# **Tumor Area Location**

In the tumor area location function, it calculates the Solidity and Area from the output image after morphological operations. Then a threshold of 0.6 is applied on that Solidity. Then the area with high solidity is retrieved. If the retrieved area pixel’s sum is more than 100 then the tumor is decided to be present but if the sum is less than 100 then it is decided not to have the tumor in the image. Then a rectangle is drawn on the detected Tumor to show the location of the detected Tumor.

# **Tumor Boundary**

When the rectangle is drawn on the tumor, the exact area is calculated using edges of the detected tumor and a yellow line is wrapped up around the boundary of the tumor. For this purpose, ‘bwboundaries’ function is used which returned the x and y values of each point on the edge of tumor. Then these values are plotted on the input image so that detected tumor can be verified using visual inspection too.

# **Classify the Detected Tumor**

After detection and visualization of detected tumor, we have to categorize it into most suitable sensitivity level of the tumor. For which, firstly, white pixel count is calculated. Thereafter, three measurements parameters including ‘Area’, ‘Perimeter’, and the ‘Bounding Box’ are retrieved using ‘RegoinProp’ function. Then ‘Area’ and the ‘Perimeter’ are converted to millimeter value from pixel value. Once the values are calculated and finalized, they are shown to each corresponding text boxes. Furthermore, for the decision of Sensitivity level of the detected tumor, ‘Area’ is the main parameter. This can be categorized into following 4 categories:

1. If total area is less than 100 then set Sensitivity level to ‘**No Tumor**’
2. If total area is more than 100 and less than 2000 then set Sensitivity level to ‘**Low**’
3. If total area is more than 2000 and less than 4500 then set Sensitivity level to ‘**Medium**’
4. If total area is more than 4500 then set Sensitivity level to ‘**High**’

After decision of the Sensitivity level, Position of Centroid is plotted on the last figure to illustrate the actual center position of the Tumor