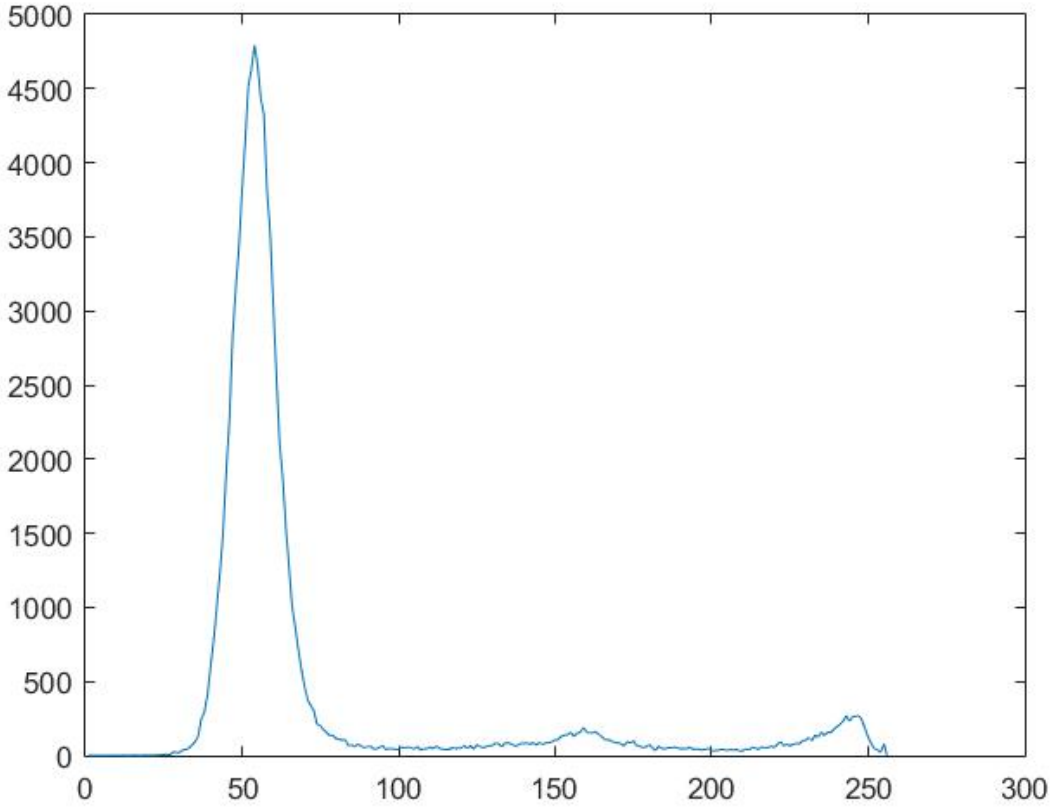
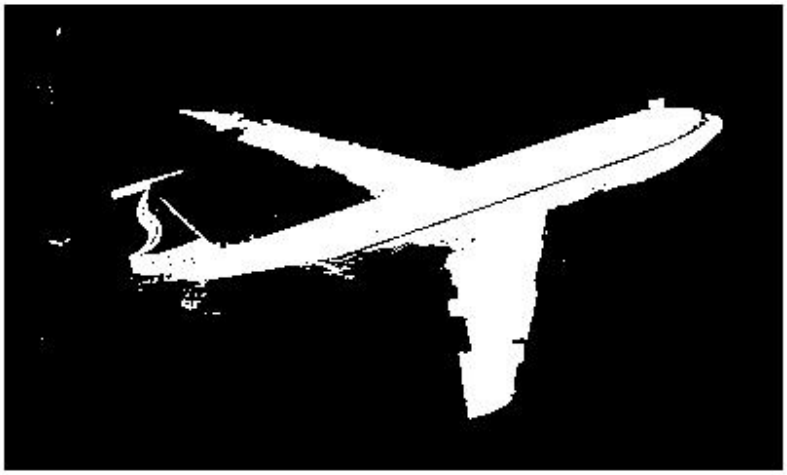
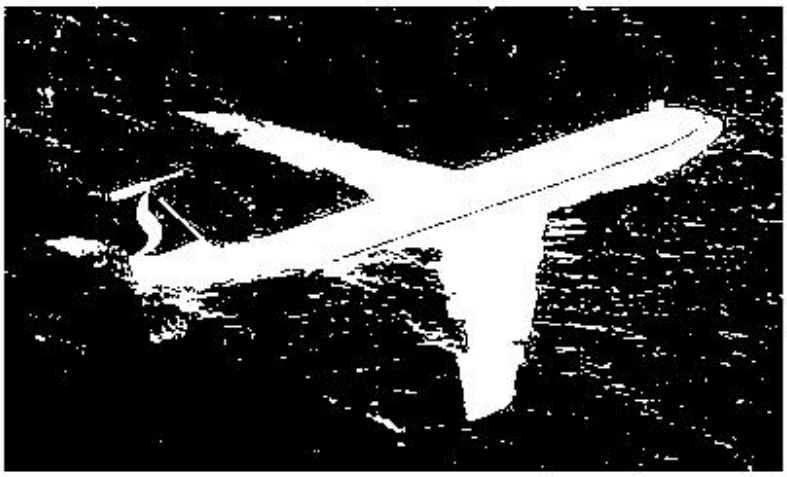
1) Create histogram of given image by counting every intensity value.



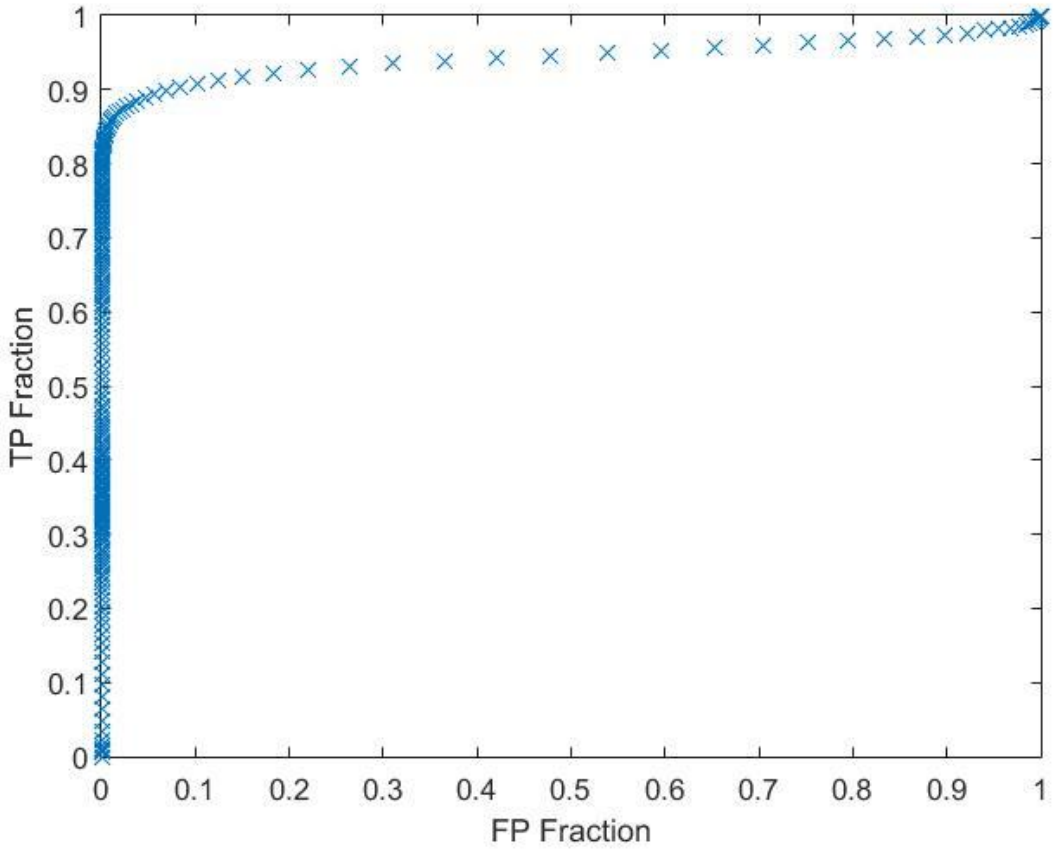
2) Threshold given image by iterating through every pixel and setting intensity values to 0 or 255 according to the comparison with threshold.

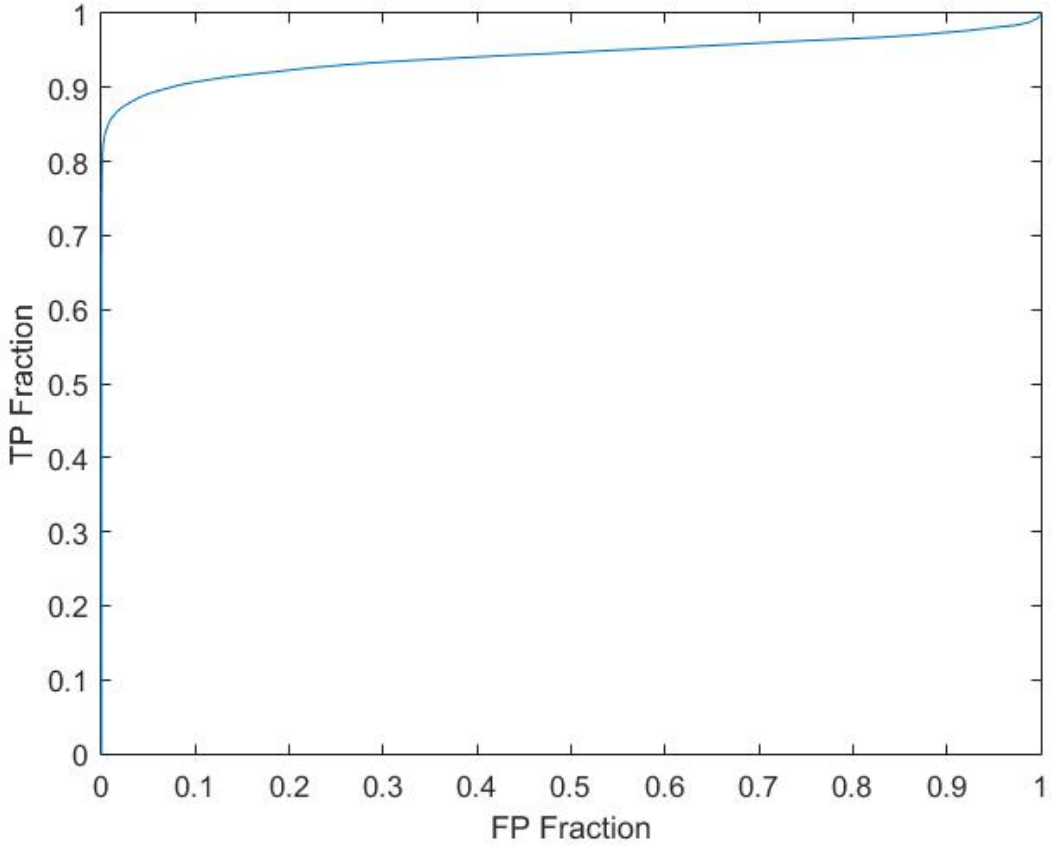
Below is an image with threshold value 90 followed by another image with threshold value 67.





3) Threshold given image for every intensity value between 0 and 255. Count true positives, true negatives, false positives, false negatives according to the ground truth and calculate sensitivity and specifity values for each threshold value. Then calculate best threshold value using nearest point calculation. Then plot ROC curve with sensitivity and specifity values. Below is the ROC curve.


TP Fraction
FP Fraction
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1


TP Fraction
FP Fraction
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1