Lab5 Report

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1 Introduction

This is a lab report for finetuning ResNet pretrained model to classify different species of flowers from images.

2 Results

Figure 1: Figure shows sample flower images and their corresponding species that from the database that is used to finetune pretrained ResNet model.

```
Epoch:  1 / 3
6552/6552: [==============================>] - ETA 0.9s
Train  Acc: 0.39
818/818: [==============================>] - ETA 0.7s
Valid  Acc: 0.79
########################
Epoch:  2 / 3
6552/6552: [==============================>] - ETA 0.6s
Train  Acc: 0.76
818/818: [==============================>] - ETA 0.6s
Valid  Acc: 0.92
########################
Epoch:  3 / 3
6552/6552: [==============================>] - ETA 0.6s
Train  Acc: 0.85
818/818: [==============================>] - ETA 0.6s
Valid  Acc: 0.96
########################
```

Figure 2: Shows accuracy of ResNet after finetuned on the flowers dataset for 3 epochs. Achieves 95% accuracy in the test dataset

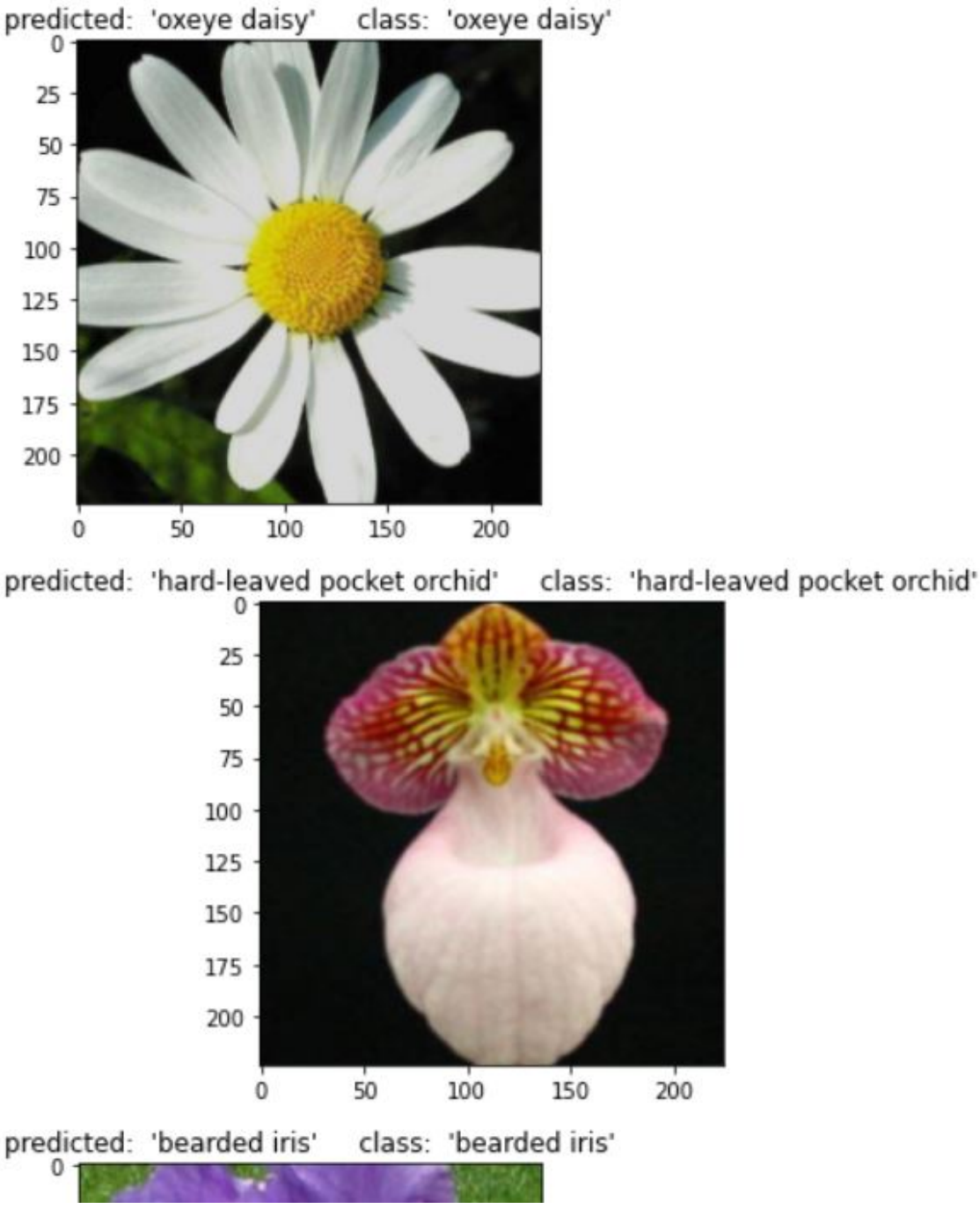
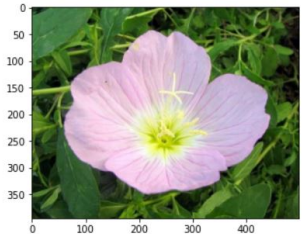


Figure 3: Shows some correctly predicted flower images from the test dataset

```
[29] image = io.imread('https://images-na.ssl-images-amazon.com/images/I/51dZp-%2B4W9L._AC_.jpg') #selecting a random flower from the internet
     plt.imshow(image);
```




```
[30] img = apply_transforms(image).clone().detach().requires_grad_(True).to(device)
```

```
[ ] outputs = model(img)
    preds = torch.max(outputs, 1)[1]
```

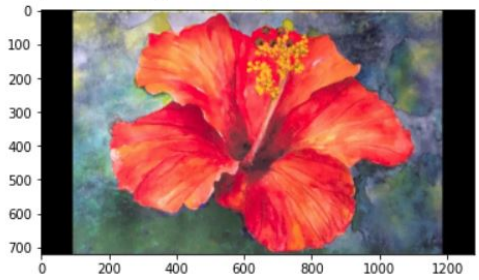
```
[ ] print('predicted: ' + dataset_labels[int(class_names[preds])-1])
```

```
predicted:  'pink primrose'
```

Figure 4: Shows detection of any other flower images accessed over internet

```
[32] image = io.imread('https://i.ytimg.com/vi/RUb_RicoDsI/maxresdefault.jpg')
     plt.imshow(image)
```

```
<matplotlib.image.AxesImage at 0x7f984b68dcc0>
```




```
[33] img = apply_transforms(image).clone().detach().requires_grad_(True).to(device)
```

```
[34] outputs = model(img)
     preds = torch.max(outputs, 1)[1]
     print('predicted: ' + dataset_labels[int(class_names[preds])-1])
```

```
predicted:  'watercress'
```

```
#a remarkable funny fail of the classifier. Although it achieved 95%accuracy in predicting real world images,
#but cannot understand paintings
```

Figure 5: Finally to test how the network fairs against paintings of flowers, an image of hibiscus is passed through the trained network. The prediction is not even close. Demonstrates how massively these highly accurate machine learning models can fail to simplest of pixel changes.