Programming Assignment 4 Report **Ege Ustunel**
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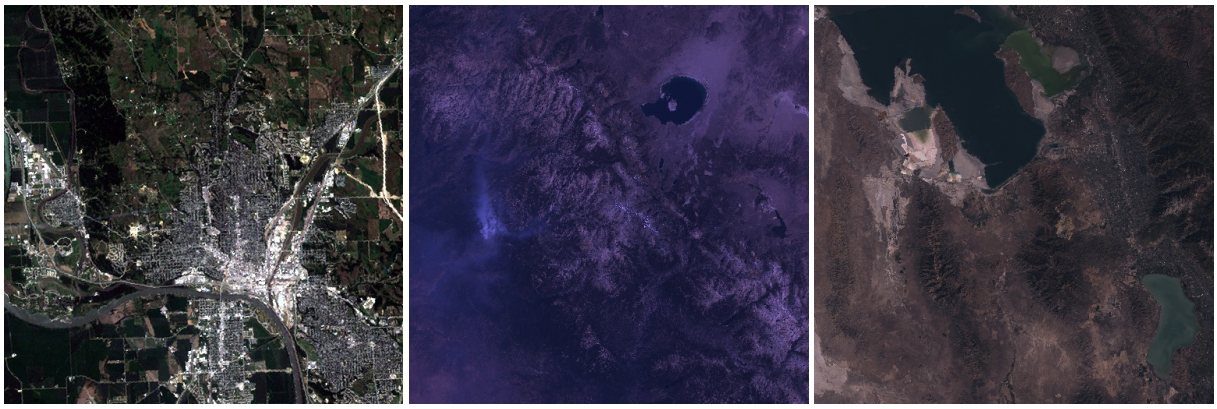
Assoc. Prof. Dr. Erkut ERDEM Lab Date: 14/12/2018
TA: Ozge Yalcinkaya Due Date: 28/12/2018

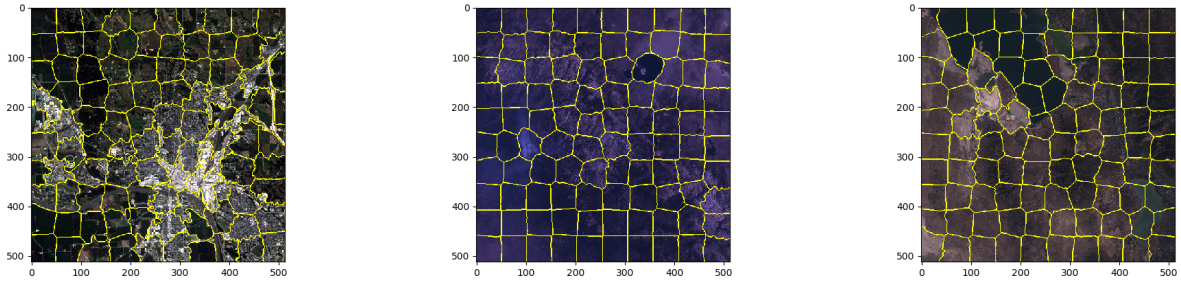
Part 1

Segmentation with k-means

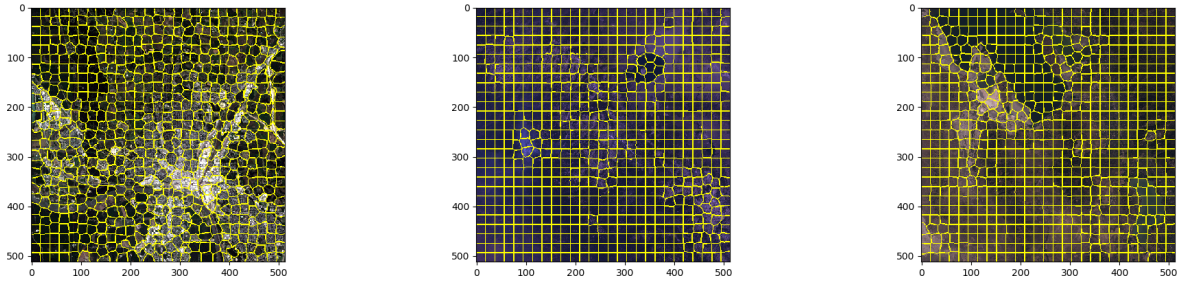
In this part firstly I have merged the red, green and the blue channel of the given sample images. And I got the rgb colored version of them. You can find them below. From left to right, they are Iowa, Owens Valley and Salt Lake.



After this, I have used slic() function to get the labels of each superpixel. When I seperated into 100 segments, I got the results below.

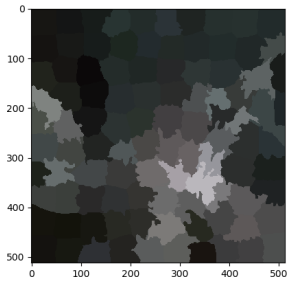
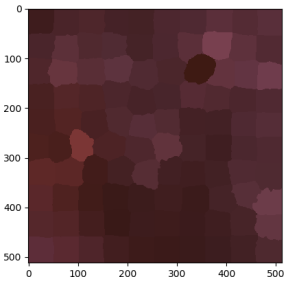
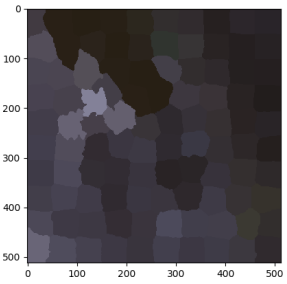


And when I seperated into 700 segments I got the results below.

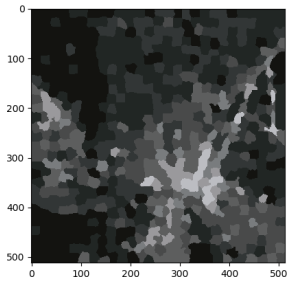
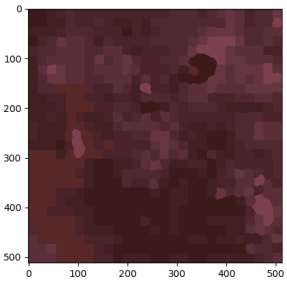
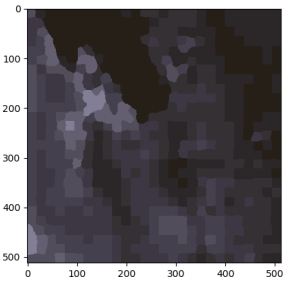


When I increase the compactness attribute of slic() function, borders got more straight rather than having zig-zags. Superpixels got more square-like shaped.

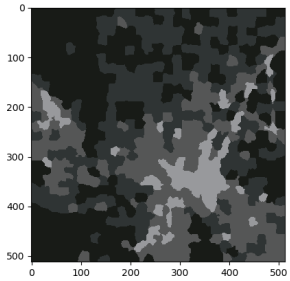
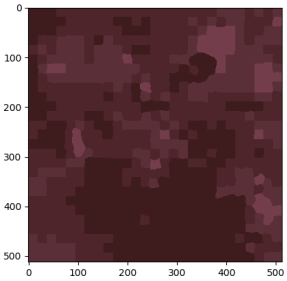
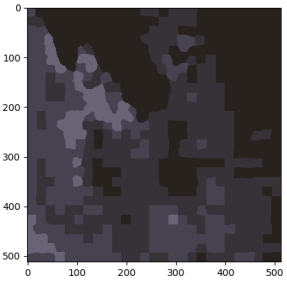
Then I calculated color means of the superpixels and created an image according to the means. I thought that using color means while using just the r,g,b channels of the image would give me satisfactory results. Besides I didn't had much time to create feature vector with more information. Below you can see the resulting images.

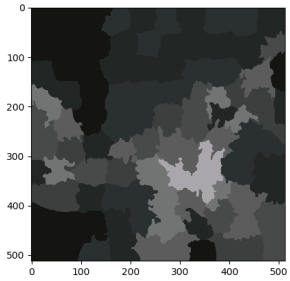
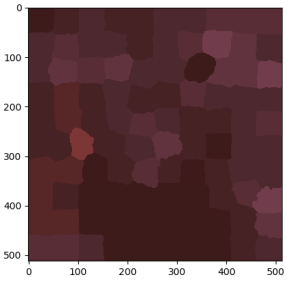
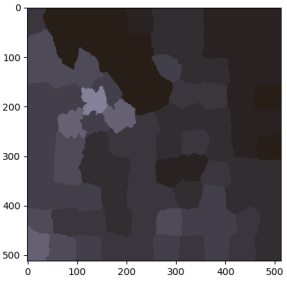
Then I clustered the superpixellated image using k-means clustering algorithm. After that I visualized the return value of the scikit learn's kmeans function. Below results are obtained with 700 superpixels and 8 clusters.

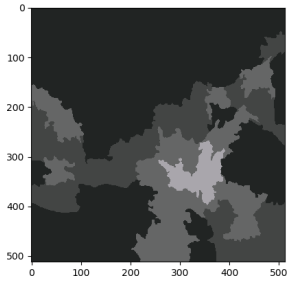
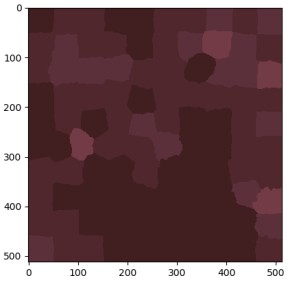
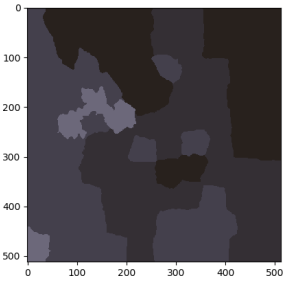
Below results are obtained with 700 superpixels and 4 clusters.

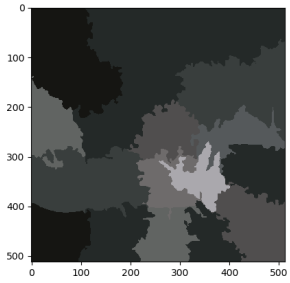
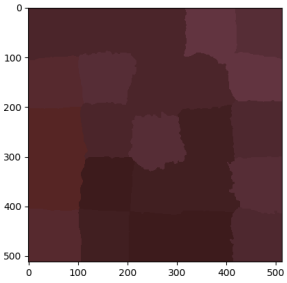
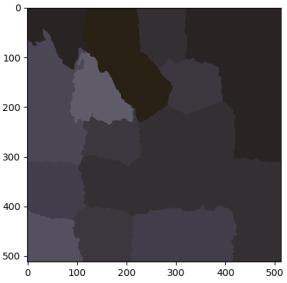
Below results are obtained with 100 superpixels and 8 clusters.

Below results are obtained with 100 superpixels and 4 clusters.

Below results are obtained with 25 superpixels and 8 clusters.

I think the most satisfactory results are with 25 superpixels and 8 clusters. The reason I couldn't get successful results is that I just used color mean information of superpixels. With color histogram and location information, I could've got more successful information.

Part 2

Infrared Band

Not implemented