function msr

clear all;

clc;

close all;

fig = openfig('msr.fig');

handles = guihandles(fig);

list = {'Dataset-1', 'Dataset-2', 'Dataset-3', 'Dataset-4', 'Dataset-5', 'Dataset-6', 'Dataset-7', 'Dataset-8', 'Dataset-9', 'Dataset-10'};

titles = { ...

'Granny Smith apple1', ...

'Golden Delicious apple1', ...

'Granny Smith apple2', ...

'Golden Delicious apple2', ...

'Granny Smith apple3', ...

'Golden Delicious apple3', ...

'Granny Smith apple4', ...

'Golden Delicious apple4', ...

'Granny Smith apple5', ...

'Golden Delicious apple5'

};

set(handles.listbox, 'String', list);

set(handles.listbox, 'CallBack', @showtitle);

set(handles.run, 'CallBack', @run);

set(handles.close, 'CallBack', 'close(gcf)');

function run(varargin)

val = get(handles.listbox, 'Value');

dirname = strcat('C:\MATLAB\R2009a\bin\Dataset',sprintf('%d',val),'\\*.jpg');

srcFiles = dir(dirname);

% Main Program Starts here ...

figure;

set(gcf, 'Position', get(0,'Screensize'));

set(gcf,'name','Defects Identified','numbertitle','off')

for i = 1 : length(srcFiles)

filename = strcat('C:\MATLAB\R2009a\bin\Dataset',sprintf('%d',val),'\',srcFiles(i).name);

I4 = imread(filename);

ir=rgb2ycbcr(I4);

kf=ir(:,:,2)>65 & ir(:,:,2)<120;

d=imfill(kf,'holes');

se=strel('disk',100);

w=imclose(d,se);

IG = rgb2gray(I4);

bimage = im2bw(IG,0.35);

%remove dots

bimage=imcomplement(bimage);

bimage = bwareaopen(bimage,40);

bimage = imcomplement(bimage);

imwrite(bimage,sprintf('C:\\MATLAB\\R2009a\\bin\\output\\%d.jpg',i));

%highlight defect

%se = strel('disk', 10); %# structuring element

bimage = bimage & w;

[B,L,N,A] = bwboundaries(bimage);

subplot(2,4,i),subimage(bimage); axis off;

hold on;

for k=1:length(B),

if(~sum(A(k,:)))

boundary = B{k};

plot(boundary(:,2),...

boundary(:,1),'r','LineWidth',3);

for l=find(A(:,k))'

boundary = B{l};

plot(boundary(:,2),...

boundary(:,1),'g','LineWidth',2);

end

end

end

end

figure;

set(gcf, 'Position', get(0,'Screensize'));

set(gcf,'name','Original Images','numbertitle','off')

for i = 1 : length(srcFiles)

filename = strcat('C:\MATLAB\R2009a\bin\Dataset',sprintf('%d',val),'\',srcFiles(i).name);

image = imread(filename);

subplot(2,4,i), subimage(image);title(i);

axis off;

end

clear;

clc;

srcFiles2 = dir('C:\MATLAB\R2009a\bin\output\\*.jpg');

i=1;

filename = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i).name);

filename1 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+1).name);

filename2 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+2).name);

filename3 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+3).name);

filename4 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+4).name);

filename5 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+5).name);

filename6 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+6).name);

filename7 = strcat('C:\MATLAB\R2009a\bin\output\',srcFiles2(i+7).name);

image = im2bw(imread(filename));

image1 = im2bw(imread(filename1));

image2 = im2bw(imread(filename2));

image3 = im2bw(imread(filename3));

image4 = im2bw(imread(filename4));

image5 = im2bw(imread(filename5));

image6 = im2bw(imread(filename6));

image7 = im2bw(imread(filename7));

image = image & image1;

image2 = image2 & image3;

image4 = image4 & image5;

image6 = image6 & image7;

image = image & image2;

image4 = image4 & image6;

image = image & image4;

[xmax,ymax] = size(image);

BW1=double(image);

Black\_pix=0;

for i=1:(xmax)-1

for j=1:(ymax)-1

if BW1(i,j)==0

Black\_pix=Black\_pix+1;

end

end

end

if Black\_pix > 100

message = sprintf('Apple Defective\n REJECT !');

msgbox(message);

else

message = sprintf('Apple Non-Defective\n ACCEPT !');

msgbox(message);

end

end

function showtitle(varargin)

val = get(handles.listbox, 'Value');

set(handles.title, 'String', titles{val});

end

end