

Project #2

assign May 19 due June 12, 2019

1. (30%) For the RGB color image, *dew on roses (c10lr).tif*. (a) Determine and plot the R, G and B-component images (18%). (b) Obtain and plot the color-transformed image by modifying the B-component image using histogram equalization scheme (12%).
2. (50%) Consider the image *airplane in the sky.tif*. Perform the image segmentation by edge-pixel detection + edge linking.
 - a) **Edge-pixel detection (20%)**: apply the Marr-Hildreth edge detection algorithm to obtain the edge image. Plot all the images generated during the entire step-by-step procedure of applying the algorithm. Assume two thresholds: 0% and 4% the maximum gray level of the **LoG image** (refer to **Example 10.7**).
 - b) **Edge linking by Hough transform (30%)**: based on the edge maps obtained in a), use the Hough transform to perform *edge linking*.
 - Firstly, determine the Hough parameter space using 2° increments for θ and 5 pixels increments for ρ . Make the same plot as Figure 10.31(c) (Example 10.12) (15%).
 - From your results of Hough parameter space, determine the cells containing the largest 20 counts to make the same plots as Figures 10.31(d)-10.34(e) (10%).
 - Determine the possible cells for the aircraft body (5%).
3. (20%) For the grayscale image, *dew on roses.tif*. Use the multiple global thresholding based on Otsu's algorithm partition the image into three segments.

Upload your project report
to the new e3 web before 23:55 of due date.

Dew on roses (color).tif
(512×512)



Dew on roses.tif
(512×512)



Airplane in the sky.tif
(900 × 1200)

