Brain haemorrhagic:

Comment: :Program to run through the validation folder.

Code:

datasetFolder = 'E:\Acdemics\EBS CBE\21ES603 - Signal & Image Processing\Term Project\HEMORRHAGE\Hemorrhagic';

%datasetFolder='E:\Acdemics\EBS CBE\21ES603 - Signal & Image Processing\Term Project\archive\NO\_validation'

% Initialize counters for azccuracy calculation

totalImages = 0;

hemorrhageDetected = 0;

imageFiles = dir(fullfile(datasetFolder, '\*.jpg')); % Get a list of all image files in the folder Update the file extension if needed

for k = 1:length(imageFiles)

% Read the CT scan image

imagePath = fullfile(datasetFolder, imageFiles(k).name);

inputImage = imread(imagePath);

image = imresize(inputImage, [512, 512]);

% Convert the image to grayscale

grayImage = rgb2gray(image);

% Apply Gaussian smoothing

smoothedImage = imgaussfilt(grayImage, 2);

% Apply edge detection using the Sobel operator

edgeImage = edge(smoothedImage, 'sobel');

% Use morphological operations to enhance edges

se = strel('disk', 5);

edgeImage = imdilate(edgeImage, se);

% Thresholding to segment the image

threshold = 150; % Adjust this threshold based on your observations and datasets

segmentedImage = smoothedImage > threshold;

stats = regionprops(segmentedImage, 'Area');

totalArea = 0;

for i = 1:length(stats)

totalArea = totalArea + stats(i).Area;

end

fprintf('Total Area of all Segments: %d\n', totalArea);

areaThreshold = 19000; % Adjust this threshold based on your observations Use a threshold to determine if there is hemorrhage

if any([stats.Area] > areaThreshold)

disp('The brain sample has hemorrhage.');

hemorrhageDetected = hemorrhageDetected + 1;

else

disp('No hemorrhage detected.');

end

totalImages = totalImages + 1;

end

% Calculate and display the percentage of accuracy

accuracy = (hemorrhageDetected / totalImages) \* 100;

hemorrhageDetected

totalImages

fprintf('Accuracy: %.2f%%\n', accuracy);

Comment:

File to be run on single MRI File.

Code:

close all

inputImage = imread("E:\Acdemics\EBS CBE\21ES603 - Signal & Image Processing\Term Project\archive\NO\_validation\26 no.jpg"); % Provide the actual image path

%imagePath = 'E:\Acdemics\EBS CBE\21ES603 - Signal & Image Processing\Term Project\archive\no\17 no.jpg'

%image pre processing

image = imread(imagePath);

image=imresize(inputImage,[512,512])

grayImage = rgb2gray(image);

smoothedImage = imgaussfilt(grayImage, 2); % Gaussian smoothing

edgeImage = edge(smoothedImage, 'Sobel'); % Sobel filter

% Use morphological operations to enhance edges

se = strel('disk', 5);

edgeImage = imdilate(edgeImage, se);

% Thresholding to segment the image

threshold =150; % threshold based on trial and error

segmentedImage = smoothedImage > threshold;

stats = regionprops(segmentedImage, 'Area');% area of the segmented regions identified with region props

figure;

imshow(inputImage);

title('Original CT Scan Image');

figure;

imshow(segmentedImage);

title('Segmented Image (Hemorrhage Regions)');

% Print the areas of the identified segments

totalArea = 0;

for i = 1:length(stats)

fprintf('Segment %d Area: %d\n', i, stats(i).Area);

totalArea = totalArea + stats(i).Area;

end

fprintf('Total Area of all Segments: %d\n', totalArea);

% Use a threshold to determine if there is hemorrhage

areaThreshold = 19000; % Adjust this threshold based on your observations

if any(totalArea> areaThreshold)

disp('The brain sample has hemorrhage.');

else

disp('No hemorrhage detected.');

end