HW2: Problem 3

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1 Read and display the image:

The rose on ice image:

Figure 1: Rose on ice image.

2 Part 1

2.1 K-means Clustering: 2 Clusters

Image split into two clusters:

Figure 2: Image with K-means Clustering: 2 Clusters.

2.2 K-means Clustering Histogram: 2 Clusters

Histogram of the image split into two clusters:

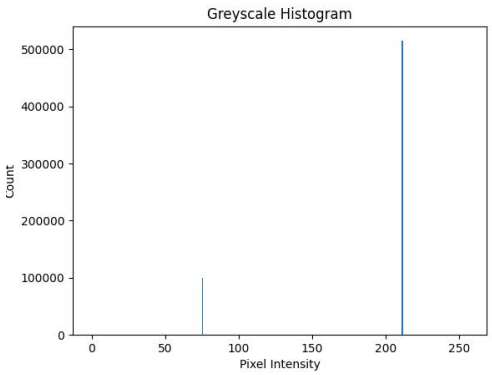

Figure 3: Histogram of image with K-means Clustering: 2 Clusters.

2.3 K-means Clustering: 3 Clusters

Image split into three clusters:

Figure 4: Image with K-means Clustering: 3 Clusters.

2.4 K-means Clustering Histogram: 3 Clusters

Histogram of the image split into three clusters:

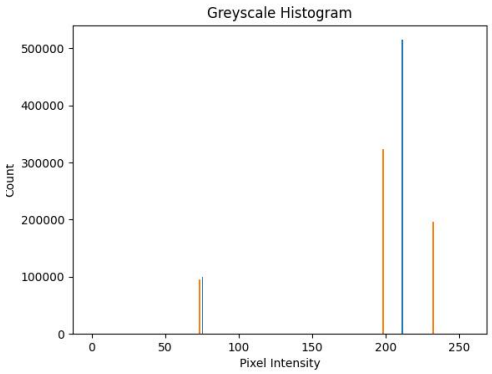

Figure 5: Histogram of image with K-means Clustering: 3 Clusters.

2.5 K-means Clustering: 4 Clusters

Image split into four clusters:

Figure 6: Image with K-means Clustering: 4 Clusters.

2.6 K-means Clustering Histogram: 4 Clusters

Histogram of the image split into four clusters:

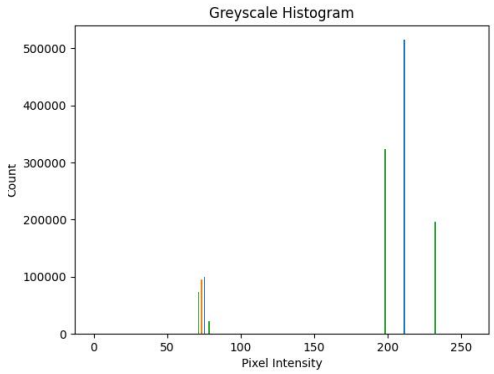

Figure 7: Histogram of image with K-means Clustering: 4 Clusters.

2.7 K-means Clustering: 5 Clusters

Image split into five clusters:

Figure 8: Image with K-means Clustering: 5 Clusters.

2.8 K-means Clustering Histogram: 5 Clusters

Histogram of the image split into five clusters:

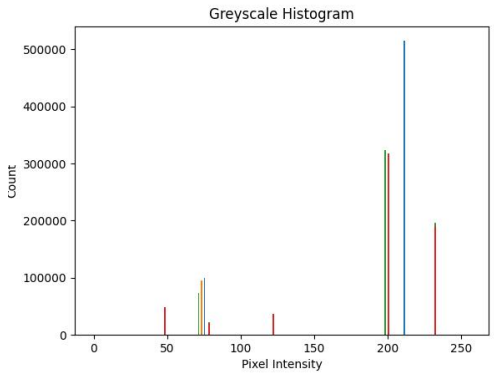

Figure 9: Histogram of image with K-means Clustering: 5 Clusters.

3 Part 2

3.1 Convert the image into greyscale:

Figure 10: Convert the image into greyscale.

3.2 Plot the histogram:

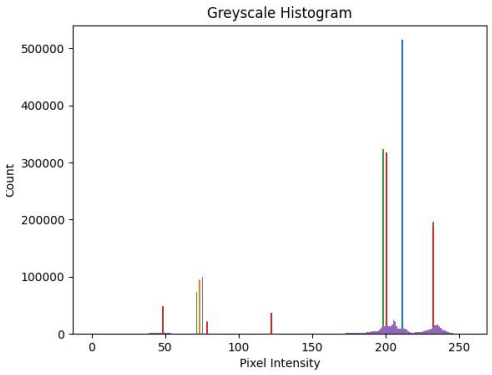

Figure 11: Histogram of greyscale image.

4 Part 3

4.1 Image thresholded using Otsu's method.

The optimal threshold for the grayscale image determined by Otsu is: 143

Figure 12: Image thresholded using Otsu's method.

4.2 Plot the histogram of the image that underwent Otsu thresholding:

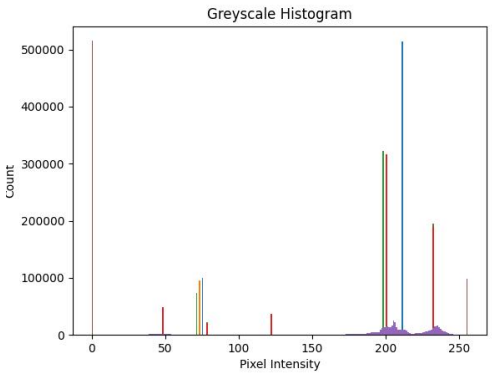

Figure 13: Histogram of greyscale image.