**SOURCE CODING**

clc;

clear all;

close all;

cd Images

[filename, pathname] = uigetfile('\*.jpg;\*.bmp', 'Pick an Image File');

if isequal(filename,0) || isequal(pathname,0)

warndlg('User pressed cancel')

else

inp\_im1 = imread( filename);

inp\_im1 = imresize(inp\_im1,[256,256]);

[r c p] = size(inp\_im1);

if p==3

inp\_im1 = rgb2gray(inp\_im1);

end

end

[filename, pathname] = uigetfile('\*.jpg;\*.bmp', 'Pick an Image File');

if isequal(filename,0) || isequal(pathname,0)

warndlg('User pressed cancel')

else

inp\_im2 = imread( filename);

inp\_im2 = imresize(inp\_im2,[256,256]);

[r c p] = size(inp\_im2);

if p==3

inp\_im2 = rgb2gray(inp\_im2);

end

end

cd ..

figure('Name','Selected Images');

subplot(1,2,1); imshow(inp\_im1);

subplot(1,2,2); imshow(inp\_im2);

inp\_im1 = double(inp\_im1);

inp\_im2 = double(inp\_im2);

%%%%%%Averaging based pixel level fusion

for ii = 1:size(inp\_im2,1)

for jj = 1:size(inp\_im2,2)

Fim(ii,jj) = (inp\_im1(ii,jj) + inp\_im2(ii,jj))./2;

end

end

figure;

imshow(Fim,[]);

title('Fused Image');

out = Fim;

%%%%%%%image segmentation using clustering model

Input =double(out);

[r c] = size(Input);

Length = r\*c;

wd1=r;

wd2=c;

Dataset = reshape(Input,[Length,1]);

Clusters=4;

Cluster1=zeros(Length,1);

Cluster2=zeros(Length,1);

Cluster3=zeros(Length,1);

Cluster4=zeros(Length,1);

miniv = min(min(Input));

maxiv = max(max(Input));

range = maxiv - miniv;

stepv = range/Clusters;

incrval = stepv;

for i = 1:Clusters

K(i).centroid = incrval;

incrval = incrval + stepv;

end

for i=1:Length

for j = 1:Clusters

temp = Dataset(i);

difference(j) = abs(temp-K(j).centroid);

end

[y,ind]=min(difference);

if ind==1

Cluster1(i) =temp;

end

if ind==2

Cluster2(i) =temp;

end

if ind==3

Cluster3(i) =temp;

end

if ind==4

Cluster4(i) =temp;

end

end

AA1=reshape(Cluster1,[wd1 wd2]);

AA2=reshape(Cluster2,[wd1 wd2]);

AA3=reshape(Cluster3,[wd1 wd2]);

AA4=reshape(Cluster4,[wd1 wd2]);

figure('Name','Segmented Clusters');

subplot(2,2,1); imshow(AA1,[]);

subplot(2,2,2); imshow(AA2,[]);

subplot(2,2,3); imshow(AA3,[]);

subplot(2,2,4); imshow(AA4,[]);

se1 = strel('line',5,0);

se2 = strel('line',5,90);

se3 = strel('disk',2);

imout = imerode(im2bw(AA3),[se1 se2]);

imout1 = imerode(imout,se3);

imout2 = imdilate(imout1,se3);

imout2 = imfill(imout2,'holes');

[fout cnt] = bwlabel(imout2,8);

fout1 = bwareaopen(fout,670);

[fout1 cnt] = bwlabel(fout1,8);

prop = regionprops(fout1,'Area');

for i=1:1:cnt

if prop(i).Area > 4000

fout1(fout1==i)=0;

end

end

figure('Name','Tumor Extraction');

imshow(fout1);

%%%% Tumor Area

seg\_image = fout1;

[r c] = size(seg\_image);

Pcount = 0;

for h = 1:r

for w = 1:c

temp = seg\_image(h,w);

if temp ~= 0

Pcount = Pcount+1;

end

end

end

disp('No of Defect Cells from Brain: ');

disp(Pcount);

%%%%%%% Tumor area by counting no of pixels

tarea = (sqrt(Pcount)).\* 0.264;

disp('Tumor Area (in mm.^2): ');

disp(tarea);

fid = fopen('tumor.txt','wb');

fwrite(fid,num2str(tarea),'char');

fwrite(fid,' mm^2','char');

fclose(fid);