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% Program for channel identification

% Read the folder
path='NILM\';

list=dir([path, '*.jpg']);
for x=1:length(list)

    format = '%d Image is under processing';
    str = sprintf(format,x);
    disp(str);


    %Reading the input files
    images{x}=imread([path, list(x).name]);
    img = images{x};


    formatSpec_org = 'original%d.jpg';
    stro1 = sprintf(formatSpec_org,x)
    stro2 = 'OUTPUT\';
    s_o = strcat(stro2,stro1);
    imwrite(img,s_o);

 %Red, Green, Blue component
    red = img(:,:,1);
    green = img(:,:,2);
    blue = img(:,:,3);
    just_red = cat(1,red);
    just_green = cat(1,green);
    just_blue = cat(1,blue);

    %RED component
    formatSpec_red = 'red%d.jpg';
    strr1 = sprintf(formatSpec_red,x)
    strr2 = 'OUTPUT\';
    s_r = strcat(strr2,strr1);
    imwrite(just_red,s_r);

    %Green component
    formatSpec_green = 'green%d.jpg';
    strg1 = sprintf(formatSpec_green,x)
    strg2 = 'OUTPUT\';
    s_g = strcat(strg2,strg1);
    imwrite(just_green,s_g);

    %Blue component
    formatSpec_blue = 'blue%d.jpg';
    strb1 = sprintf(formatSpec_blue,x)
    strb2 = 'OUTPUT\';
    s_b = strcat(strb2,strb1);
    imwrite(just_blue,s_b);

%CMY Model
f = im2double(img);
r=f(:,:,1);
g=f(:,:,2);
b=f(:,:,3);
c = 1-r;
m = 1-g;
y = 1-b;
c = cat(1,c);
m = cat(1,m);
y = cat(1,y);

    %cyan component write
    formatSpec_cyan = 'cyan%d.jpg';
    strc1 = sprintf(formatSpec_cyan,x)
    strc2 = 'OUTPUT\';
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70        s_c = strcat(strc2,strc1);
71        imwrite(c,s_c);
72
73        %megenta component write
74        formatSpec_magenta = 'magenta%d.jpg';
75        strm1 = sprintf(formatSpec_magenta,x)
76        strm2 = 'OUTPUT\';
77        s_m = strcat(strm2,strm1);
78        imwrite(m,s_m);
79
80        %megenta component write
81        formatSpec_yel = 'yellow%d.jpg';
82        stry1 = sprintf(formatSpec_yel,x)
83        stry2 = 'OUTPUT\';
84        s_y = strcat(stry2,stry1);
85        imwrite(y,s_y);
86
87
88    %HSV model
89    h_model=rgb2hsv(img);
90    %figure, imshow(h_model), title('HSV image')
91    %imwrite(h_model,'C:\Users\Infra\Documents\MATLAB\hsv.jpg')
92    h=h_model(:,:,1);
93    s_r=h_model(:,:,2);
94    v=h_model(:,:,3);
95    hue = cat(1,h);
96    satu = cat(1,s_r);
97    valo = cat(1,v);
98
99        %Hue component write
100       formatSpec_hue = 'hue%d.jpg';
101       strh1 = sprintf(formatSpec_hue,x)
102       strh2 = 'OUTPUT\';
103       s_h = strcat(strh2,strh1);
104       imwrite(hue,s_h);
105
106       %Saturation component write
107       formatSpec_sat = 'saturation%d.jpg';
108       strs1 = sprintf(formatSpec_sat,x)
109       strs2 = 'OUTPUT\';
110       s_s = strcat(strs2,strs1);
111       imwrite(satu,s_s);
112
113       %Intensity component write
114       formatSpec_int = 'intensity%d.jpg';
115       stri1 = sprintf(formatSpec_int,x)
116       stri2 = 'OUTPUT\';
117       s_i = strcat(stri2,stri1);
118       imwrite(valo,s_i);
119
120
121   %YcbCR model
122   ycbcr=rgb2ycbcr(img);
123   %figure, imshow(ycbcr), title('YCbCr image')
124   y = ycbcr(:,:,1);
125   cb = ycbcr(:,:,2);
126   cr = ycbcr(:,:,3);
127   just_y = cat(1,y);
128   just_cb = cat(1,cb);
129   just_cr = cat(1,cr);
130       %Y component write
131       formatSpec_y = 'Y%d.jpg';
132       str_y1 = sprintf(formatSpec_y,x)
133       str_y2 = 'OUTPUT\';
134       s_Y = strcat(str_y2,str_y1);
135       imwrite(just_y,s_Y);
136
137
138       %Cb component write
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139       formatSpec_cb = 'Cb%d.jpg';
140       strcb1 = sprintf(formatSpec_cb,x)
141       strcb2 = 'OUTPUT\';
142       s_cb = strcat(strcb2,strcb1);
143       imwrite(just_cb,s_cb);
144
145       %Cr component write
146       formatSpec_cr = 'Cr%d.jpg';
147       strcr1 = sprintf(formatSpec_cr,x)
148       strcr2 = 'OUTPUT\';
149       s_cr = strcat(strcr2,strcr1);
150       imwrite(just_cr,s_cr);
151
152   end
153
```