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#### HW4: Stanford Car Classification

1. Method description – what is your strategy for parameter selection?

Train my own model without pre-training weights.

Seed = 123, epochs = 50, batch\_size = 32, optimizer = 'Adam', lr = 0.0001

Build model

CNN 5 個 layer

每層後面加 relu 激活函數和 Max pooling

Fc 3 個 layer

前兩層加 relu 激活函數和 Dropout

Data augmentation

圖片顏色調整

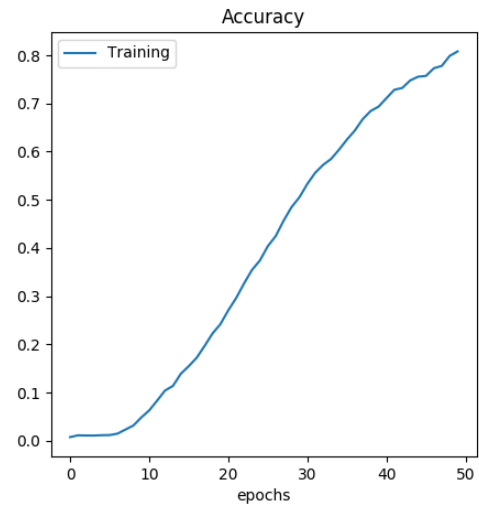
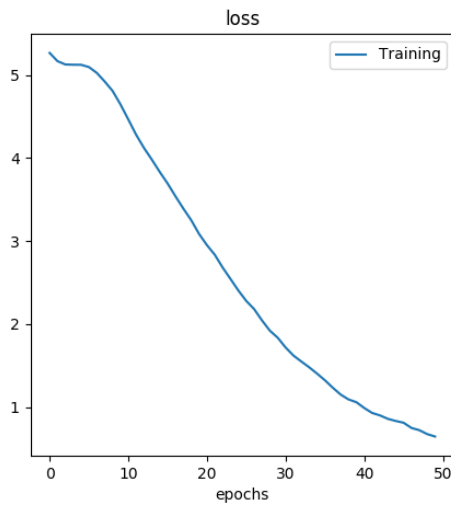
水平翻轉圖片

旋轉圖片

## 2. Experimental results

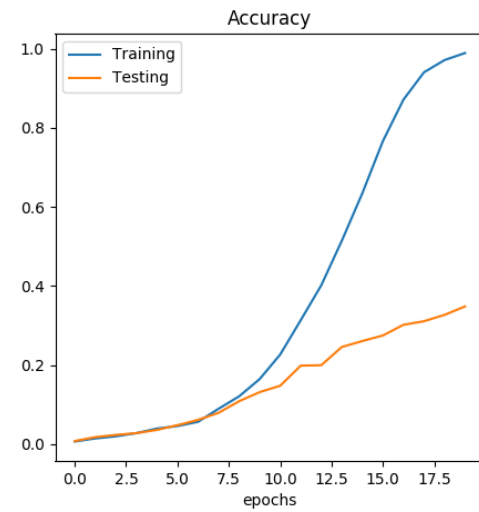
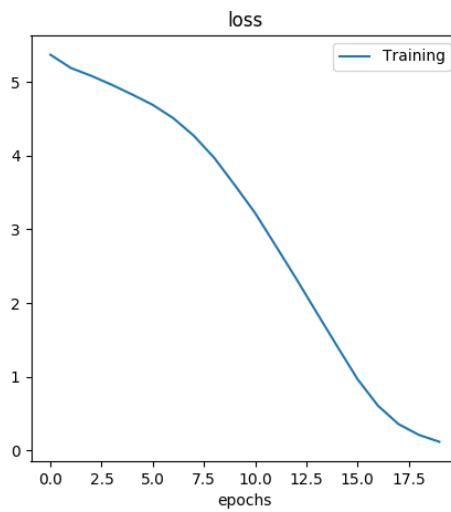
### My model

Training loss & Training accuracy:



### HW2 model without pre-training weights

Training loss & Training accuracy:



My model Testing accuracy:

Accuracy on the all test images: 42 %

```
cody@cody-B85M-D3H: ~/Documents/scc
(torch) cody@cody-B85M-D3H:~$ cd Documents/scc
(torch) cody@cody-B85M-D3H:~/Documents/scc$ python test.py
8041
Accuracy on the ALL test images: 42 %
Accuracy of 63 : 29 %
Accuracy of 41 : 68 %
Accuracy of 177 : 36 %
Accuracy of 117 : 54 %
Accuracy of 185 : 23 %
Accuracy of 54 : 37 %
Accuracy of 155 : 52 %
Accuracy of 70 : 38 %
Accuracy of 86 : 52 %
Accuracy of 6 : 45 %
Accuracy of 124 : 41 %
Accuracy of 159 : 25 %
Accuracy of 46 : 46 %
Accuracy of 110 : 58 %
Accuracy of 38 : 35 %
Accuracy of 181 : 26 %
Accuracy of 40 : 53 %
Accuracy of 151 : 20 %
Accuracy of 49 : 40 %
Accuracy of 169 : 47 %
```

HW2 model without pre-training weights Testing accuracy:

Accuracy on the all test images: 34 %

```
Accuracy on the ALL test images: 34 %
Accuracy of 63 : 20 %
Accuracy of 41 : 51 %
Accuracy of 177 : 34 %
Accuracy of 117 : 57 %
Accuracy of 185 : 18 %
Accuracy of 54 : 35 %
Accuracy of 155 : 42 %
Accuracy of 70 : 28 %
Accuracy of 86 : 64 %
Accuracy of 6 : 36 %
Accuracy of 124 : 28 %
Accuracy of 159 : 33 %
Accuracy of 46 : 37 %
Accuracy of 110 : 51 %
Accuracy of 38 : 12 %
Accuracy of 181 : 39 %
Accuracy of 40 : 33 %
Accuracy of 151 : 44 %
Accuracy of 49 : 32 %
Accuracy of 169 : 21 %
```

### 3. Discussion

資料量的增加有助於模型的準確率提升。沒有做資料量增加，跑 epoches 的次數到 50 次數，測試所有圖片的準確率為 22%。

比起作業二，我的模型有比沒有 pre-training weights 的模型好。原因為 epoches 的次數從 20 變為 50 次，資料量做擴增。

### 4. Problem and difficulties

自己設計模型，讓模型收斂還滿難的，一開始無法收斂，所以調整模型的中間層，後來改動 epoches 的次數到 50 次，綜合來說，自己設計模型是有難度的。