure you type "gcr.io/tensorflow/tensorflow:latest-devel" because in the later part you will have to use "gcr.io/..." I think I downloaded tensorflow/tensorflow because gcr.io/ was not getting recognized on my machine, which might be a BIG problem.

I was able to get *something to work with:*

maris-macbook:tensorflow marisilva$ docker run -it -v ~/tf\_files/flowers:/tf\_files/flowers tensorflow/tensorflow:latest-devel

Unable to find image 'tensorflow/tensorflow:latest-devel' locally

latest-devel: Pulling from tensorflow/tensorflow

18d680d61657: Pull complete

0addb6fece63: Pull complete

78e58219b215: Pull complete

eb6959a66df2: Pull complete

bd0dd89161cf: Pull complete

8c3894355998: Pull complete

6f5a69bbc1a8: Pull complete

ed1c047a87d3: Pull complete

88ade92a35d0: Pull complete

0d696bf5f7e1: Pull complete

5f0e672baa01: Pull complete

ba3cb339a815: Pull complete

b6b2fdd7c6f3: Pull complete

efa836630a23: Pull complete

7da288b1d70a: Pull complete

Digest: sha256:ee12f4710c22bbae70597c4c24cde72ad7da056203d6f9aee38274214c9b0bd6

Status: Downloaded newer image for tensorflow/tensorflow:latest-devel

*… But this doesn’t have gcr.io so I’m circling back around to my previous issue.*

Aaaand I can’t get past this point. It looks like the tutorial I was loosely following did not cover enough of the set-up detail, so my codes are not accessing tensorflow/connecting to GitHub and Docker correctly.

While this experiment has taught me a LOT about Docker images and containers, and TensorFlow’s capability to be run locally, I think I am going to be switching to a simpler version with Keras on Jupyter so I can have a more comprehensive output.

I’ve learned:

* How to control Docker with terminal (mostly the basics but evidently not enough for the purposes of this project, not without probably an official class or two)
* What more sophisticated training scripts look like, and how many layers of functions they involve, and that they’re constantly being updated (all the scripts that I was finding seemed to be for python 2 and were either deprecated or soon to be deprecated)
* SHELL SCRIPTS and how it’s a more concise way of telling terminal multiple things that are read at once. Also simplifies what you need to type into your terminal/what things you might get wrong.
* Created a Jupyter notebook that connected with my terminal! Neat! Will continue to use.

Moving on!

SOMETHING that worked… Not sure how much it counts for, since the two categories it’s predicting for are totally off, which likely has to do with my retraining scripts. I might have pulled the retrained\_graph from somewhere else that I’m forgetting…

maris-macbook:~ marisilva$ python ~/Documents/GitHub/FCC\_flowers/labelImage.py

Include the path to the image you'd like to identify:

/Users/marisilva/Documents/GitHub/FCC\_flowers/C\_tinctoria\_fake\_daisy.jpg

2019-05-09 04:25:14.171961: W tensorflow/core/framework/op\_def\_util.cc:355] Op BatchNormWithGlobalNormalization is deprecated. It will cease to work in GraphDef version 9. Use tf.nn.batch\_normalization().

2019-05-09 04:25:14.564596: I tensorflow/core/platform/cpu\_feature\_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FMA

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{\fonttbl\f0\fswiss\fcharset0 Helvetica;} (score = 0.20587)

maris-macbook:~ marisilva$