Deep Learning for Computer Vision

Homework 2

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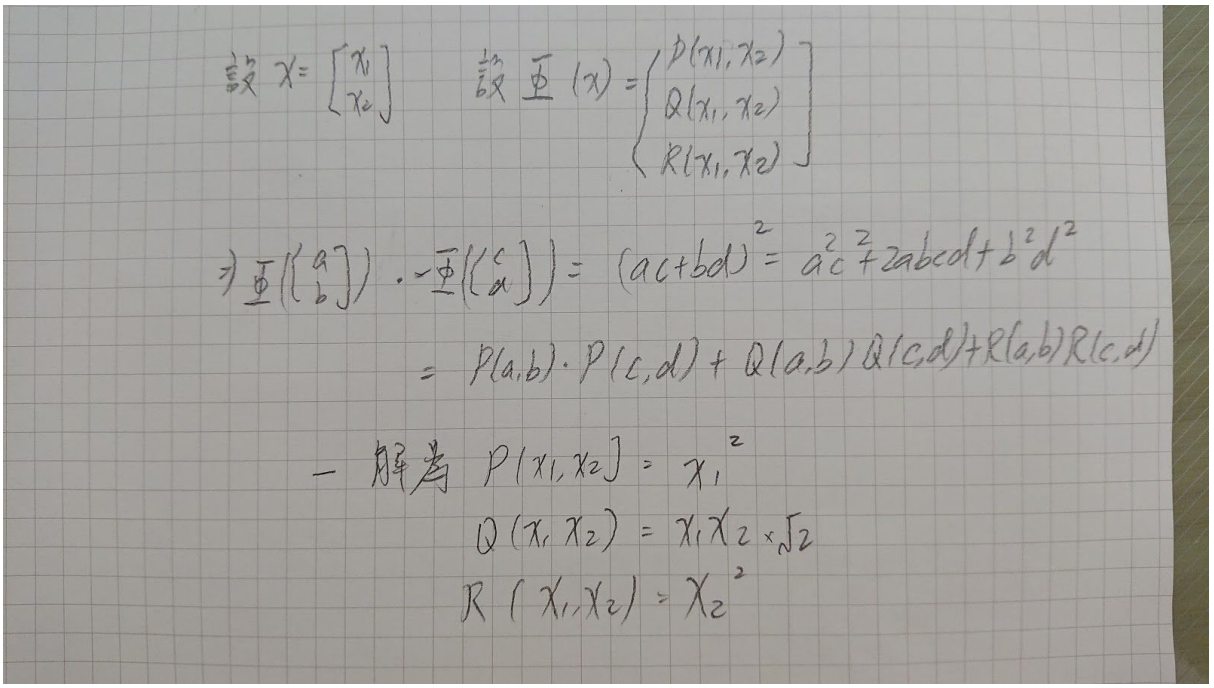
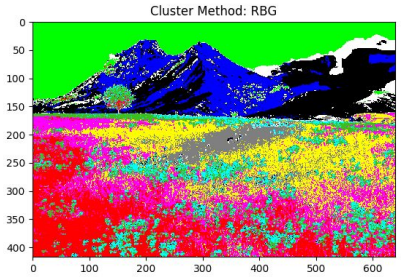
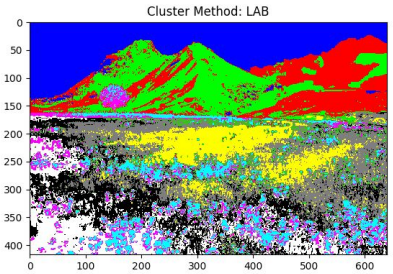
Problem 1:

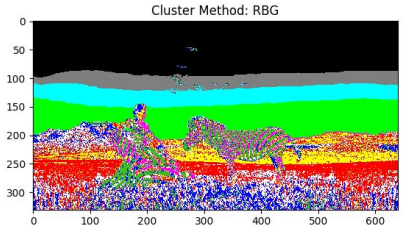


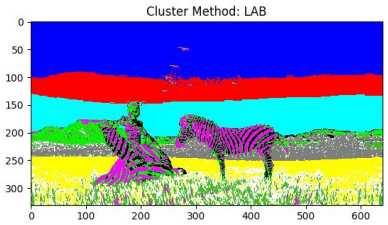
Problem 2:

problem 2.a

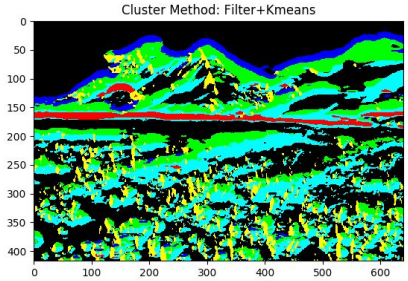


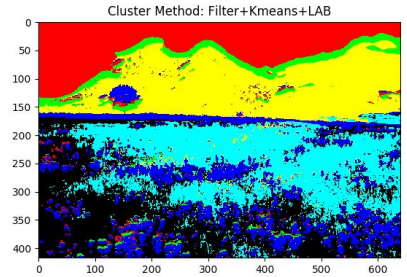


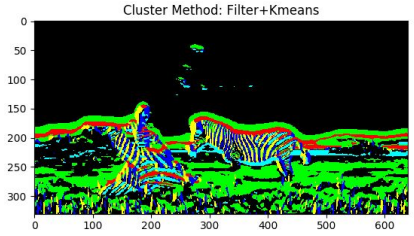


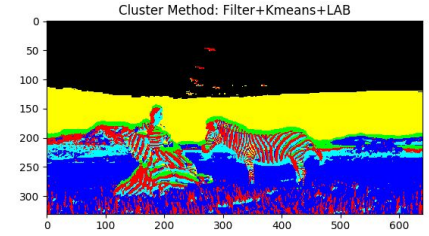


problem 2.b



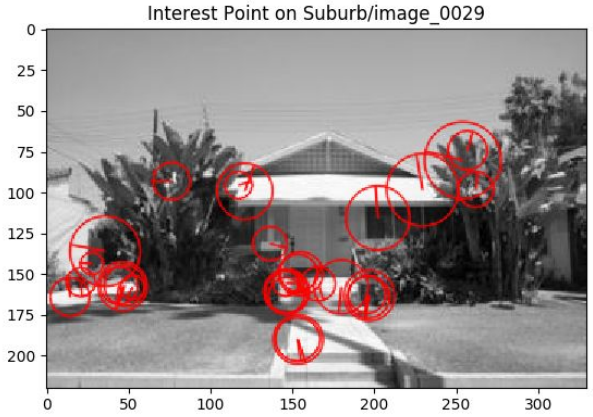




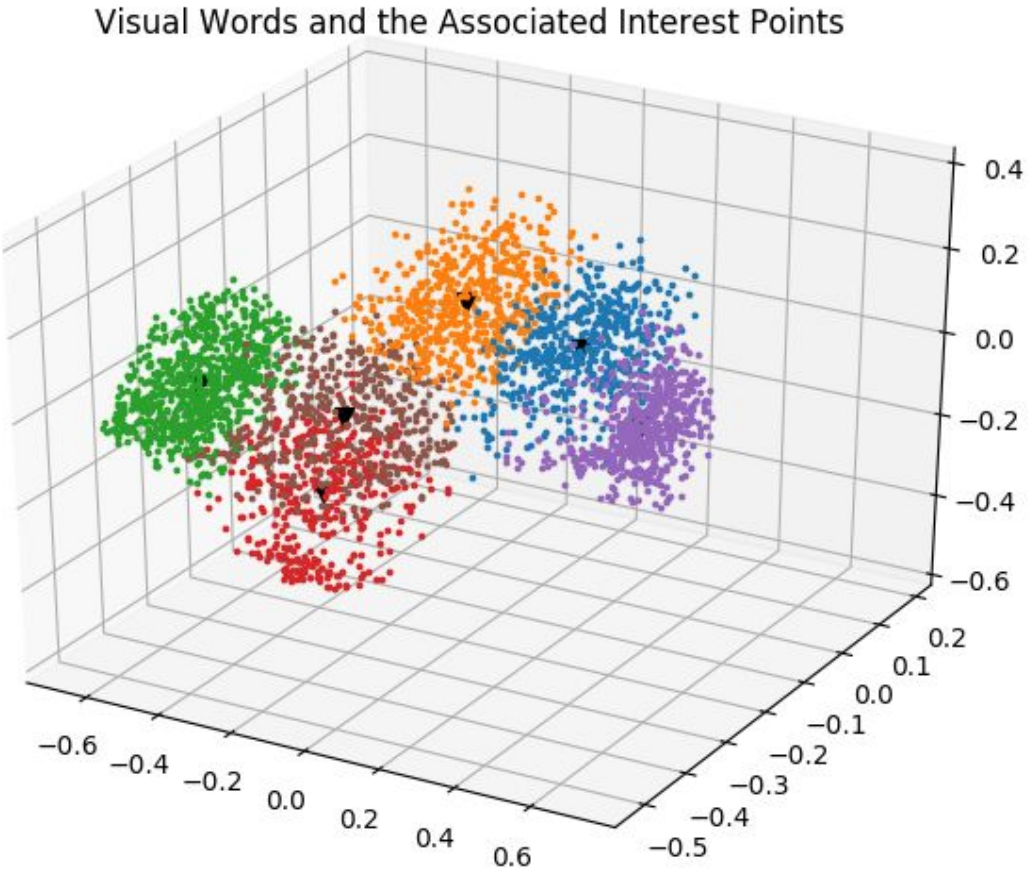


problem 3

problem 3.a

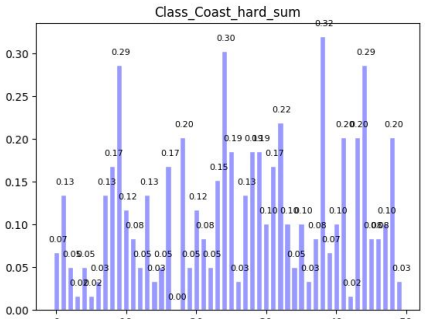


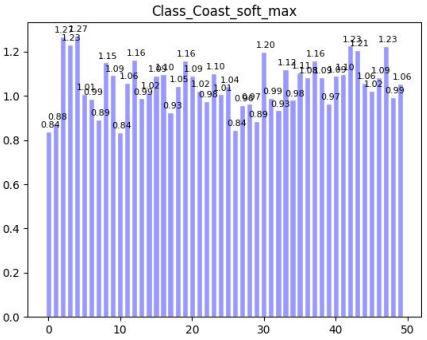
problem 3.b

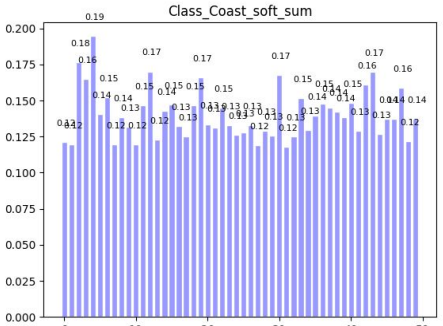


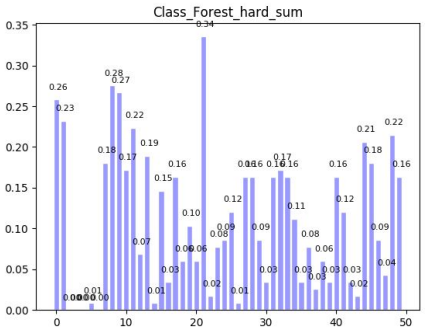
黑點代表cluster中心，因為用別的顏色很容易背蓋掉，在嘗試了很多不同顏色的狀況下，我才只好選擇了黑色。

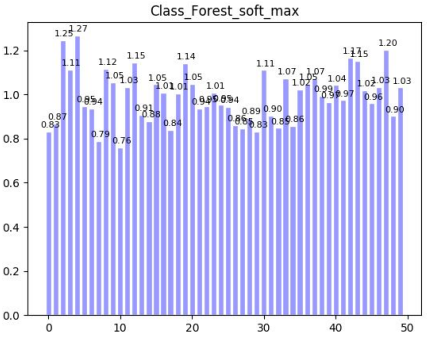
problem 3.c

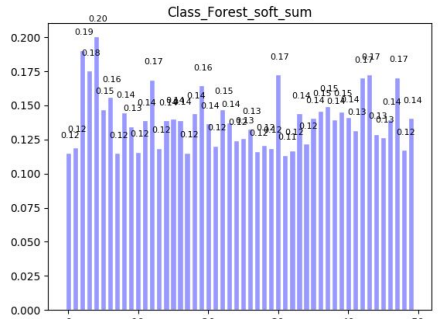

Class_Coast_hard_sum

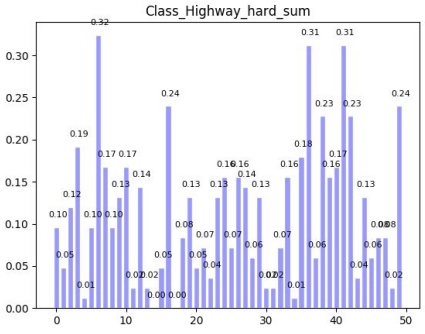

Class_Coast_soft_max

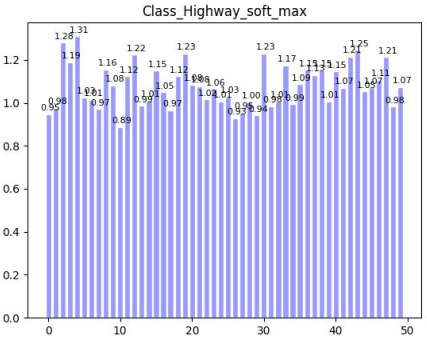

Class_Coast_soft_sum

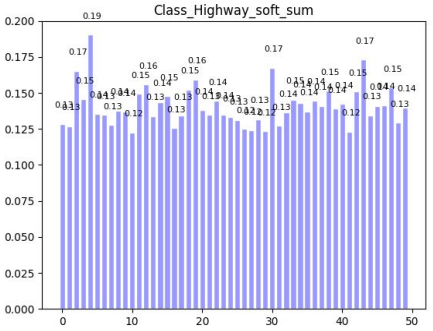

Class_Forest_hard_sum

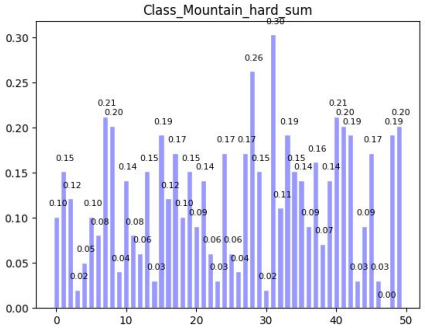

Class_Forest_soft_max

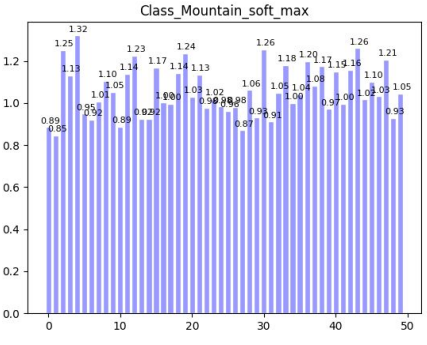

Class_Forest_soft_sum

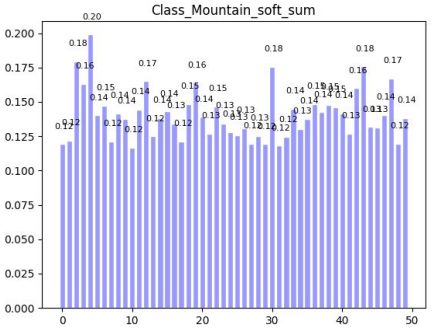

Class_Highway_hard_sum

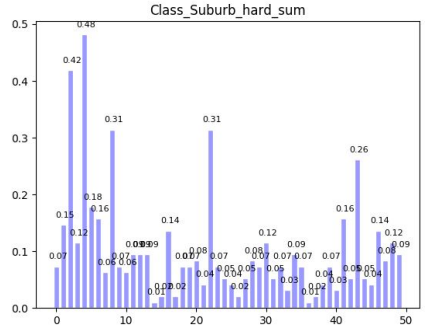

Class_Highway_soft_max

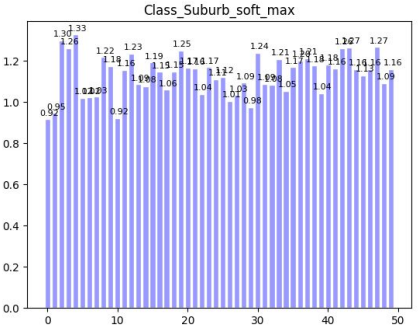

Class_Highway_soft_sum

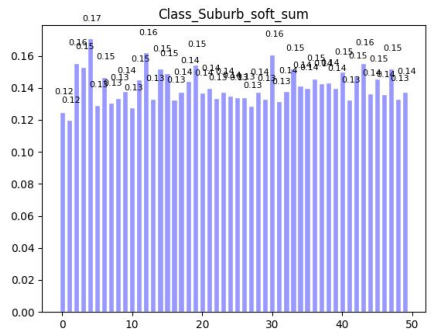

Class_Mountain_hard_sum


Class_Mountain_soft_max


Class_Mountain_soft_sum


Class_Suburb_hard_sum


Class_Suburb_soft_max


Class_Suburb_soft_sum

看的出來 Mode=hard, sum 時，每個feature之間的差異比較大，所以我認為 hard sum 可以達到較高的準確率。

problem 3.d

(i)

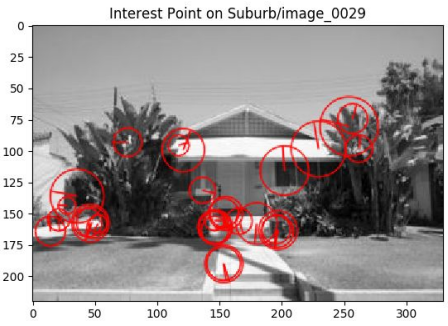
train-10 的準確率

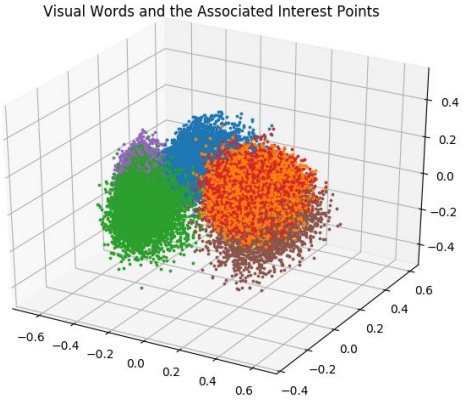
```
Mode soft max | Accuracy: 47.4%
Mode hard sum | Accuracy: 60.0%
Mode soft sum | Accuracy: 52.6%
```

跟預期的結果相同

(ii)

train-100的圖





kmeans k=5, max_iter=5000

Knn k=5

```
Mode soft max | Accuracy: 51.6%
Mode hard sum | Accuracy: 73.2%
Mode soft sum | Accuracy: 64.6%
```

調到參數最好的狀況是

kmeans k=30, max_iter=5000

Knn k=5

```
Mode soft max | Accuracy: 53.6%
Mode hard sum | Accuracy: 74.0%
Mode soft sum | Accuracy: 65.4%
```