

Assignment No. 2

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1. Implement the Histogram specification algorithm using the two approaches discussed in class: (a) via $T_2 T_1$, and (b) exact histogram specification. Name the two files `myhistspec.m` and `myexacthistspec.m`. In the first case, the input to the function should be two vectors p_R and p_S , the input and specified distribution functions, each of size $L - 1$, while the output should be a vector containing $T_2 T_1(r_k)$, $k = 0, \dots, L - 1$. In the second case, the input to the function should be an image I , the specified distribution function p_S as an $L - 1$ vector, and k , the number of neighborhoods to be considered for inducing a total order on the pixels. The neighborhoods used should be of size $(2j + 1)$, $j = 1, \dots, k$. The output of this function should be the output image with the desired distribution p_S , only if the given k number of neighborhoods induce a total order. Otherwise, the function should simply give out the error message: The neighborhoods do not induce a total order on the pixels of the given image.

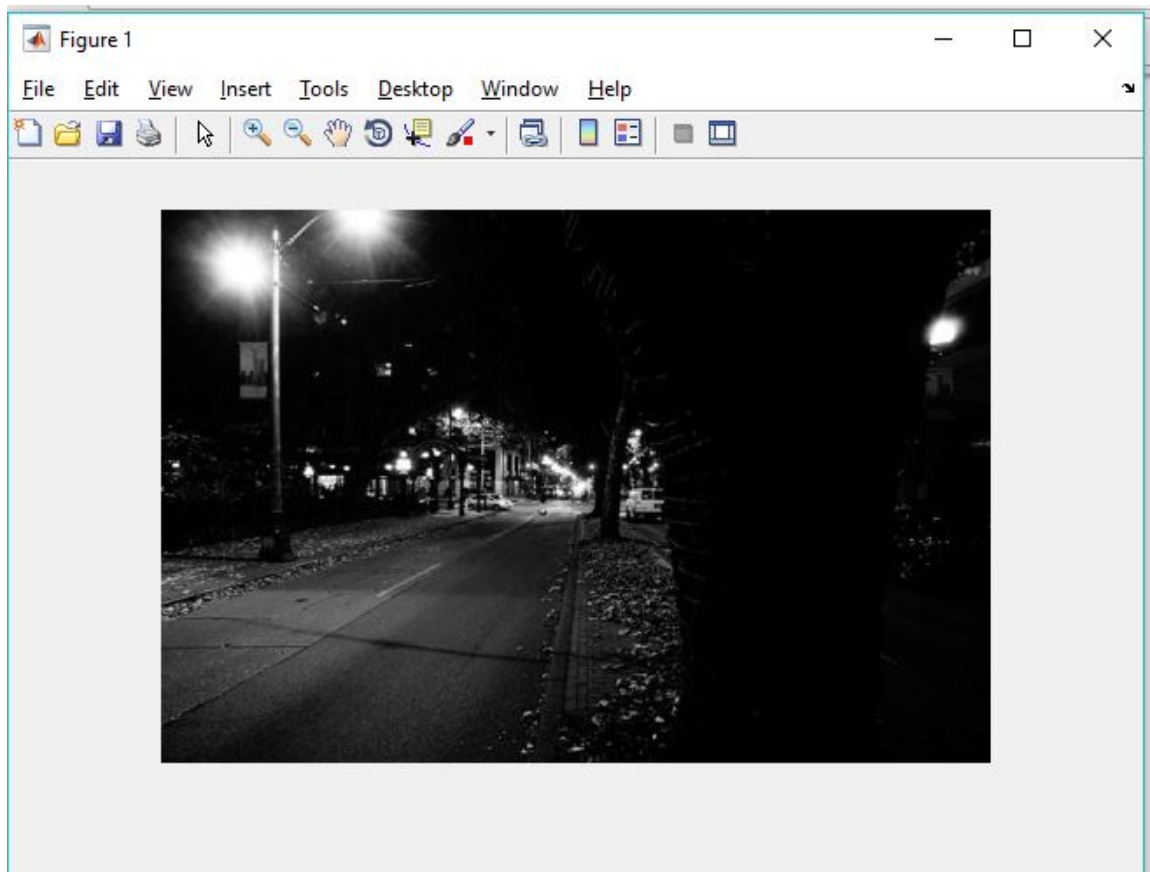


Figure 1: Original Image 1

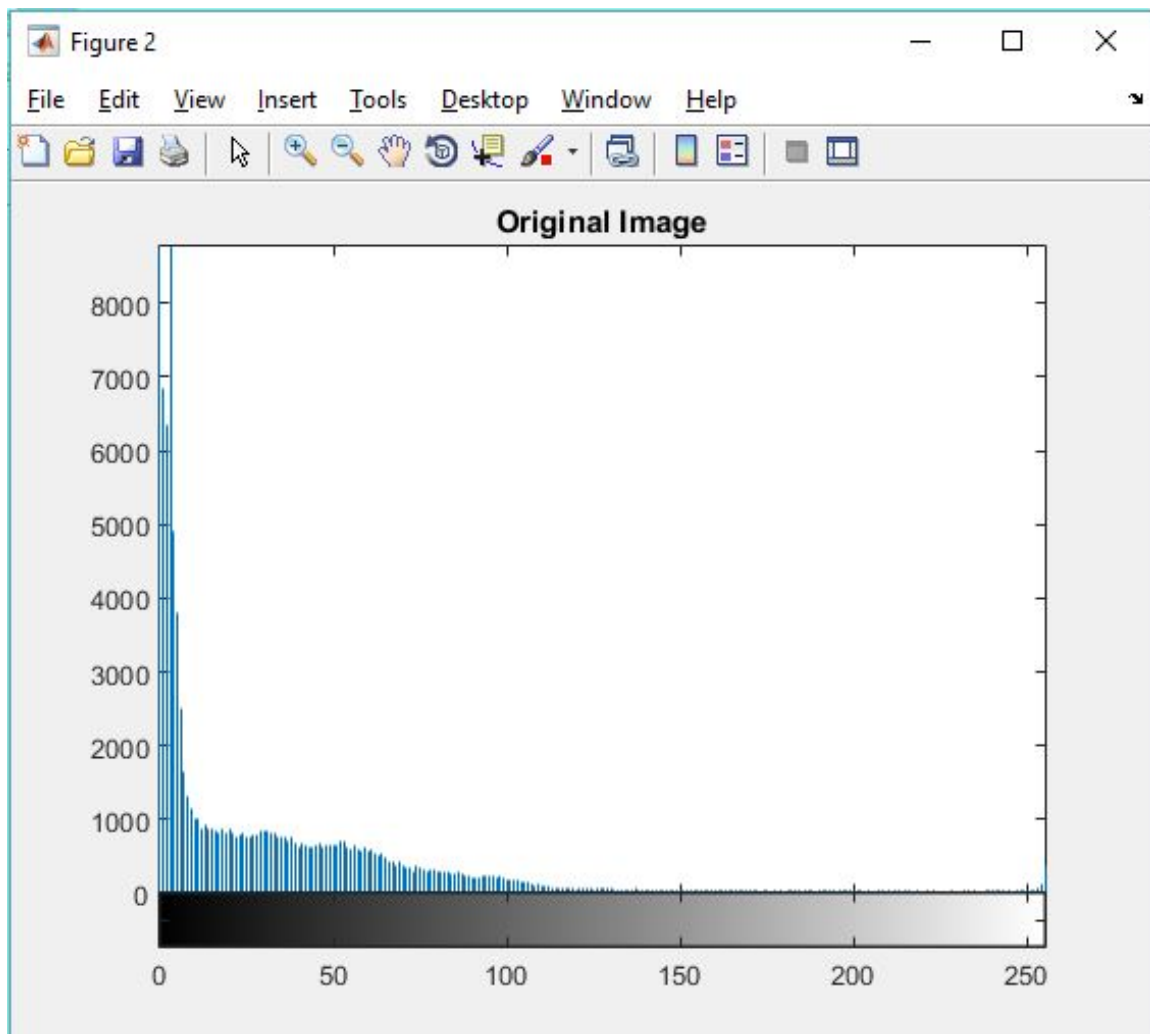


Figure 2: Histogram of Original Image 1

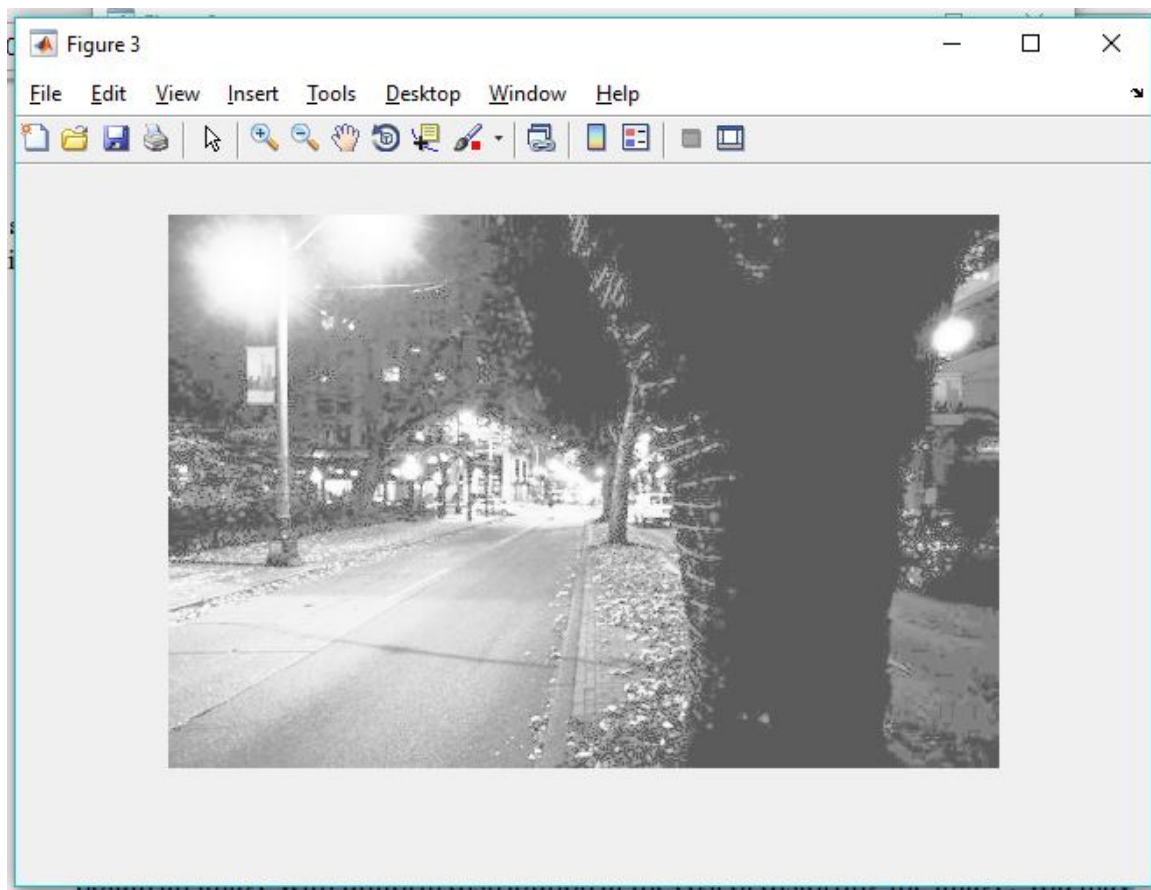


Figure 3: Equalized Image 1

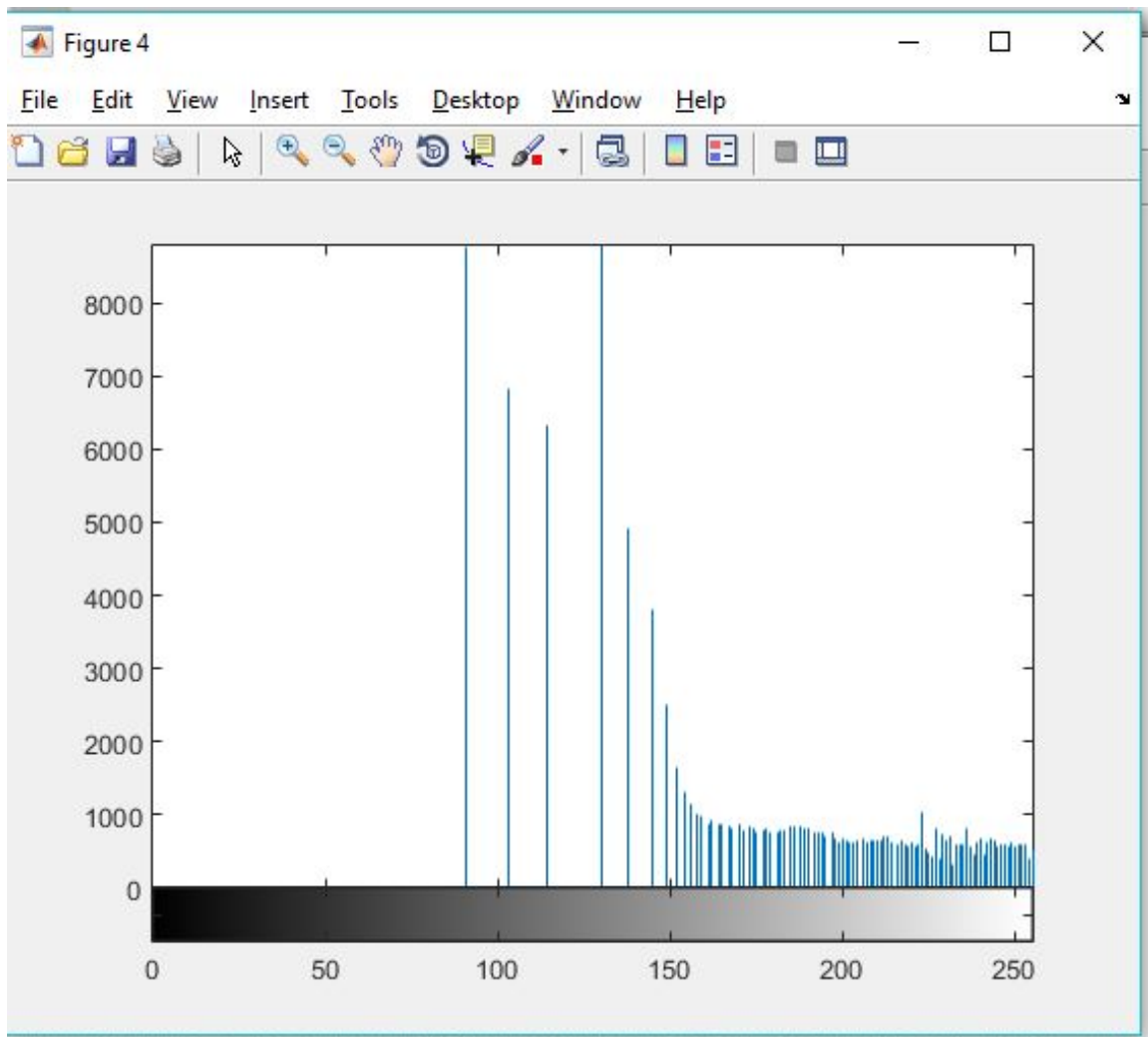


Figure 4: Histogram Of Equalizaed Image 1

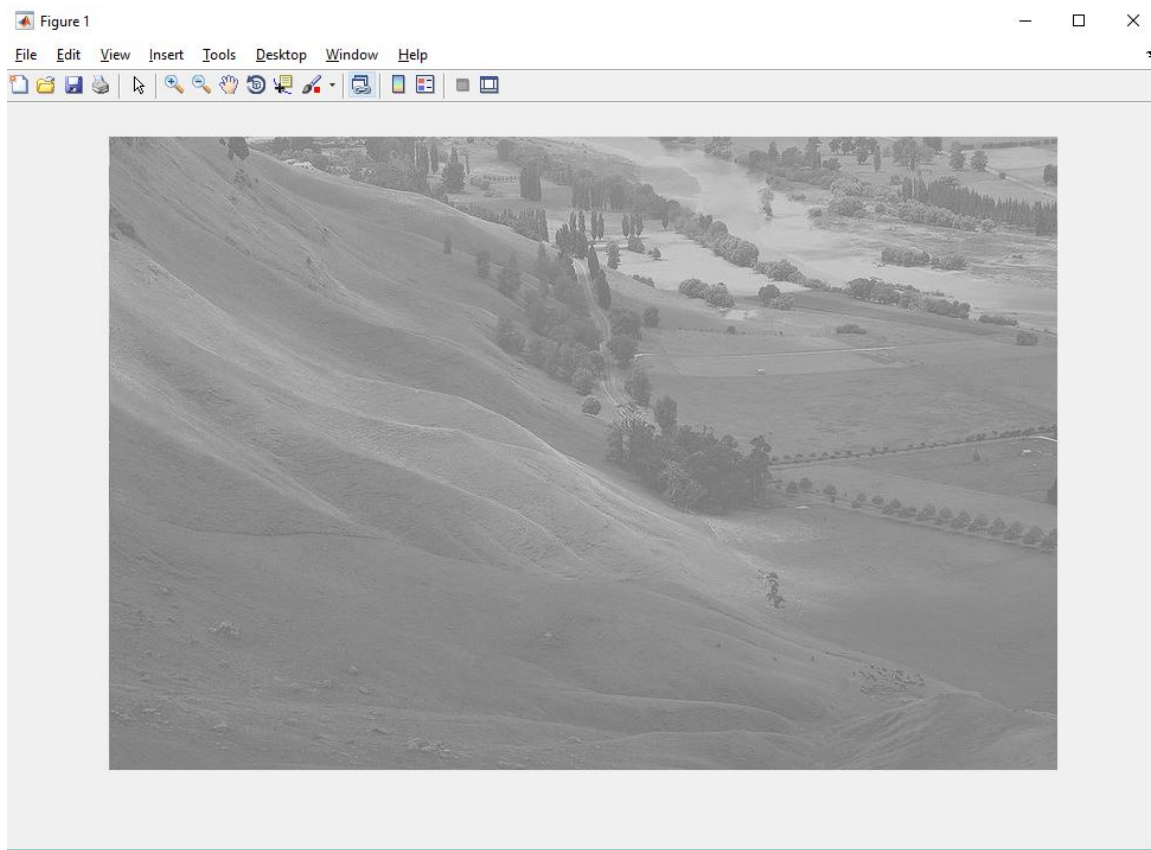


Figure 5: Original Image 2

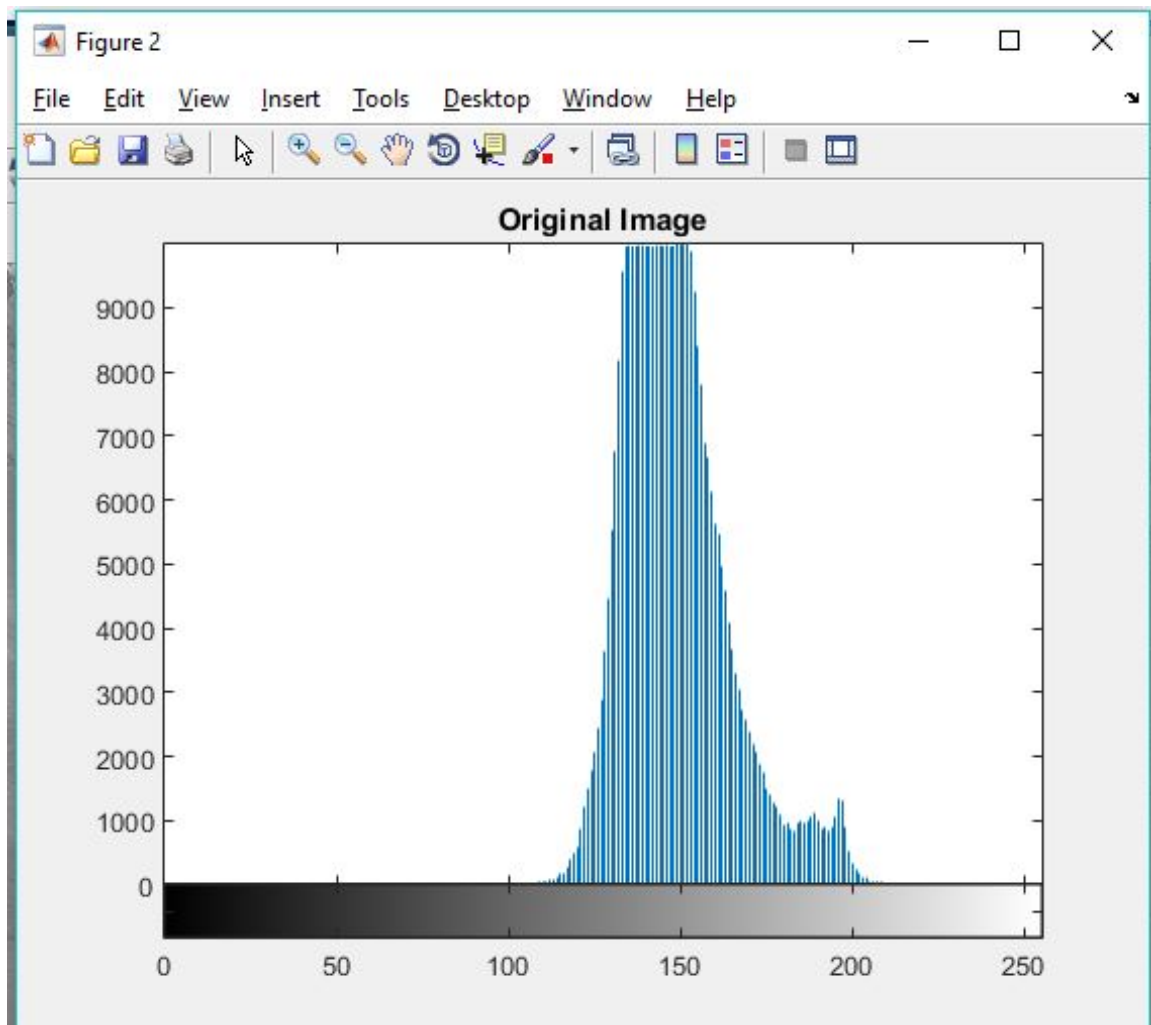


Figure 6: Histogram of Original Image 2

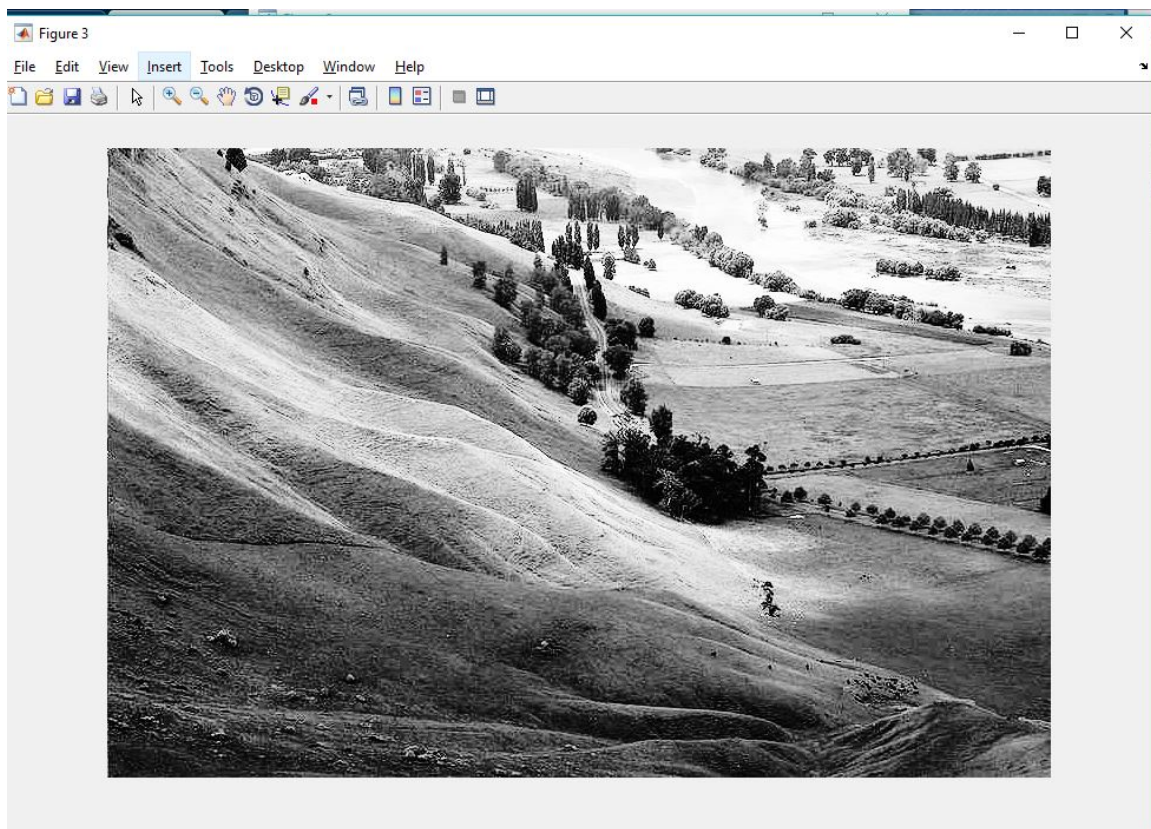


Figure 7: Equalized Image 2

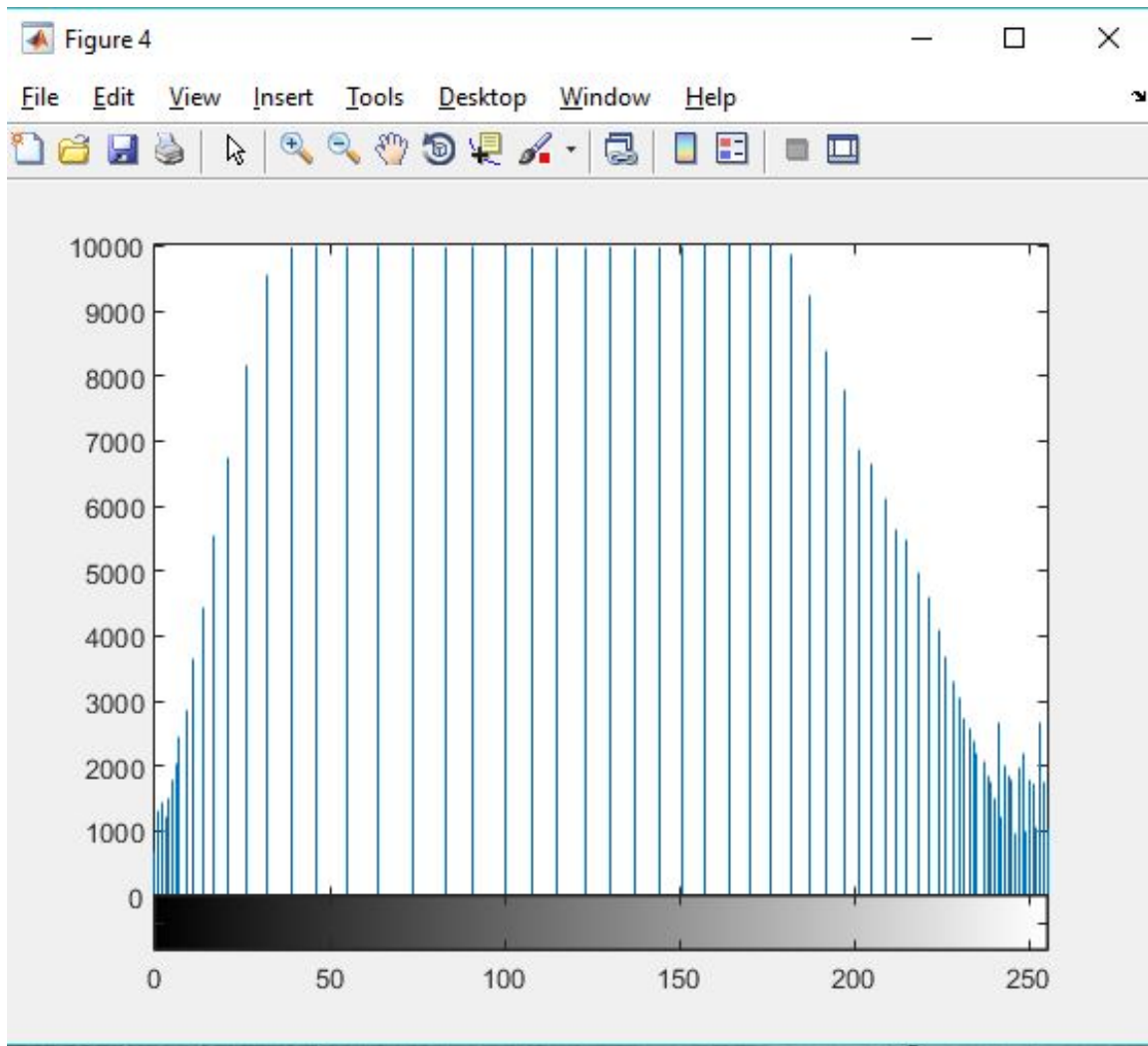


Figure 8: Histogram Of Equalizaed Image 2