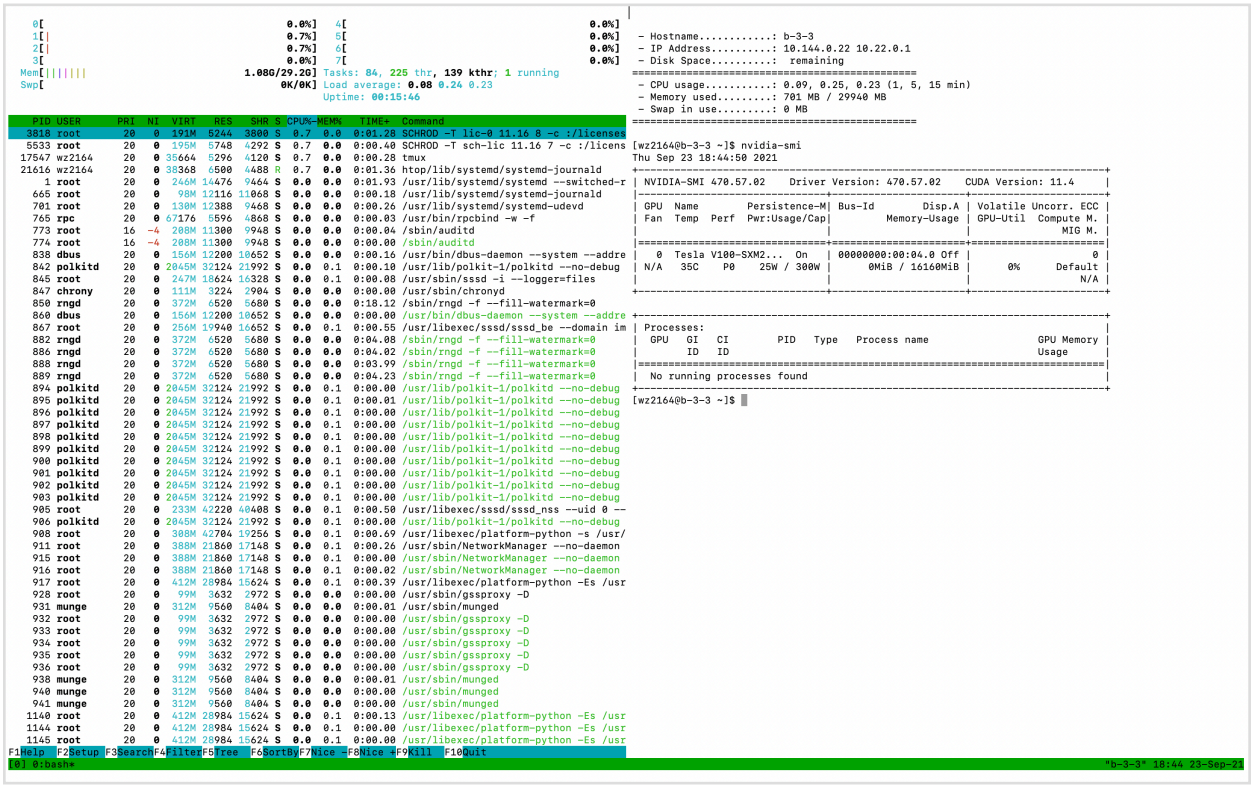
Homework Template

This is a template for collecting the required responses from the homework.

2.1 Environment

Insert a screenshot of your terminal connected to a GCP instance, displaying both htop and nvidia-smi inside a tmux / screen window.



2.3 Singularity

Number of files in dataset: [1803460]
Copy your script for computing that result below.

Script:
In [1]: import pandas as pd
In [2]: train_images = pd.read_csv('places365_train_standard.txt', header=None)
In [3]: train_images.shape[0]
Out[3]: 1803460

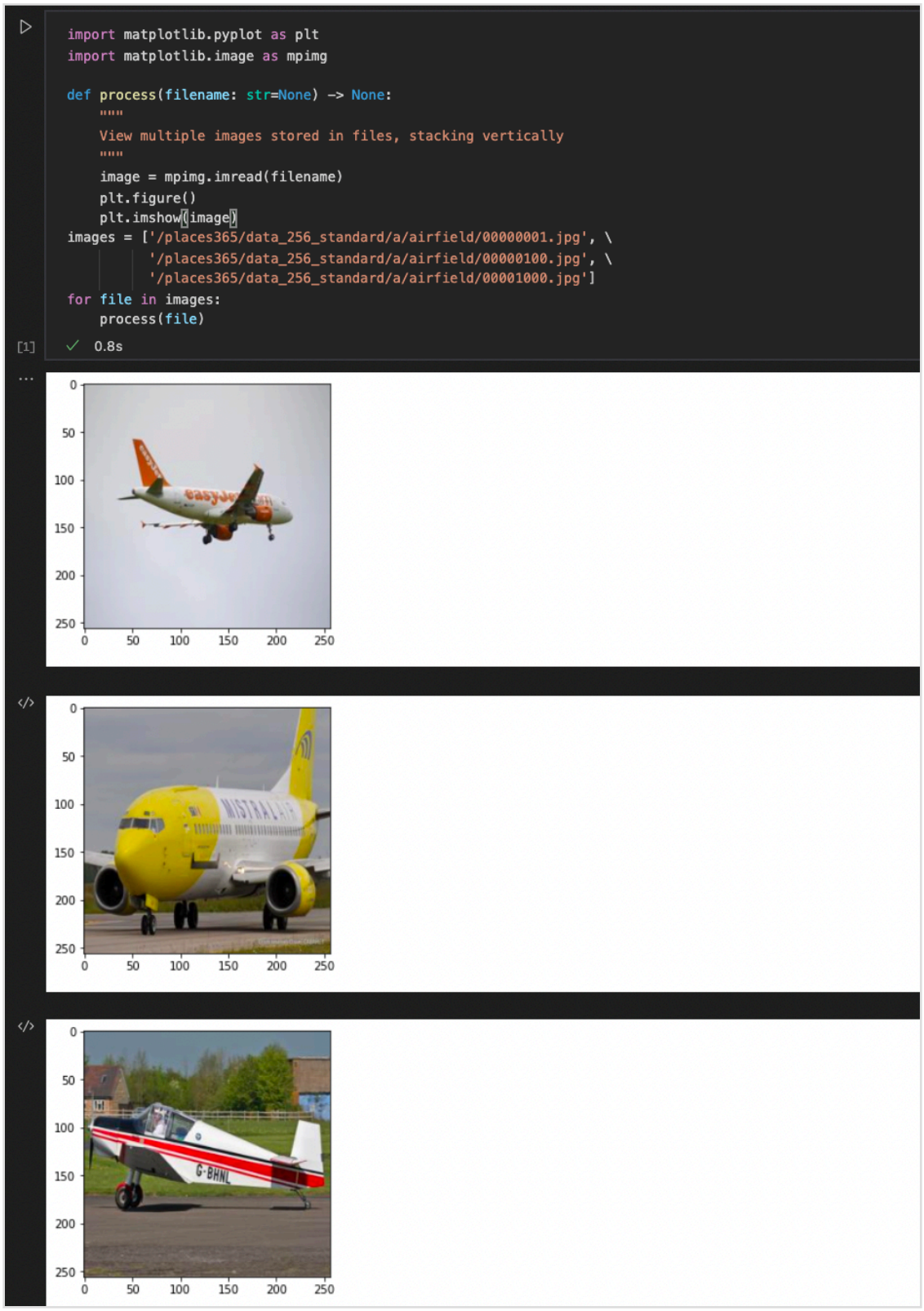
```
In [1]: import pandas as pd

In [2]: train_images = pd.read_csv('places365_train_standard.txt', header=None)

In [3]: train_images.shape[0]
Out[3]: 1803460
```

2.4 VSCode

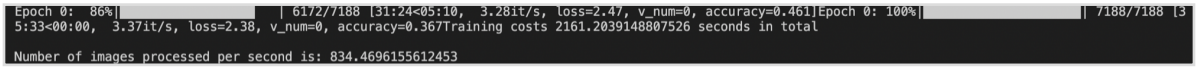
Insert a screenshot of the notebook interface displaying a couple of images from the dataset



3.1.1 Training smoke test

Network architecture: MobileNetV3 large (replace if not using provided example)

Performance 32-bit float: [834] img / s. (2x GPU)
32-bit Float:
- Batch size = 256
- 3.28 it/s
- 834 img/s



Performance 16-bit float: [935] img / s. (2x GPU)
16-bit Float:
- Batch size = 256
- 3.73 it/s
- 935 img/s

3.1.2 Long training

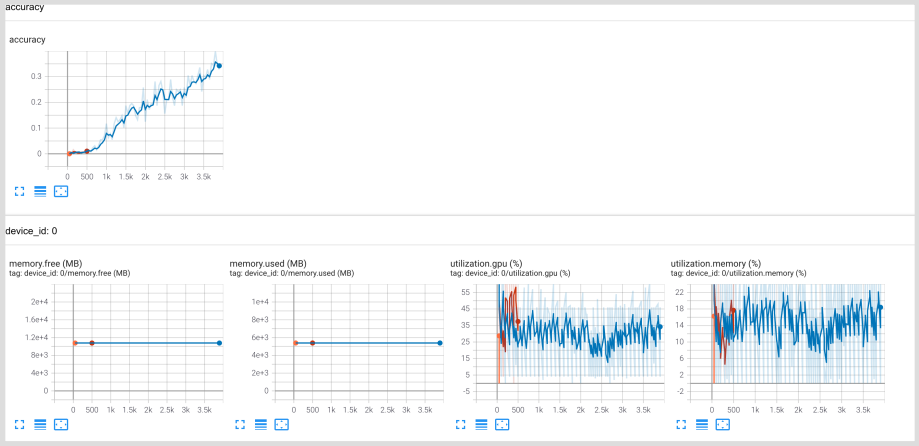
Insert tensorboard screenshot here.

A few words to explain:
Unfortunately, I cannot get the final result by running 30 epochs here, since at the time this HW is due, there are still several epochs to be run. (Sorry for that, I just wasted lots of time to figure out how to copy files from Greene to GPC and how to launch tensorboard effectively.)

Having solved various of bugs, finally I made it to move the data from /scatrch/wz2247/data/ at Greene to the local place at GCP called /tmp/ as shown below. And to unsquashfs the places365.squashfs, I used conda to install unsquashfs in the process of creating package overlay.

```
# DATA_DIRECTORY=${DATA_DIRECTORY:-/scratch/wz2247/data/}
cp "/scratch/wz2247/data/places365.squashfs" "/tmp"
DATA_DIRECTORY=${DATA_DIRECTORY:-/tmp}
```

Here, all I can do now is to show the visualization of running 1 epoch, and the speed of running 30 epoch. From the shortcut below, when running the 6th epoch, the speed is 4.02it/s(), and it may be even quicker later. Compared to the result of 3.1.1, we can see that moving data indeed improves the speed of training.




```
Epoch 6:  73%|                                                  | 2615/3595 [10:51<04:03,  4.02it/s, loss=1.98, v_num=0, accuracy=0.527]
```

3.2 Portability

Performance 4x GPU Greene: [insert here] img / s
Copy sbatch script here.

3.3 Testing

Insert screenshot of vscode test explorer here