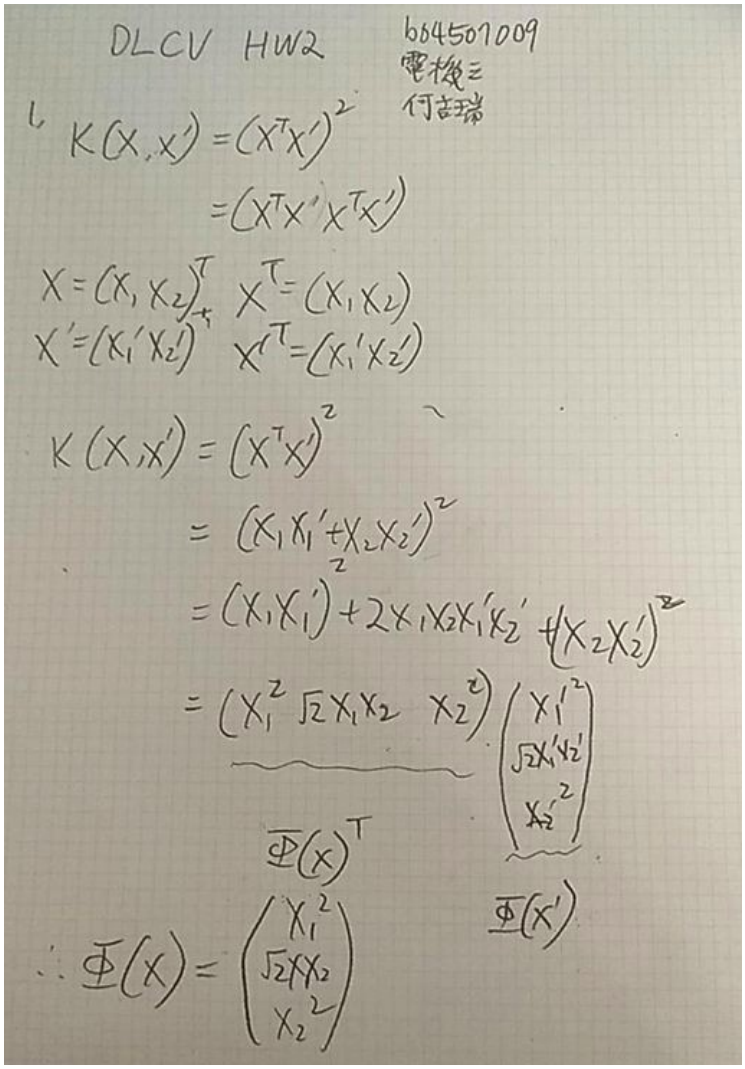
Deep Learning on Computer Vision HW2
b04507009 電機三 何吉瑞

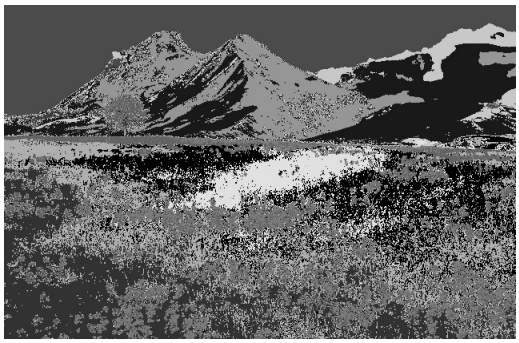
1.



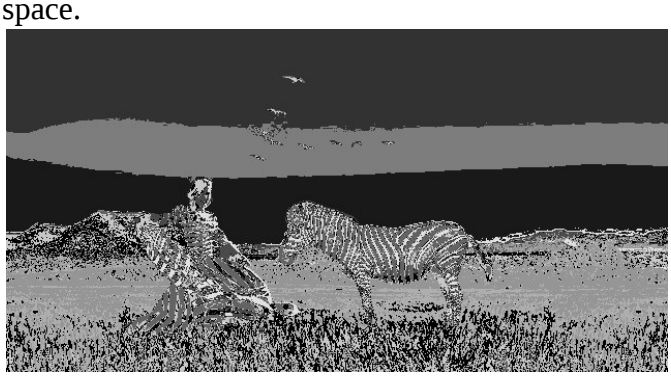
2.

(a) (20%) Color segmentation:

(i) Plot the segmentation results for both images based on your clustering results.

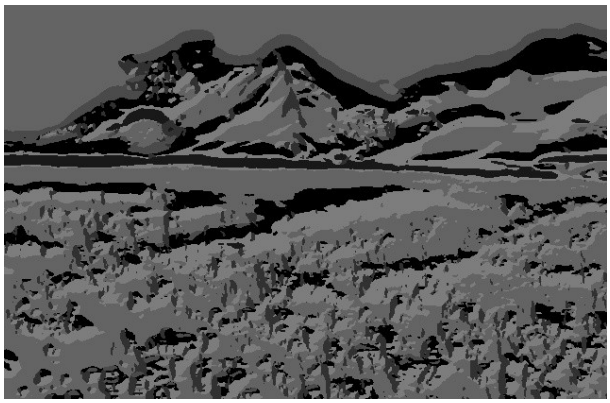


(ii) Convert both RGB images into Lab color space.

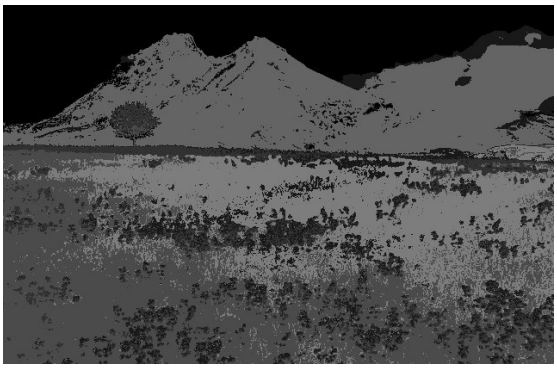



(b) (20%) Texture segmentation:

(i) Please plot the texture segmentation results for both images



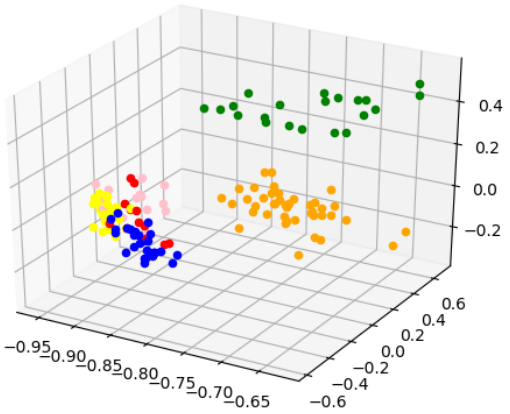

(ii) Combine both color and texture features (3 + 38 = 41-dimensional features) for image segmentation.




3.

(a) (5%) Randomly pick an image from Train-10. Detect interest points and calculate their descriptors for this image using SURF. Plot your interest point detection results

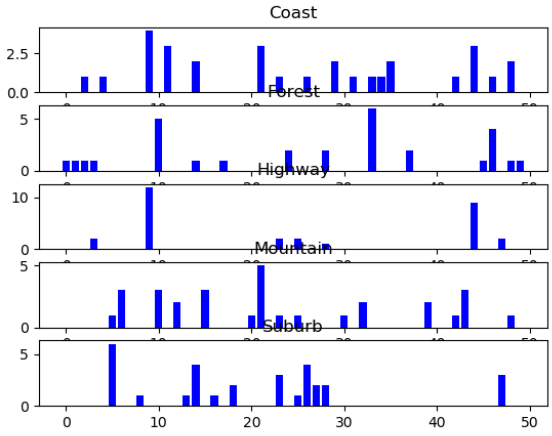
(b) (10%)



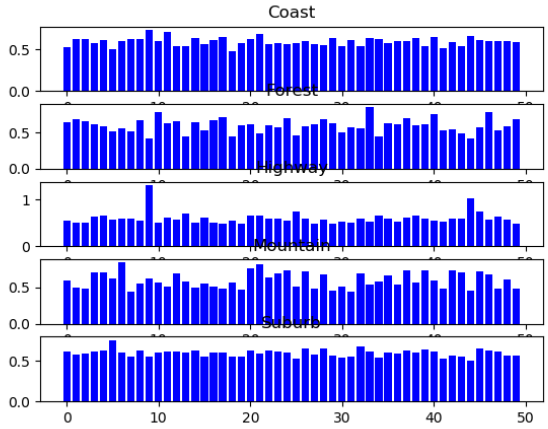
Coast: red
Forest: orange
High-Way: yellow
Mountain: green
Suburb: blue

(c) (20%)

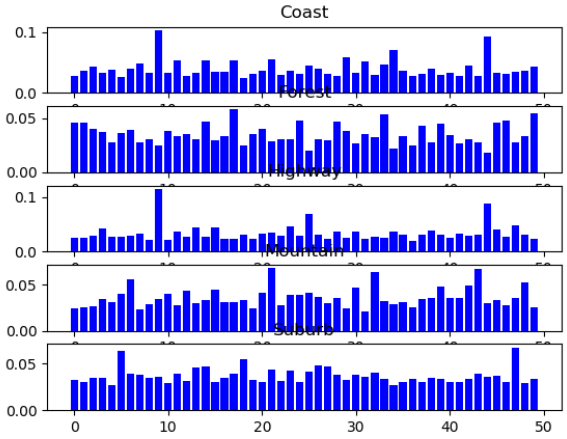
Hard-Sum:



Soft-Sum:



Soft-Max:



I expect the accuracy of Hard-Sum prediction will be the the highest, since the difference between different category is most obvious.

(d) (25%)
(i) Use Train-10

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HardSum: 0.392
SoftSum: 0.364
SoftMax: 0.336
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(ii) Use Train-100

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HardSum: 0.548
SoftSum: 0.536
SoftMax: 0.504
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The accuracy of Hard-Sum prediction is the highest one, which matches my expectation. Moreover, using training data sized of 500 result in higher accuracy.