# USER GUIDE

## content

# 0 Starting Image

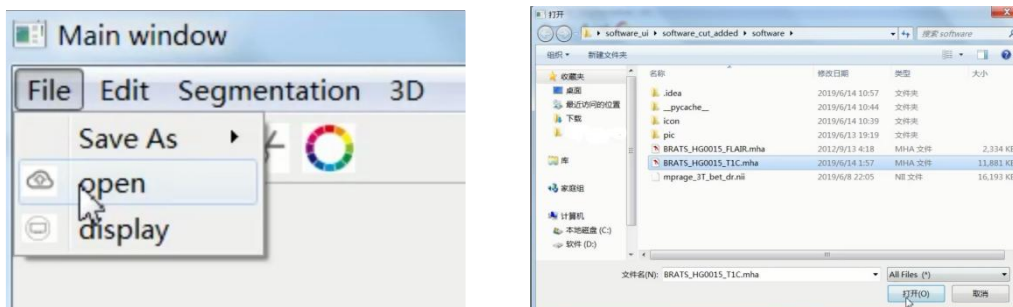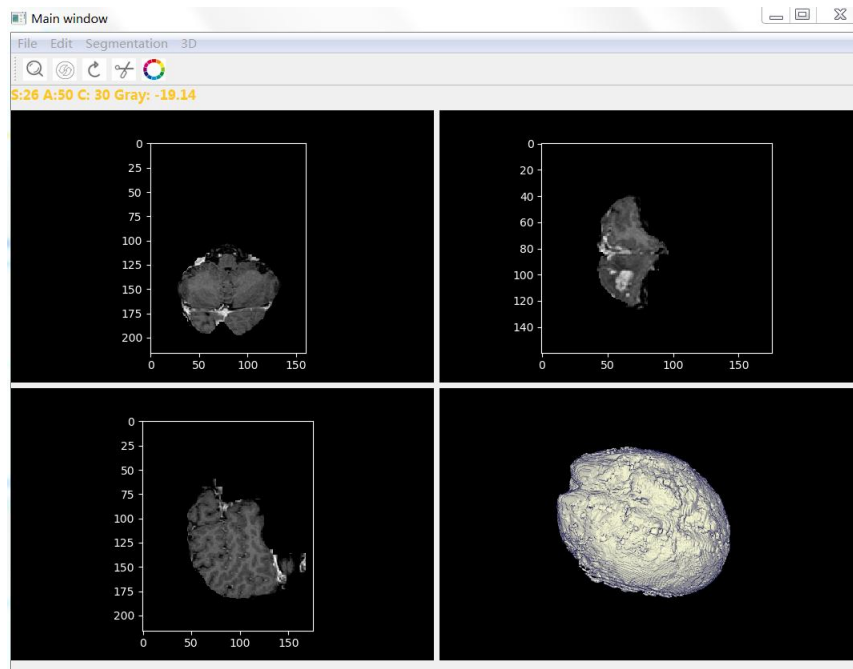**After clicking run, the following picture appears：**



# 1.File

### 1.1 open file：

Click "File -> open"，then choose path to open files in the format of *\mha or *\nii.



See the following interface, in which the lower right corner is a gifs (you can drag the mouse to rotate and other operations), and the remaining three are three slices based on rectangular coordinate system.

## 1.2 Save Files：

In "File -> Save As", we can find two encoding system. We can choose to convert the file to *mha or *nii.

Click "选择文件夹" to choose the path and the file can be automatically saved as the file of different format but of the same name.
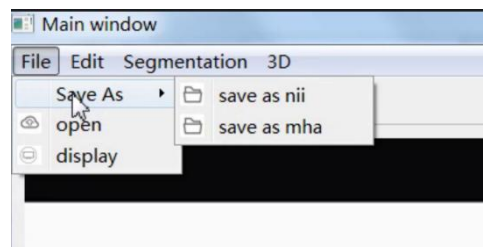


## 1.3  4*4 display

Click "File -> display"，and input a dimension (0, 1 or 2).

After confirmation, you can jump to the 4*4 window for a better look and feel.
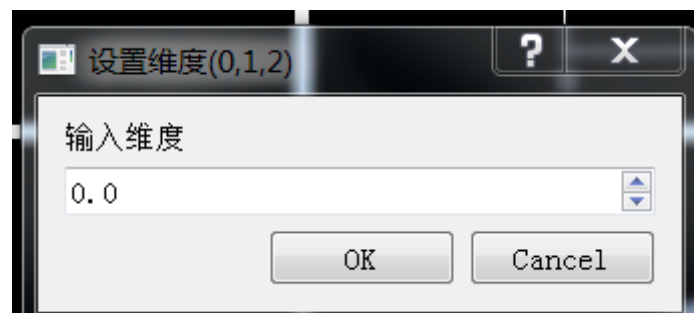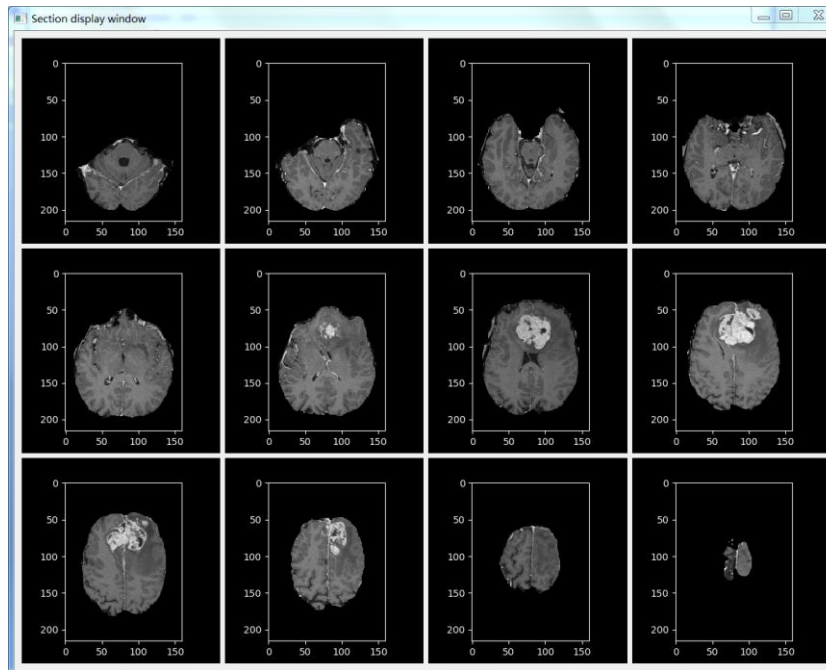
## 1.4 Save Segmentation Result

After you have done the segmentation, you may save the result by clicking "File-> Save Segmentation Result". Then you could find a *mha file in the directory you choose.

In this "segmentation_result.mha", the tumor part is painted white.







# 2 Edit

## 2.1 Set the contrast

Click "Edit->contrast", and input a contrast you want. (Attention: 0-1 means decreasing contrast, >1 means increasing contrast).

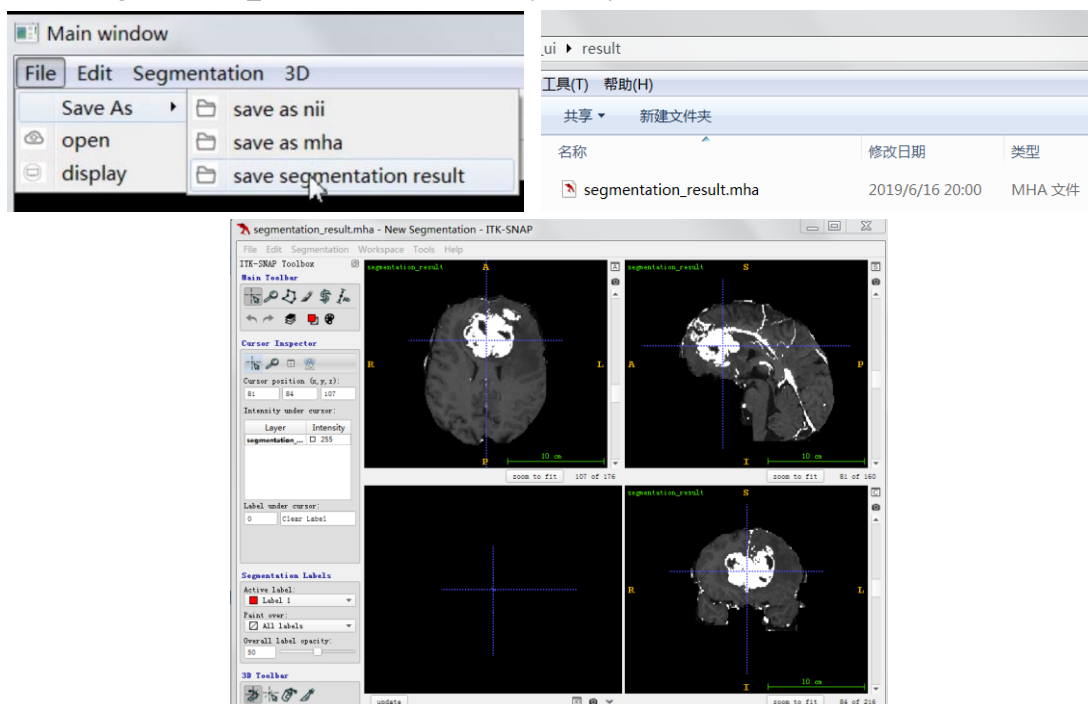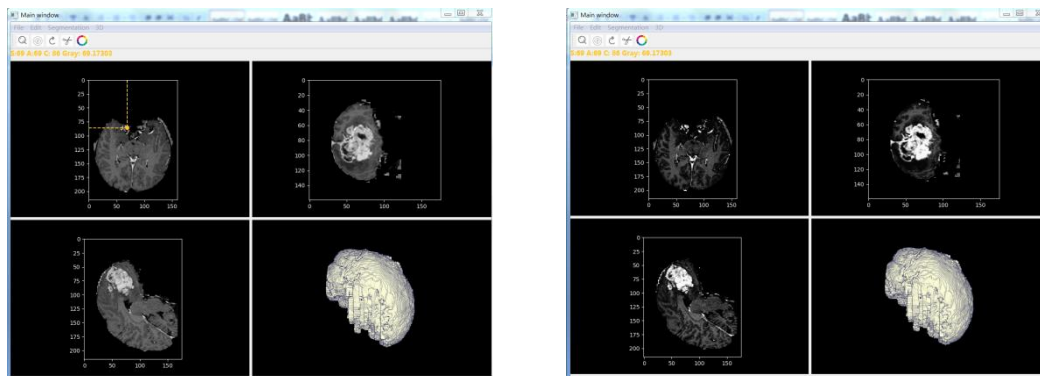As shown in the figure below, contrast is set to 10.



## 2.2 Set the brightness

Click "Edit->brightness", and input a brightness you want. (Attention: 0-1 means decreasing brightness, >1 means increasing brightness).
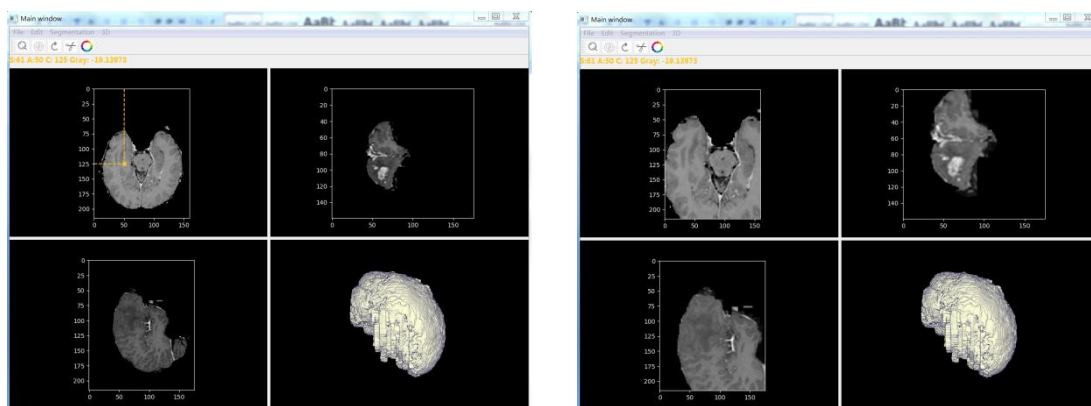
As shown in the figure below, brightness is set to 2.
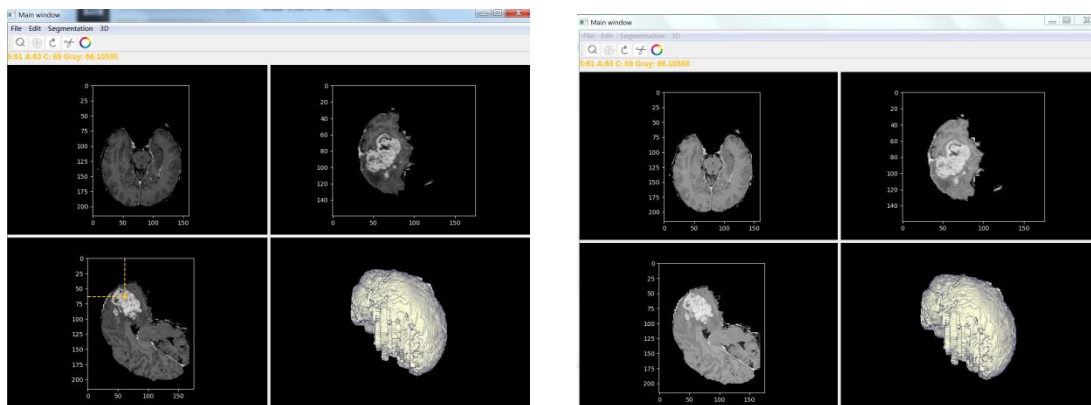


## 2.3 Zoom in

First click where you want to enlarge the image. Click the magnifying glass button on the toolbar or "Edit->maximize" for local magnification. The effect is shown below.
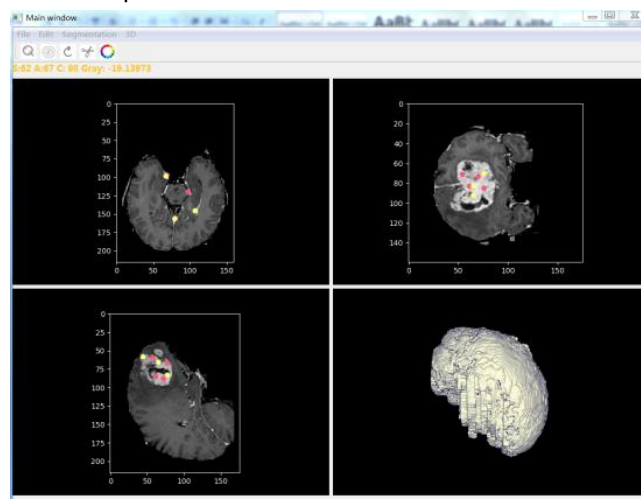
# 3 Segmentation

## 3.1 Selected tumor point

First, switch to the 3d view, and you can adjust the contrast or other functions so that all three views can show clear tumors as much as possible.

Hint: How to tell if it's a tumor? -- By looking at the grayscale at the top left coordinate, the gray scale at the tumor part will be larger (typically >100). Click the "switch mode button" to switch to manual annotation mode.



After seeing the following mode, click the "color" button, and select the color you like. Click the tumor location to mark them.

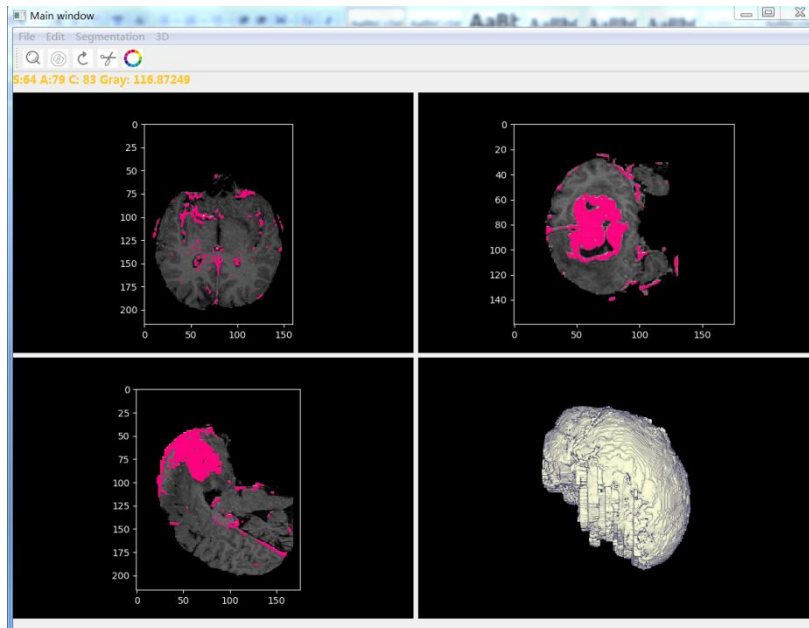Hint: You can click a few more points.



## 3.2 Manual Segmentation

After the dot notation, click "Segmentation->manual segmentation", and input the threshold (usually pick 30-50).

Generate segmentation image after confirmation. Now that the range of tumor has spread to the background, other functions can be explored.
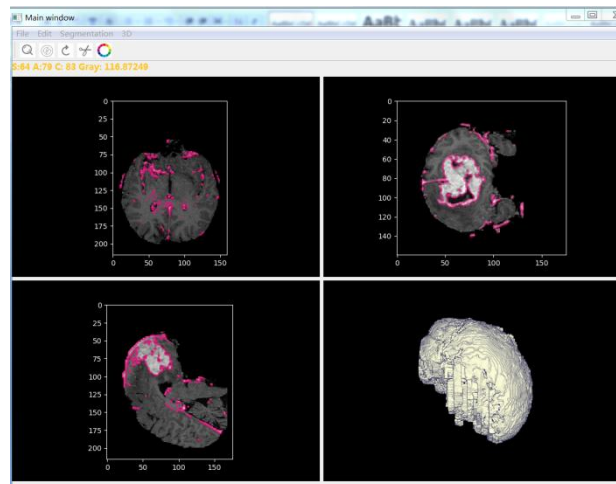
## 3.3 Generate Manual Segmentation Gif

Click Segmentation->Active Manual Segmentation, then you can see the gifs generated by drawing points in the tumor area.
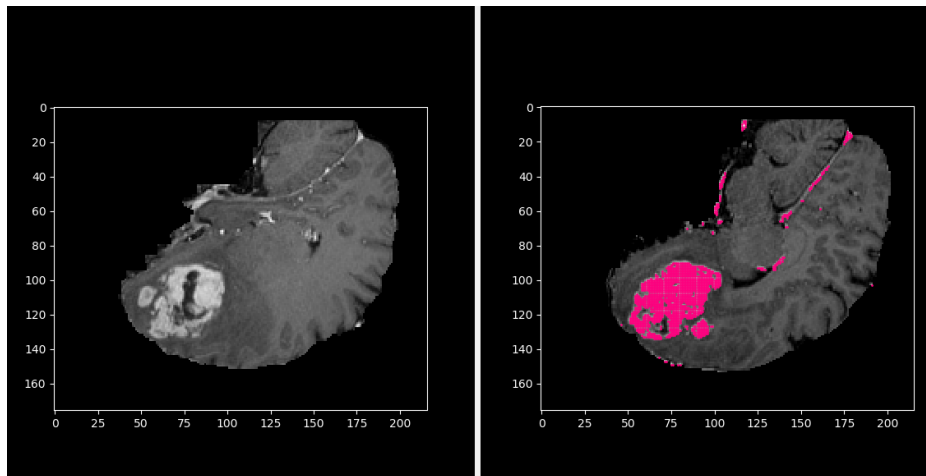


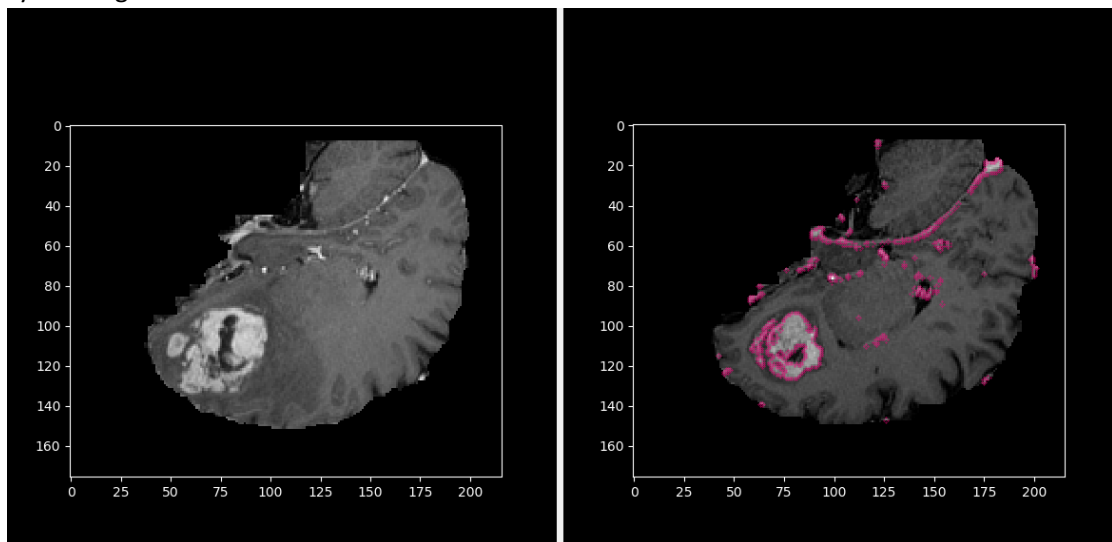## 3.4 Showing tumor contour

Click "Segmentation -> Manual Segmentation Outline". There is no color inside the colored spot area. The edges of the painted area remain colored so that the edges of the tumor are visible.
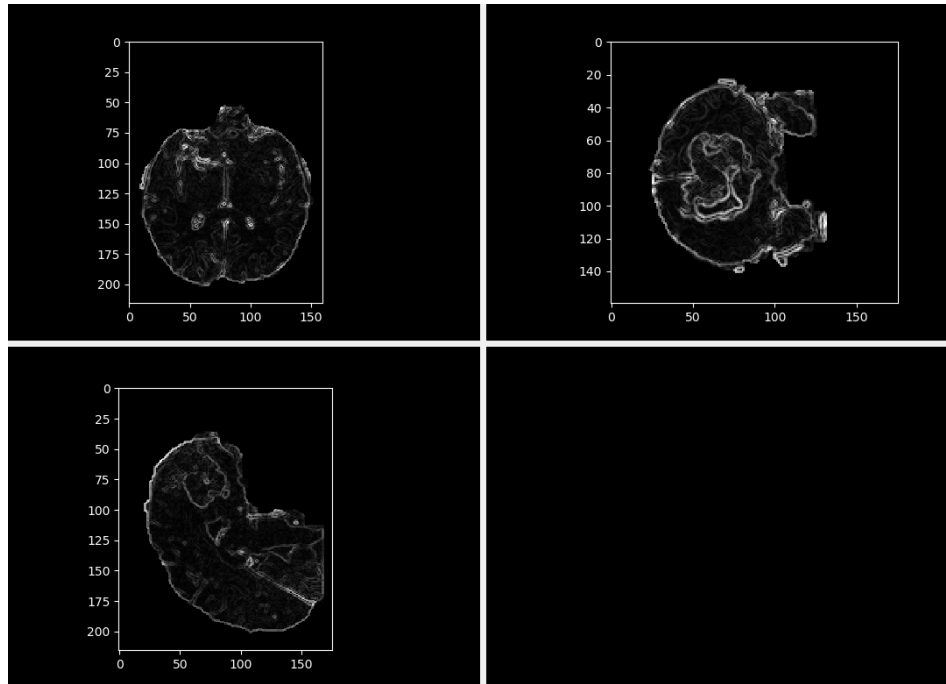
## 3.5 Showing tumor contour Gifs

Click "Segmentation->Active Manual Segmentation outline", then you can see the gifs generated by drawing the tumor contour.



## 3.6 outline

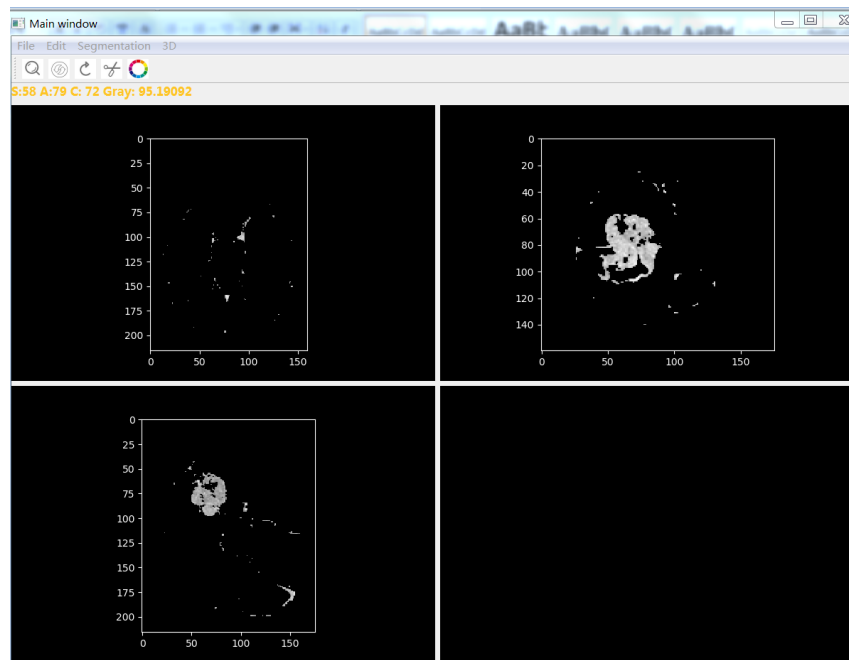Click "Segmentation->outline", we can see the contour of the brain in black and white..

### 3.7 Threshold

Click "Segmentation-> threshold", we can see the contour more clearly.

Switch to 3D mode and click a point in the figure (such as tumor point) before beginning to

"threshold segmentation". You can set the threshold through the gray value of this point。
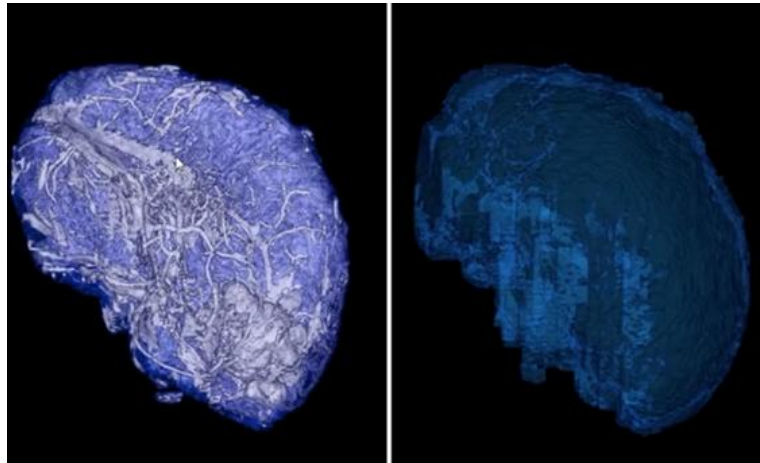


# 4 Display in 3D

### 4.1 colourful 3D

Click "3D-> colourful 3D", You get a rough 3D map of the tumor on the left and a detailed 3D map of the brain on the right.

Hint: the color is randomly generated, and if the GIF color is "extremely" ugly, please don't mind to try again.
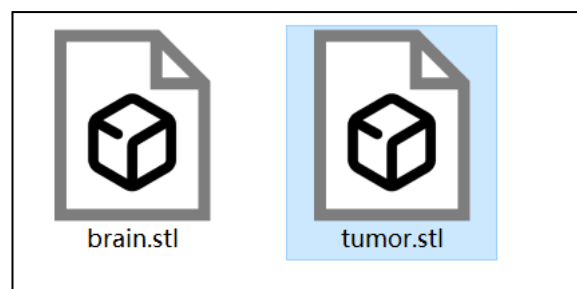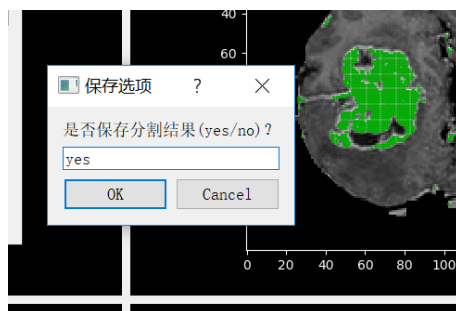


## 4.2 Active 3D

This step is generated after the segmentation. Click "3D-> Active 3D", select global color & transparency and tumor color & transparency, and wait to generate a GIF later.
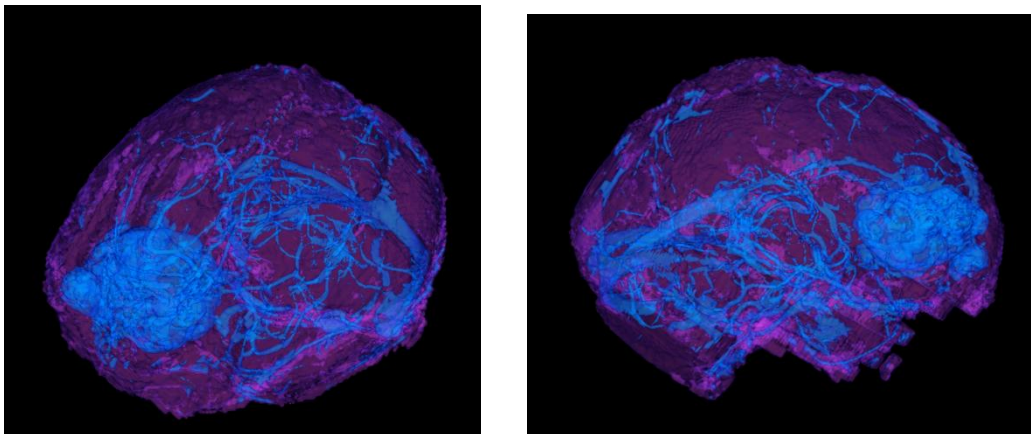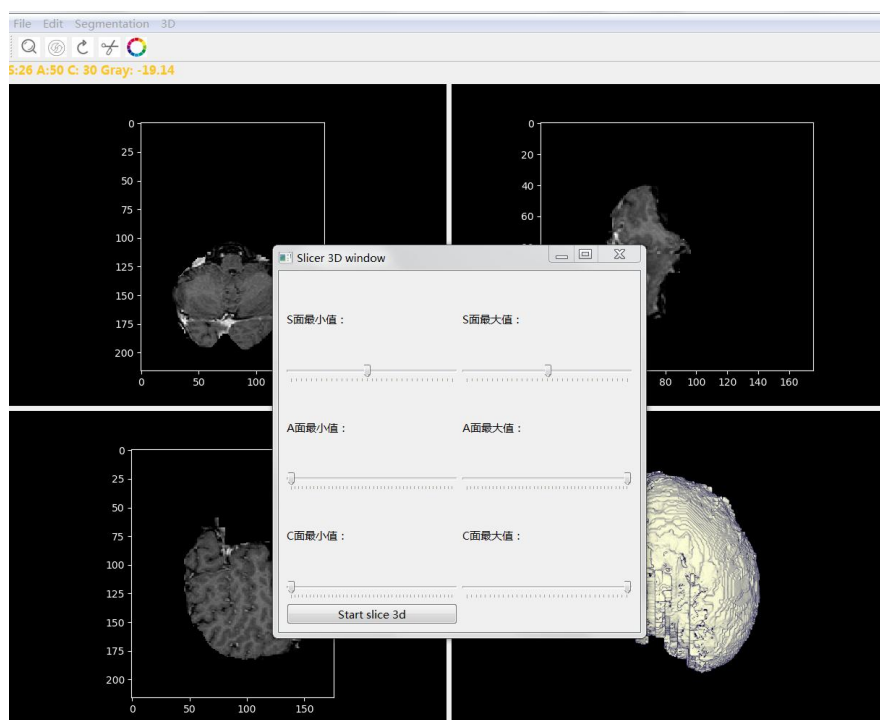


You can also choose to or not to save the 3D result. If you input "yes", and you are expected to find a "brain.stl" and a "tumor.stl" in your chosen folder .
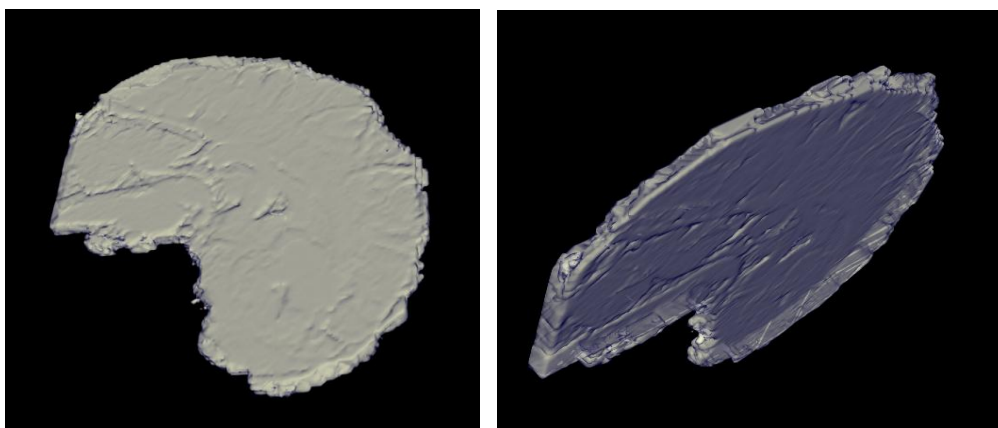


## 4.3 Slicer 3D

Click "3D-> Slicer 3D". Set the maximum and minimum values for each side when you see the

following screens. The smaller the difference of cutting surface, the thinner the slice.



After confirming the slicer segmentation, 3D slices can be seen.



# 5 Other features

There are some other features in the toolbar, from left to right: zoom in, reset, return, toggle mode and a color bar.

There are many more details and lovely bonus waiting for you to explore.