FMCG Retail Pulse assignment

So the data given was we had to classify planes arranged in folder based on their variants. There were around 100 variants so 100 folders. So these variants were mapped to their families and this can be found in 2 .txt files. So for classifying uniquely based on families I had normally loaded my data using datasets.ImageFolder which gave me my train data of 100 classes. Now using the file image variant train file and image families file I notices that all variants of the unique families were given in order. So now I had 100 classes so labels were 0-99. To change the labels I went to images family train file and created I initialized a variable as 0 and temporary variable as name of first plane in family file. Then I give target of train as 0 and check the next name. If same means I again give 0. If I detected the change in name then I increase my variable by 1 and change my temporary variable name to the detected family. So like that I could set my targets from 0 to 69.

```
fil1 = open('/content/drive/My Drive/Retail Pulse ML Assignment Data/image
s_family_train.txt', 'r')
Lin1 = fil1.readlines()
l = 0
temp = Lin1[0][8:]

for i in range(len(Lin1)):
    if(temp == Lin1[i][8:]):
        c.append(l)
    else:
        temp = Lin1[i][8:]
        l=l+1
        c.append(l)
for i in range(len(Lin1)):
    train_data.targets[i] = c[i]
print(len(train_data.targets))

for i in range(len(Lin1)):
    train_data.targets[i] = c[i]
```

So in the end my l value was 69 which kinda gave me the feeling that this part of the code was correct.
I did the same for validation dataset also.
My first trial was to run resnet50 by freezing the layers and add custom fc. It performed pretty bad as my val accuracy was not increasing at all and was very poor. Since I had 2 gmail account I tried running whole resnet50 and still the results were quite poor and model not converging. To make sure that I was doing the right thing I used fastai(my go to tool) to classify 100 classes(Not 70 this time) just to see if I'm doing things properly and same issue was happening there. Error rate is not going down.

I tried a simpler resnet18 without freezing and after 100 epochs accuracy slowly increased a bit and I thought why not make a custom simple Neural Network. But as that time I think I finished my GPU limit in colab and tried in on my Laptop's GPU which is basic NVIDIA and trained using custom GPU for only around 10 epochs as memory was kinda becoming full but both validation and train accuracy were increasing and model was performing much better than resnet50(pretained) and resnet18(pretrained. So my opinion is if we train my simple CNN like for 12 hours we can get good accuracy. Also I tried decreasing lr by lot and for resnet with layers frozen the performance is increasing but not that well but better. In future I will use lr finder and see perfect learning rates. I will also try to unfreeze some layers in resnet18 and train and achieve good accuracy as resnets are proven model. Also try mobile nets as they are low memory and high performance. But I personally feel the best thing to do will be make your custom CNN model and train from scratch for something like 12 hours and so on or take resnet and unfreeze some good amount of layers and train for something like 12 hours.