clc;

clear all;

close all;

warning off;

a=rgb2gray(imread('tumor1.jpg'));

figure,imshow(a);

%%

imData = reshape(a,[],1);

imData = double(imData);

[IDX, nn] = kmeans(imData,4);

imIDX = reshape(IDX,size(a));

%%

figure,

imshow(imIDX,[]),title('index image');

%%

figure,

subplot(3,2,1),imshow(imIDX==1,[]);

subplot(3,2,2),imshow(imIDX==2,[]);

subplot(3,2,3),imshow(imIDX==3,[]);

subplot(3,2,4),imshow(imIDX==4,[]);

%%

bw = (imIDX==2);

se = ones(5);

bw=imopen(bw,se);

bw=bwareaopen(bw,400);

figure,imshow(bw);

%%

WITH AREA CALCULATION

clc;

clear all;

close all;

warning off;

a=rgb2gray(imread('tumor2.jpg'));

figure,imshow(a);

%%

bw = reshape(a,[],1);

bw = double(bw);

[IDX, nn] = kmeans(bw,4);

imIDX = reshape(IDX,size(a));

%%

figure,

imshow(imIDX,[]),title('index image');

%%

figure,

subplot(3,2,1),imshow(imIDX==1,[]),title('segment 1');

subplot(3,2,2),imshow(imIDX==2,[]),title('segment 2');

subplot(3,2,3),imshow(imIDX==3,[]),title('segment 3');

subplot(3,2,4),imshow(imIDX==4,[]),title('segment 4');

%%

prompt='ENTER THE SEGMENT YOU WISH TO VERIFY';

str=input(prompt);

bw = (imIDX==str);

se = ones(5);

bw=imopen(bw,se);

bw=bwareaopen(bw,400);

figure,imshow(bw),title('binary image');

%%

xmax=255;

ymax=255;

whitepix=0;

for i=1:(xmax)-1

for j=1:(ymax)-1

if bw(j,i)==0

whitepix=whitepix+1;

end

end

end

whitepix

pix=white\*255\*255;

size=sqrt(pix)\*0.264;

size

if(size>6)

disp("TUMOR IS PRESENT");

else

disp("TUMOR IS ABSENT");

end

%%