

ภาคผนวก ง.

ต้นแบบโปรแกรมปรับปรุงคุณภาพของภาพโดยยังคงรักษาค่าเฉลี่ย
ความสว่างของภาพโดยใช้การถ่วงน้ำหนักฮิสโตแกรมกระจายตามพื้นที่

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tic
clc
clear all
close all
img = imread('.....filename.....');
x1 = imhist(img);
x2 = cumsum(x1);
[X, Y] = size(img);
p = x2/(X*Y);
c = cumsum(p);
threshold = max(find(p <= 0.5));
s0 = double(min(min(img)));
s1 = double(max(max(img)));

    nn = cumsum(imhist(img));
    c = nn/max(nn);
    threshold(1) = max(find(c <= 0.5));

clear c
%-----CDF recalculation-----
nn = imhist(img);
lower = 0; upper = 255;
p1 = nn(lower+1:threshold(1)+1)/max(cumsum(nn(lower+1:threshold(1)+1)));
c1 = cumsum(p1); clear p1
    p2 = nn(threshold(1)+2:upper+1)/max(cumsum(nn(threshold(1)+2:upper+1)));
c2 = cumsum(p2); clear p2

w1 = ((threshold - s0) / threshold) + ((s0) / (2 * threshold));
lower = round(s0 * (1 - w1));
w1 = s0 / (2*threshold);
lower = round(w1 * threshold);

w2 = ((s1 - (0.5 * s1)) / 256) + 0.5;
upper = round(w2 * 256);

oldlevel = lower:upper;
    [x1, y1] = size(c1);
    for i = 1:x1

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        newlevel(i) = round(lower + (threshold(1) - lower)*c1(i));
    end
    [x2, y2] = size(c2);
    for i = 1:x2
        newlevel(i+x1) = round(threshold(1) + (upper - threshold(1))*c2(i));
    end
    newimg = img;
    for i = 1:(upper-lower)
        newimg(find(img==oldlevel(i))) = newlevel(i);
    end

    %imshow(img);figure;imshow(newimg);figure;imhist(img);figure;imhist(newimg);
    fprintf('WBHE mean = %.5f\n', mean2(newimg));
    fprintf('WBHE AMBE = %.5f\n\n', abs(mean2(newimg)-mean2(img)));

    HEimg = histeq1(img);
    fprintf('HE mean = %.5f\n', mean2(HEimg));
    fprintf('HE AMBE = %.5f\n\n', abs(mean2(HEimg)-mean2(img)));

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