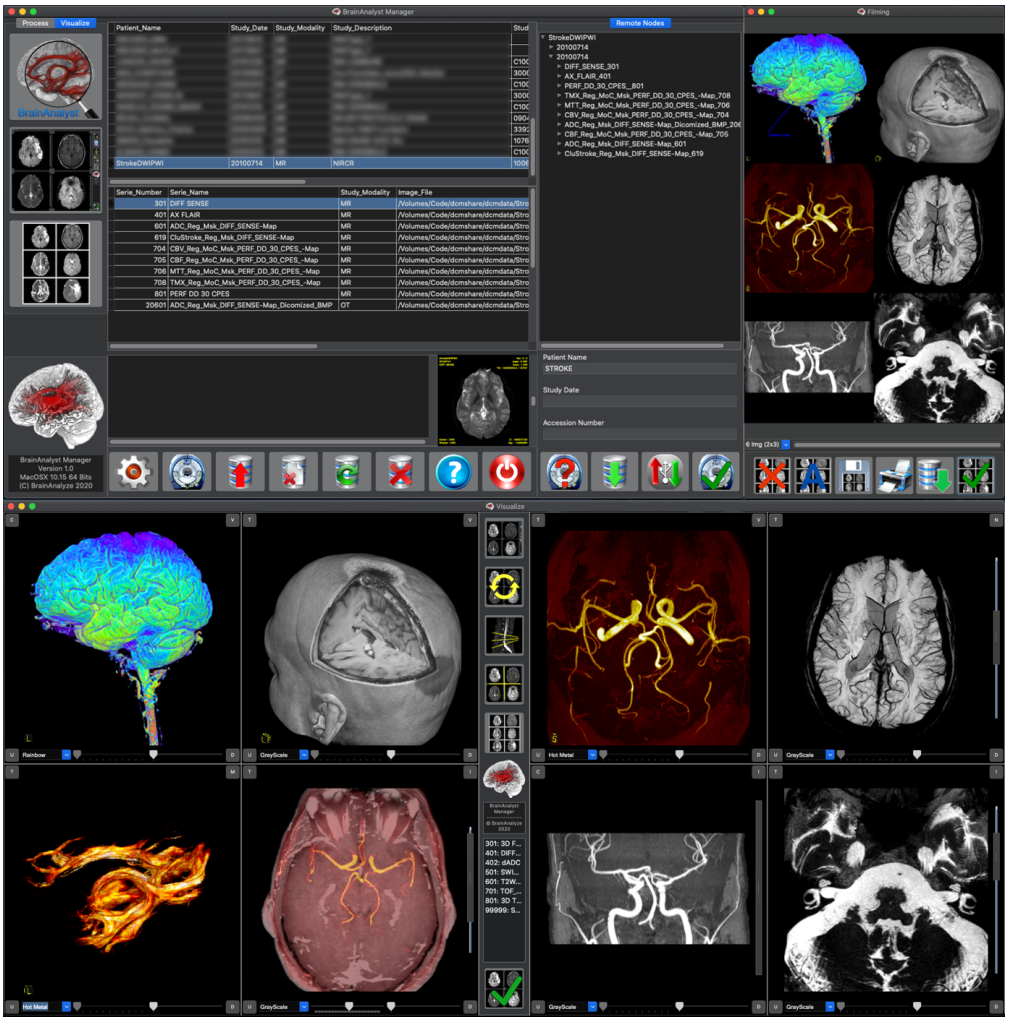
BRAINANALYZE

To Analyze the Brain in Function

Manager & Visualize User's Manual

Version 1.2.2



DISCLOSURE

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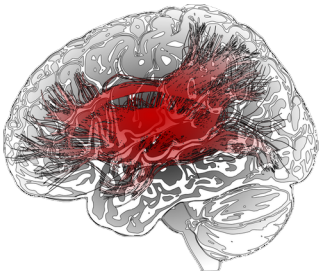

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To Analyze the Brain in Function

SUMMARY

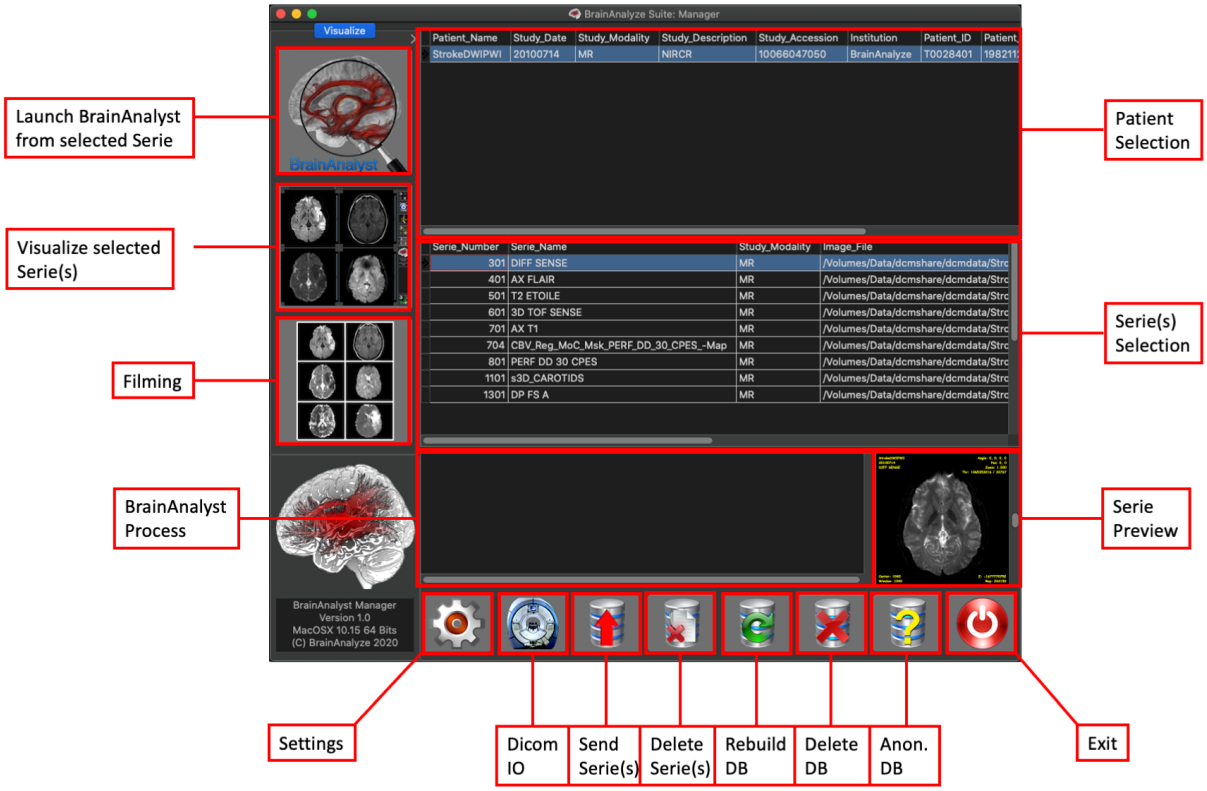
1. Installation

Download the .zip files matching your OS distribution (MacOS, Windows 10 64 bits, Linux 64 bits) and unzip it into a specific folder (e.g. « BAManager ») or open the ".dmg" file by double-clicking on it and copy the "BAManager" file on your Desktop (for Mac users).

Find the executable (« BAManager ») and launch it by double-click.

The Manager screen will appear :

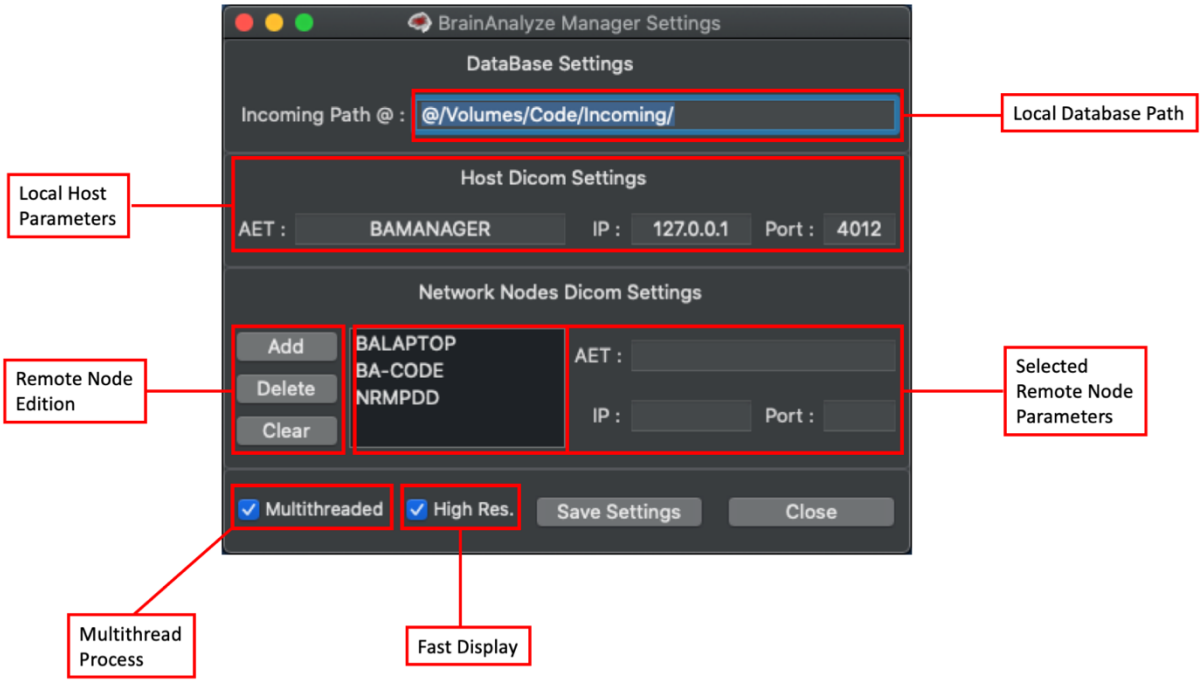
Manager is divided into several areas :



- Patient Selection Grid : where the exams are shown from the DataBase
- Series Selection Grid : Serie(s) to be loaded into « Visualize » or processed using « BrainAnalyst »
- Serie Preview image with scrollbar
- Buttons to launch « Visualize », « BrainAnalyst », « Filming »
- Buttons for Settings, Dicom Import/Export, Dicom Send to Node, Serie(s)/Patient(s) Deletion, Database Rebuild, Database Deletion, Anonymize Serie(s) and Exit.
- Messages Area to see in real time the process performed by « BrainAnalyst »

2- Configuration

By clicking on the « Settings » button, the Settings screen will show up :



The first setting to be done is the Local DataBase Path location.

You have to create on your drive a folder called « Incoming » and to point the DataBase Path to this folder.

Be careful, add a '@' sign before the full path ; e.g. in Windows, the « Incoming » path is set in « C:\BAManager\Incoming » ; in the Settings, the path have to be :
« @C:\BAManager\Incoming\ ».

To be able to receive and send Dicom images, Host Dicom parameters and Remote Node parameters have to be set.

For the Host parameters, just fill the « AET », « IP » and « Port » Labels with your own values.

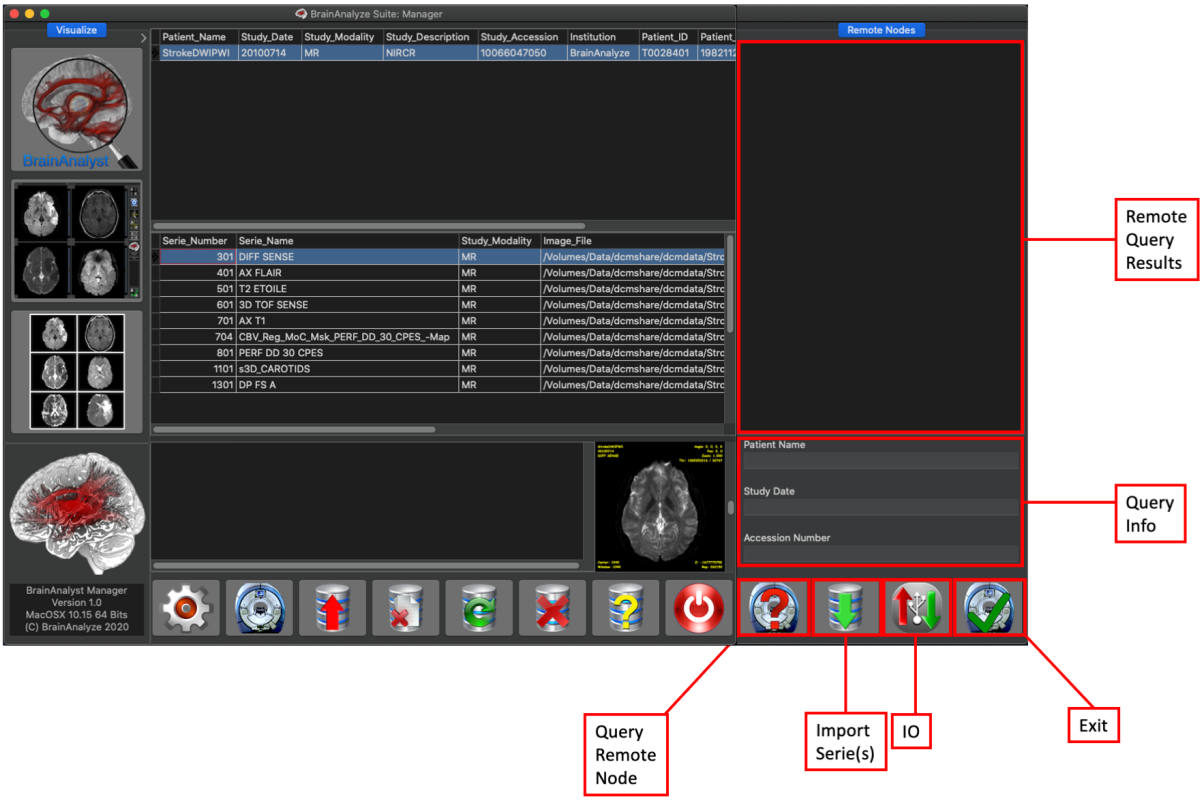
For Remote Nodes, you have to fill « AET », « IP » and « Port » Labels, then to click on the « Save » Button. Once done, the new Dicom Node will appear besides the Node Labels, and you may edit or delete these info by clicking on the Dicom Node List then on the « Delete », « Clear » or « Save » Button.

« Multithread » checkbox is for enabling/disabling multithreading in the « BrainAnalyst » processes.

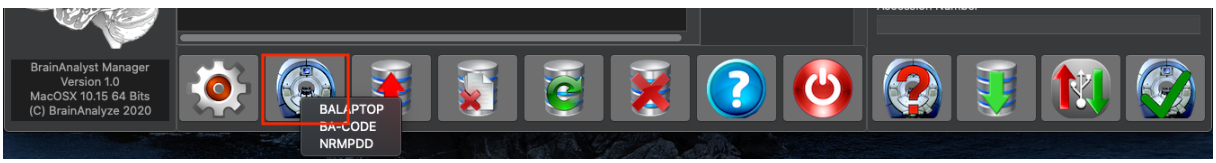
« High Res. » checkbox is used to ensure a good display quality when using the “Fast Display” feature. On Windows and Linux distributions, depending on your system configuration (CPU, graphic card), the display process might appear “lagged”. In that case, keep this setting unckecked to speed up the display process.

3- Importing Exams :

On the Main Screen, when clicking on the « Dicom IO » button, new buttons and functions will show up :

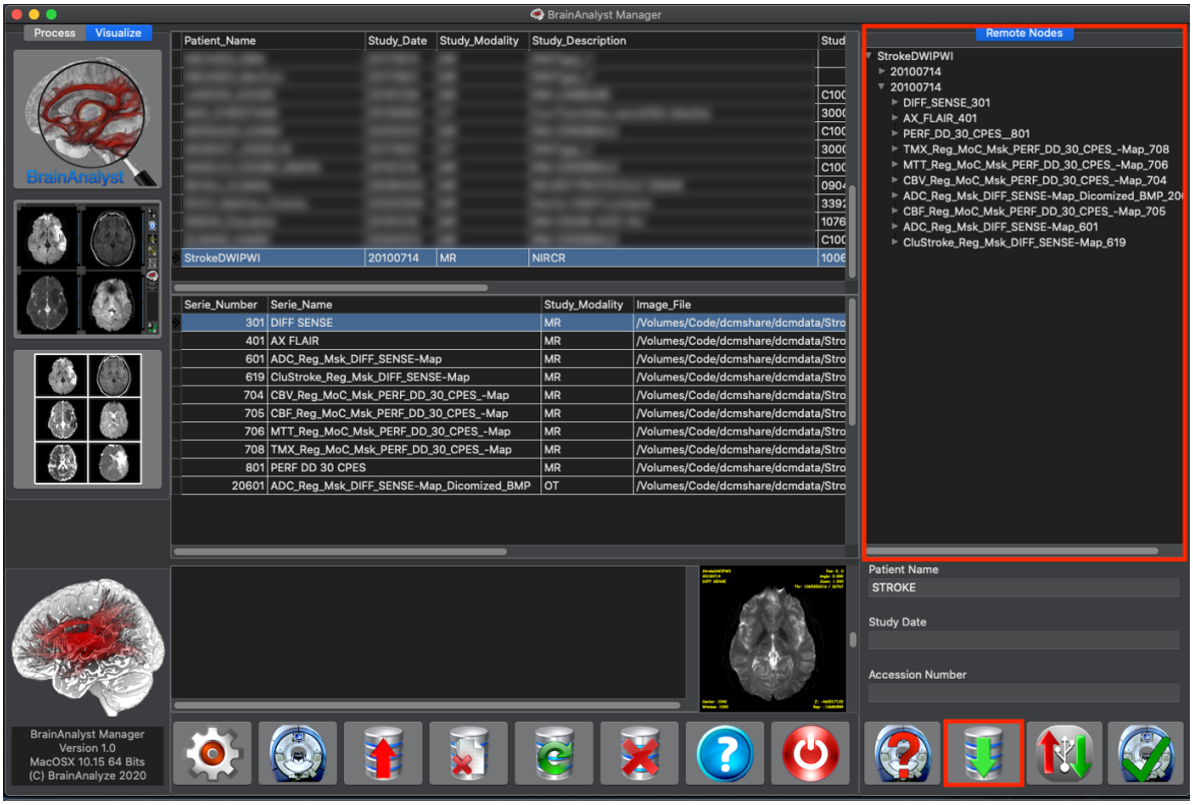


After setting up the Remotes Nodes in the « Settings » screen, Right-Click (RC) on the « Dicom IO » button to select Remote Dicom Node :



Then fill the « Query Info » fields (patient Name is usually enough), then click on the « Query Node » button or press the « Enter » key.

Select the Serie(s) to be downloaded inside the « Remote Query Results » area, then click on the « Import Serie(s) button.



Dicom files will be imported into the DataBase.

You can also import Dicom Files from zip file, or CDRom Dicomdir either by clicking on the « IO » button or by Drag & Drop Zip file onto Manager.

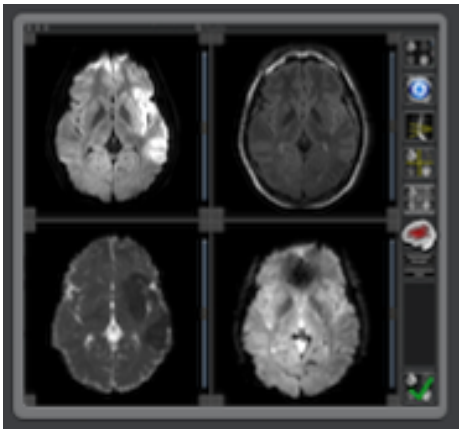
For Dicomdir CDROM, click on the “IO” button then select the “DicomDir” file then open it. Same process for the .zip file.

4- Selecting Series to be displayed in « Visualize » :

By clicking on a Patient Name, then clicking on a Serie Name, you enable the display process :

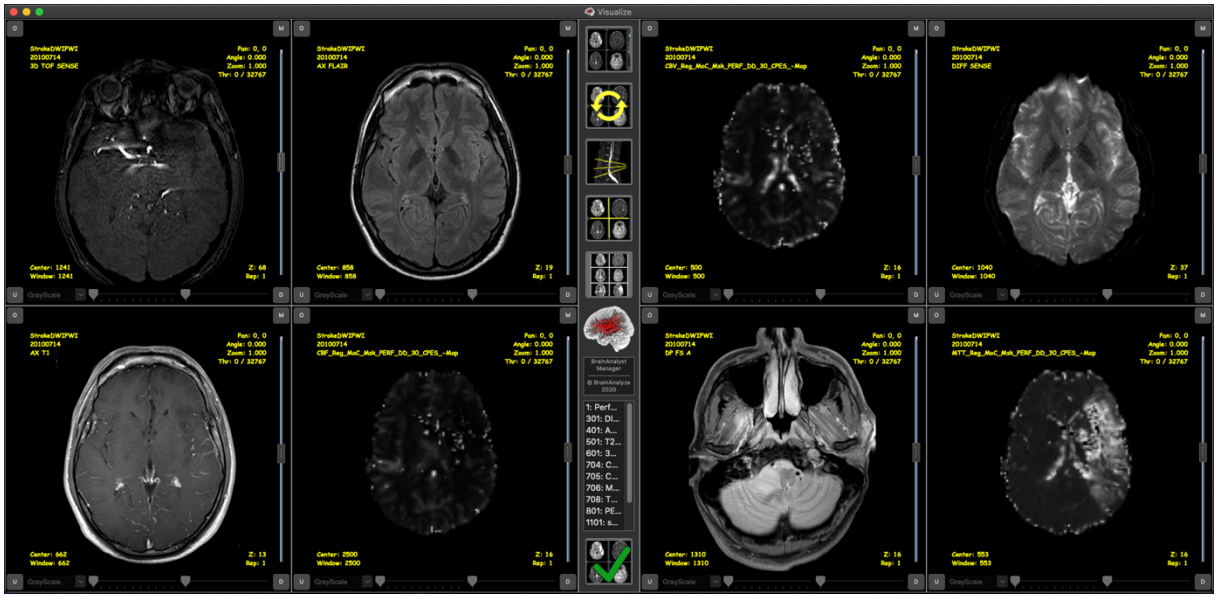
The selected serie will appear in the « Serie Preview » area, and you can scroll among images.

Just click on the « Visualize » button to open « Visualize ».

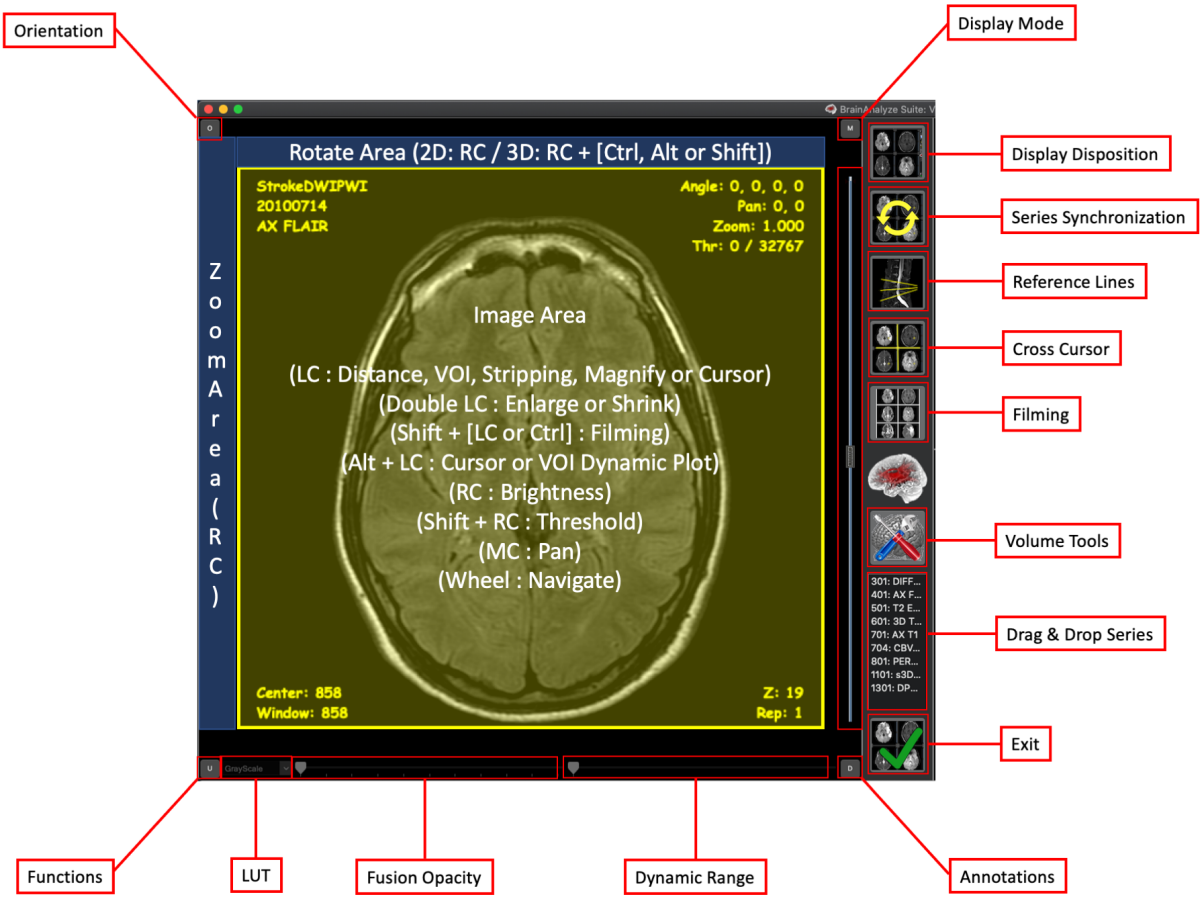


You can select more than one serie to be displayed, by Left Click + Ctrl button on the series names before clicking on the “Visualize” button.

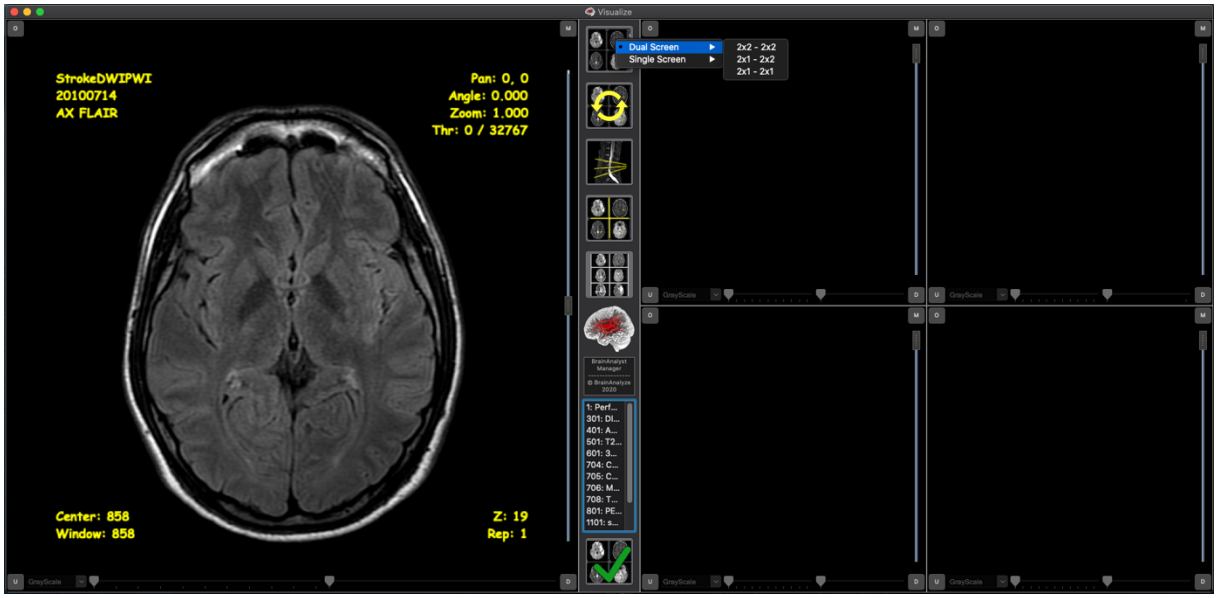
5- Visualize



Visualize is divided into three main areas : two are for images display (left and right part of the screen), and a center panel with buttons and functions :



You can select your images settings for single display or dual display settings by RC on the « Display Disposition » Button :



2x2 / 2x2, 2x1 / 2x2, 2x1 / 2x1 for dual displays and 2x2, 2x1 for single display

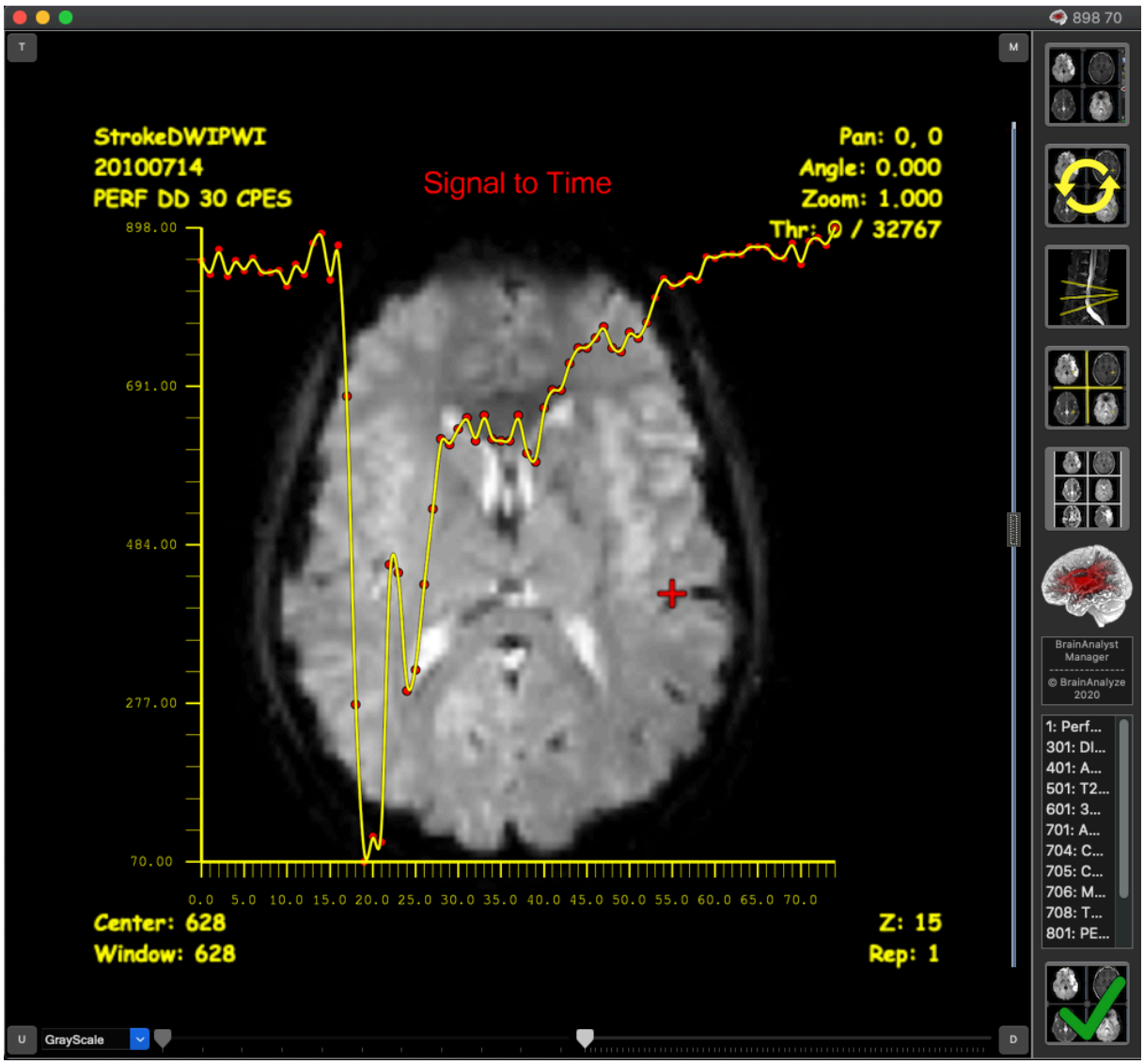
When an image is displayed, you can navigate by using the Scroll Bar or the Mouse Wheel.

You can Pan, Zoom, Rotate image or VR Renderings, set Brightness & Threshold using different buttons combinations on the Image (in yellow) or Panel (in blue) Area.

When the Volume Mode is enabled (“Transversal”, “Sagittal” or “Coronal” modes), you can also Yaw, Pitch or Roll the 2D image (visualization only ; functions such as Distance, VOI, Cursor, Stripping are not available).

When you double-click on an image, you enlarge or shrink it.

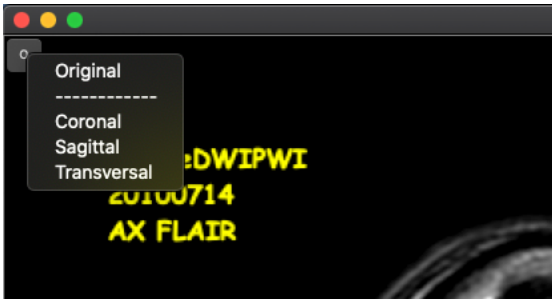
You can plot a dynamic curve of the Signal to Time variation (when available) by Alt + LC on a volume ("Transversal", "Coronal" or "Sagittal" views only) in "Cursor" or "VOI" mode (cf *Display Functions*):



On each corner of the Panel are buttons for display modes, orientations, functions selections.

Right Click on them to select task to perform:

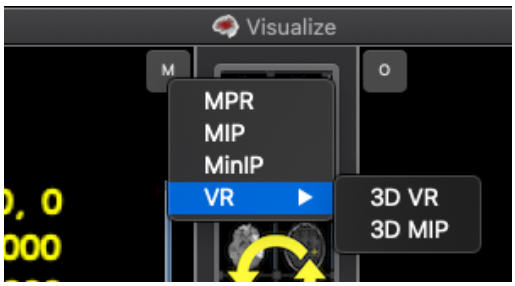
Display Orientations (Upper-Left Corner):



Selection of the different modes :

- Original : unchanged dicom slice
- Coronal, Sagittal, Transversal : reformated volume

Display Modes (Upper-Right Corner) :

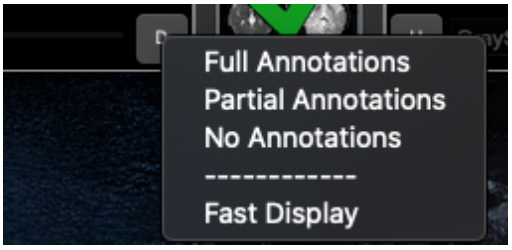


Selection of MPR, MiP, MinIP or VR modes.

In 2D MPR, MIP and MinIP (not VR), you can set the reconstructed slice thickness by "Ctrl" on the Images Scroll Bar + Wheel Up or Down.

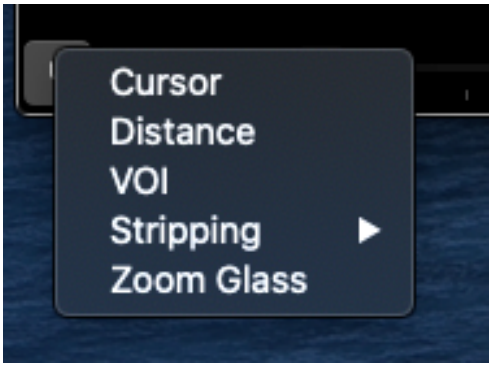
Be Careful, these modes are only working when display orientation is set to Volumes reconstructions (Coronal, Sagittal or Transversal).

Display Annotations (Lower-Right Corner) :



Select if you want the patients informations to be displayed or not.

Display Functions (Lower-Left Corner) :



Select Cursor, Distance, VOI, Stripping, or Zoom Glass.

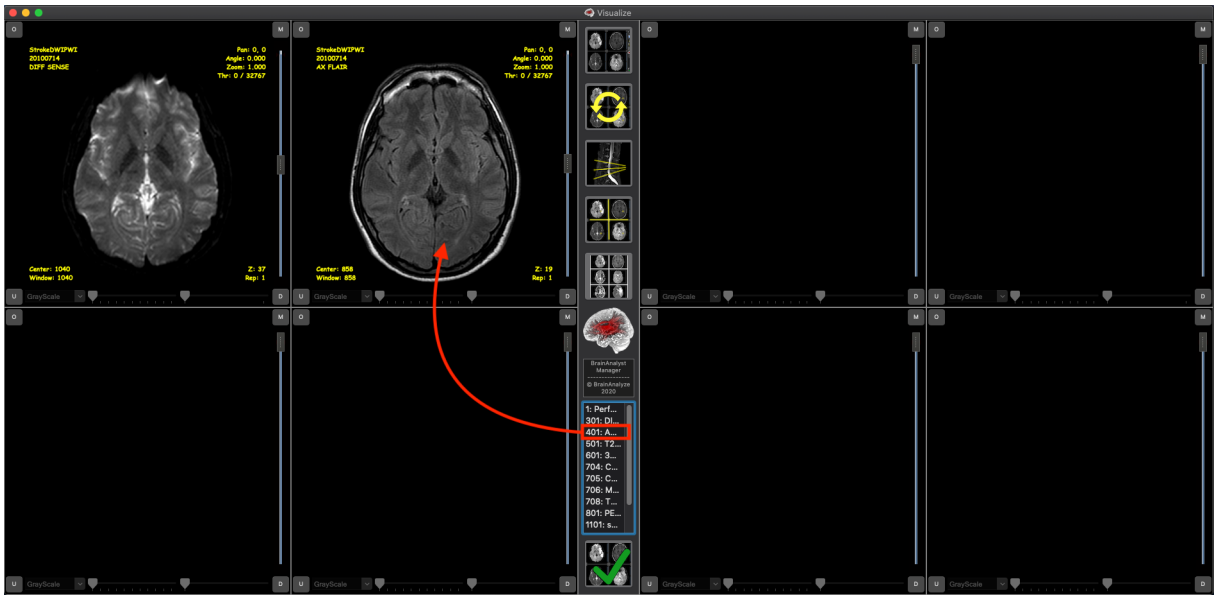
When selected, these functions are performed by LC on the image.

Selecting Serie(s) to be Displayed :

In the Center Panel, the « Drag & Drop Series » area shows series from a selected patient.

Just LC on an item then drag & drop it on the image area.

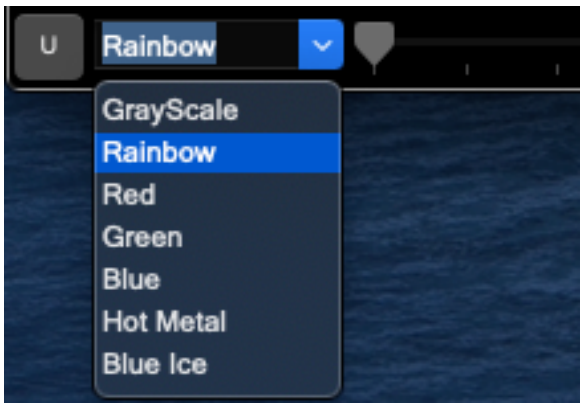
You can display up to 8 different or same series.

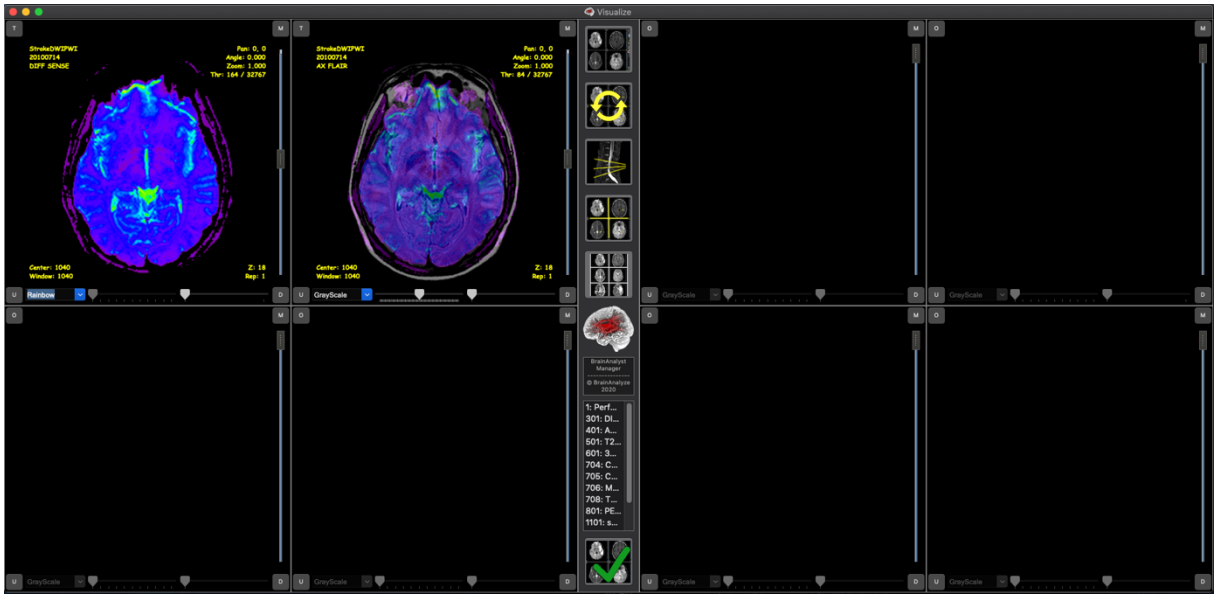


Series Fusion :

Drag & Drop an image to another from the Images Areas and the Fusion will be performed :

When done, you can select a LUT, change Brightness and Threshold and Opacity of your fused series :





NB : If series are of the same acquisition plan, but differs in Frame of Reference (e.g. different acquisitions dates), then the fusion process will be performed but will be far slower.

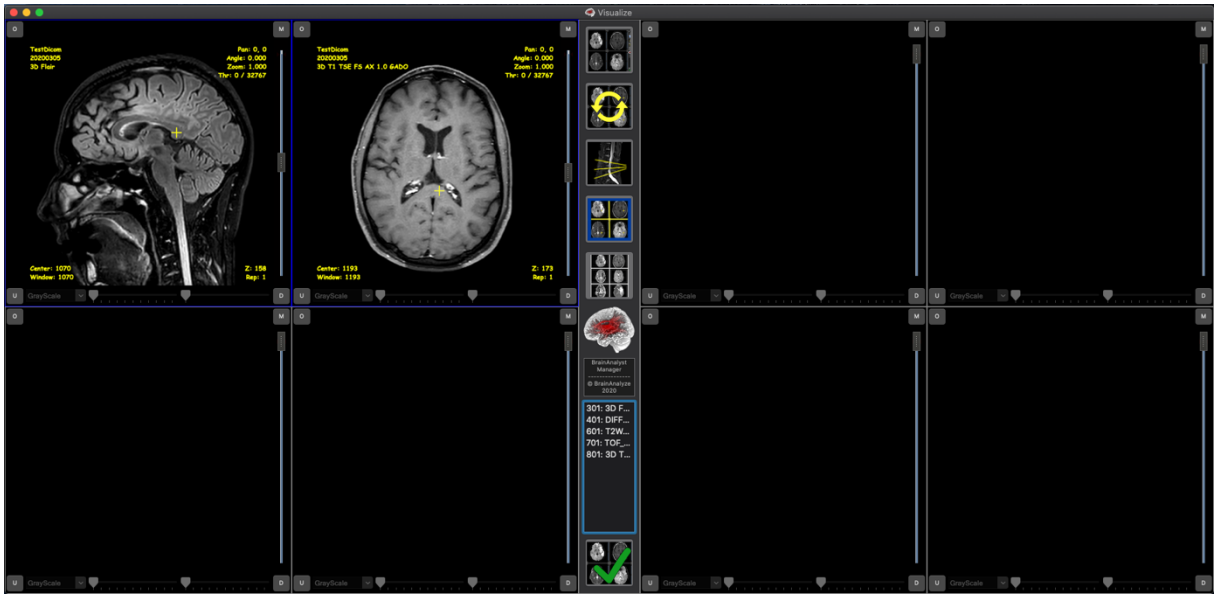
References Lines, Series Sync & Reference Cursor :

To enable these functions, you have to select which series are to be processed by LC on the Panel are. The selected series will then have a Blue Bevel.

Then click on the desired function :

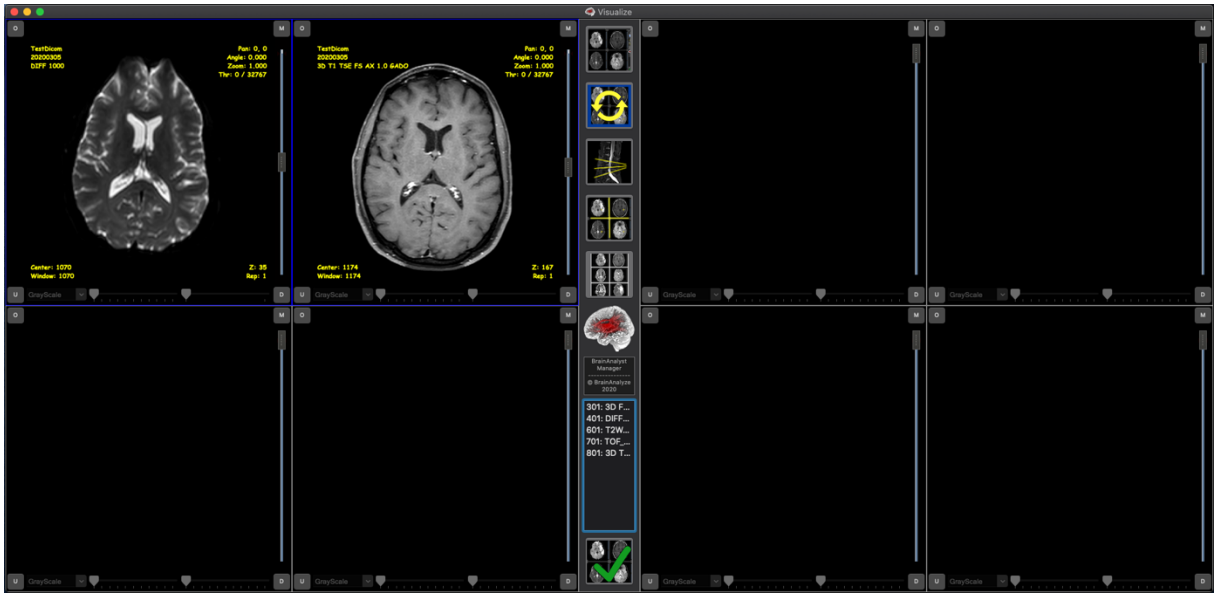
The Reference Lines Button :

The Reference Cursor Button :



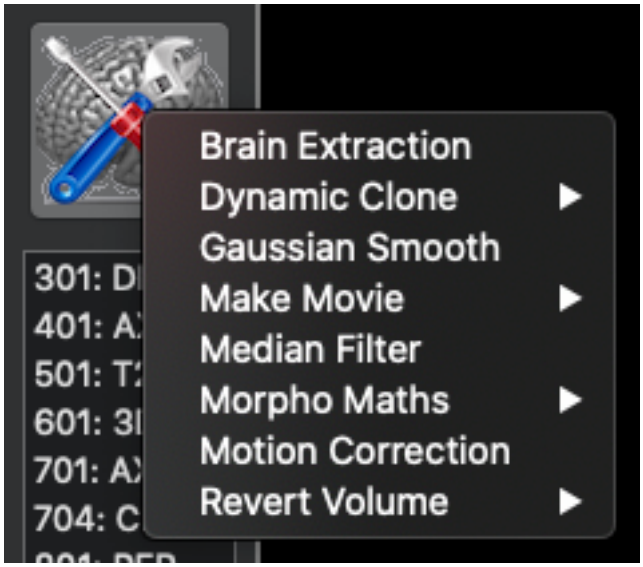
You can move the cursor if your Display Function is set to « Cursor »

The Sync Series Button :



These functions are only working if series are the same but displayed in different orientations (Volumic Reconstruction Sagittal, Coronal or Transversal), or if series are displayed in the « Original » Mode.

Volume Tools :



When the Volumic Display Mode is enabled ("Transversal", "Coronal", "Sagittal"), volume image processing tools are available for:

- Brain Extraction (Non-Free distribution only)
- Motion Correction (Non-Free distribution only)
- Dynamic Serie Baseline or Endline Cloning
- Making 2D or 3D Movie
- Median Filtering
- Gaussian Smoothing
- Morpho Maths (Dilate, Erode, Expand, Close, Open)
- Reverting Volume in X, Y, Z and T axes

RC on the button, then select the process to perform, then LC on the button to perform the process.

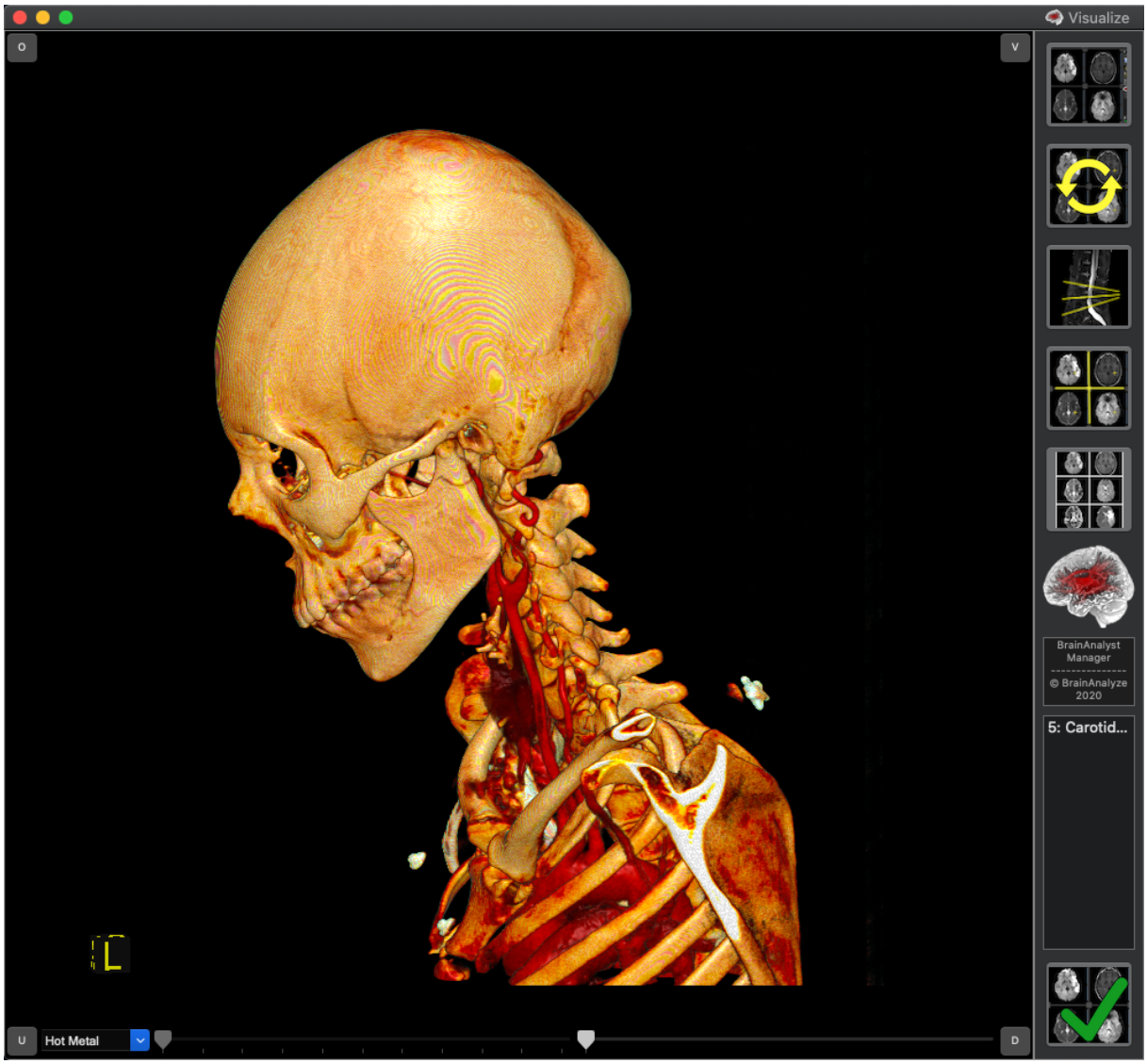
6- Volume Rendering

Visualize can perform Volume Rendering reconstructions of volumic acquisition, either CT or MR.

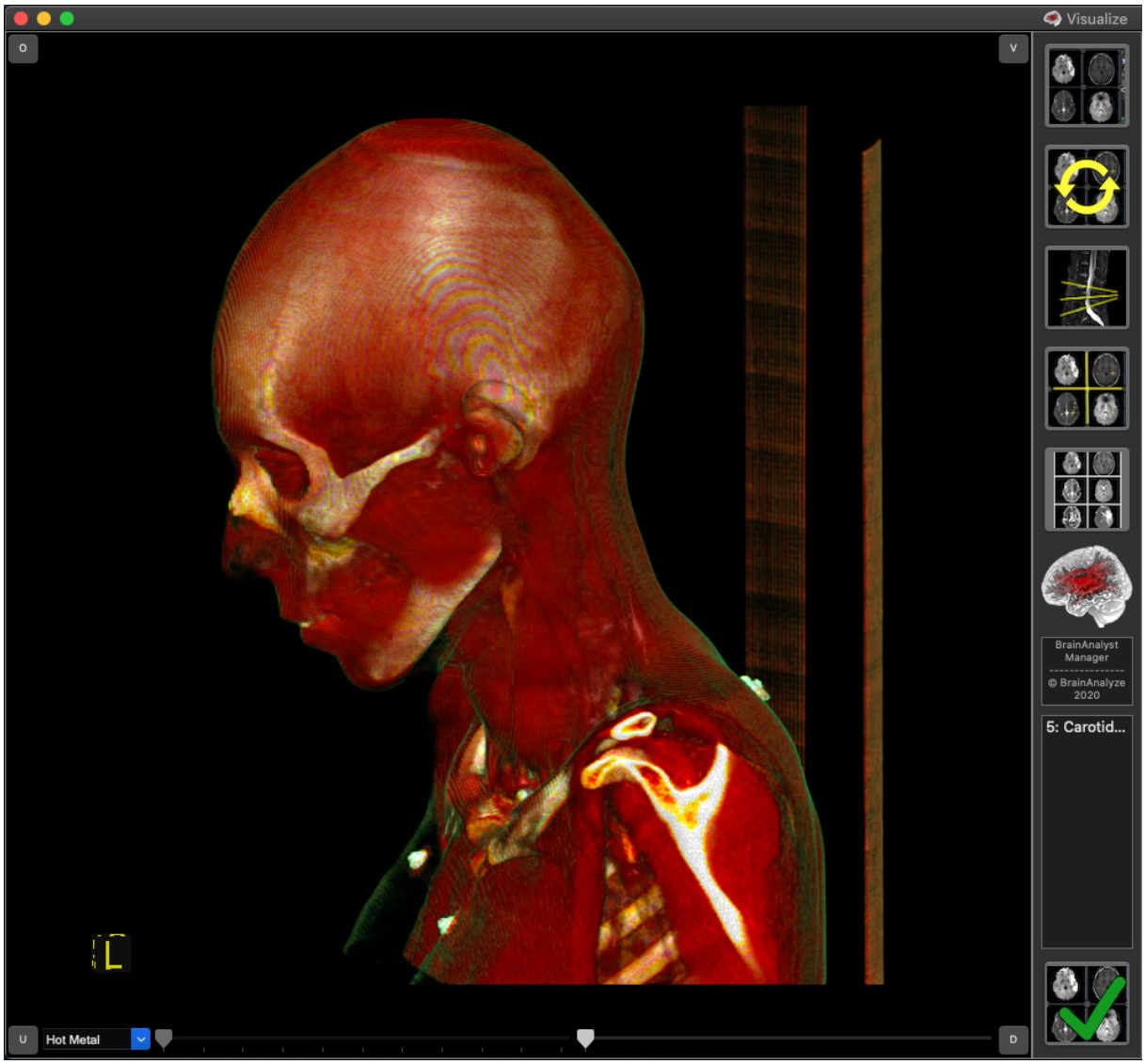
There are some presets for dedicated reconstructions:

- CT Angiography
- CT Muskulo-skeltal
- MR Angiography
- No Preset

Once selected, the preset will perform thresholding and opacity setting:

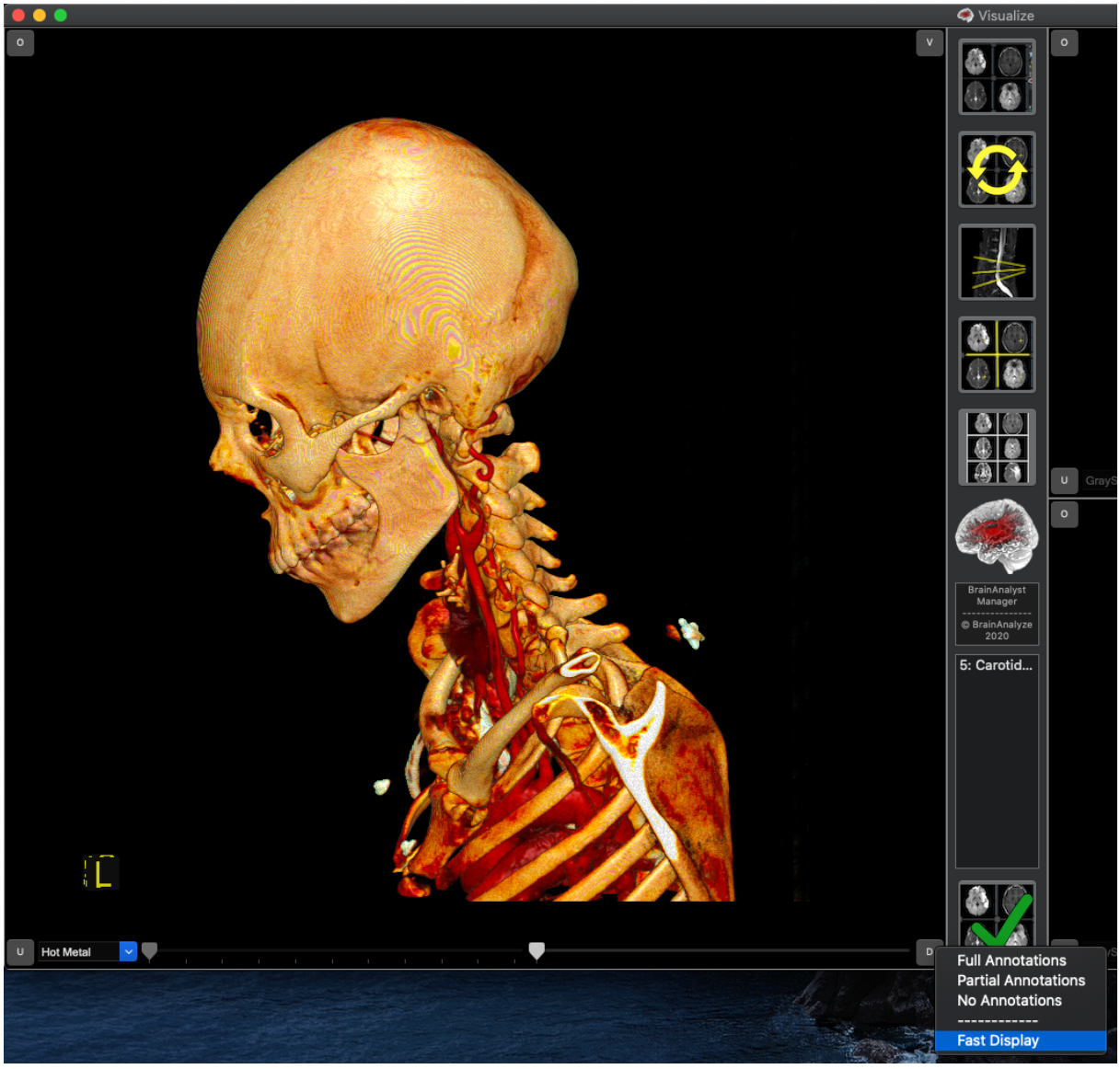


You can change the rendering by Shift + RC on the image :



Depending on your graphic card, this might not be fast enough to have a real-time change of the rendering.

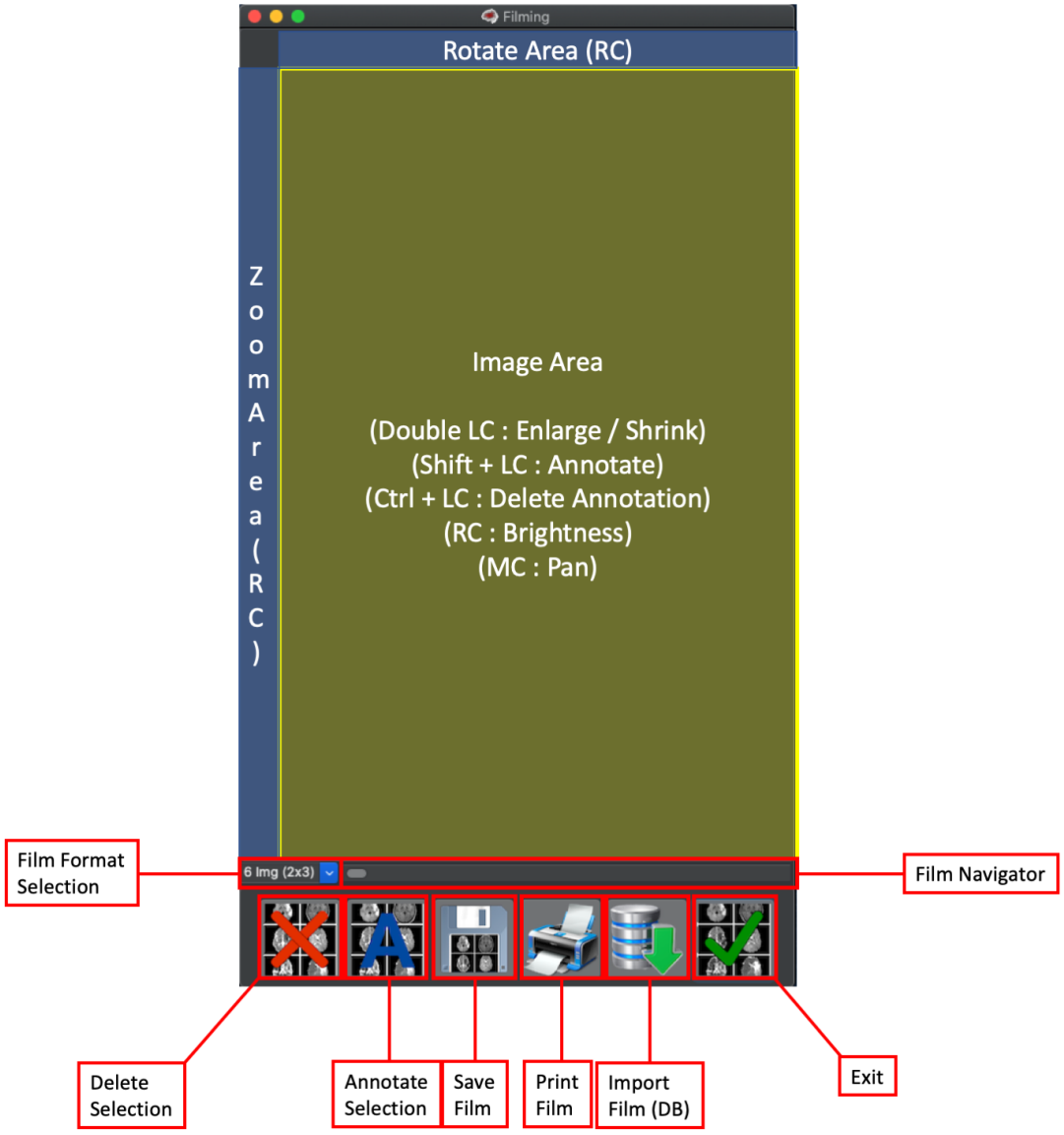
You can select “Fast Display” in the “Annotate” Menu to accelerate rendering changes, by LC on the Menu, then RC on the “Fast Display” mode:



You can also change the Colors LUT ; here the selected LUT is “Hot Metal”, but you can choose other LUTs.

7- Filming

The Filming Panel is also divided into functional areas and buttons :

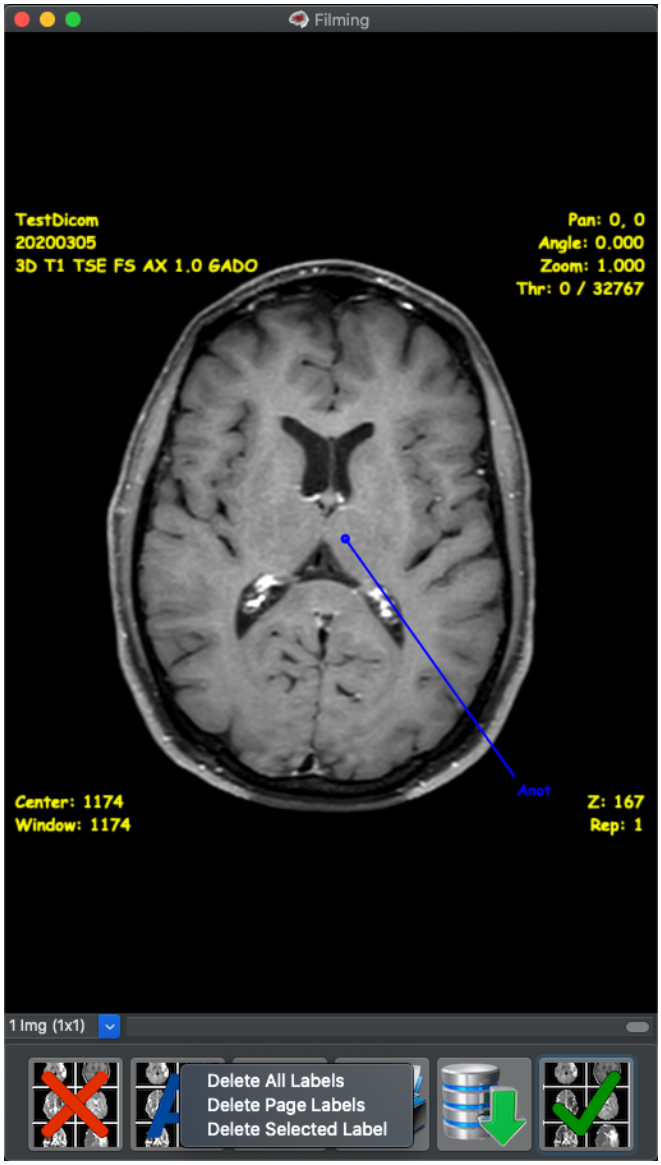


You can Zoom, Pan Rotate all or each image, annotate film, navigate through films, export films into DataBase, as Bitmap, Print Films, etc…

You can enlarge or shrink a single film image by double-clicking on it.

Film Annotation:

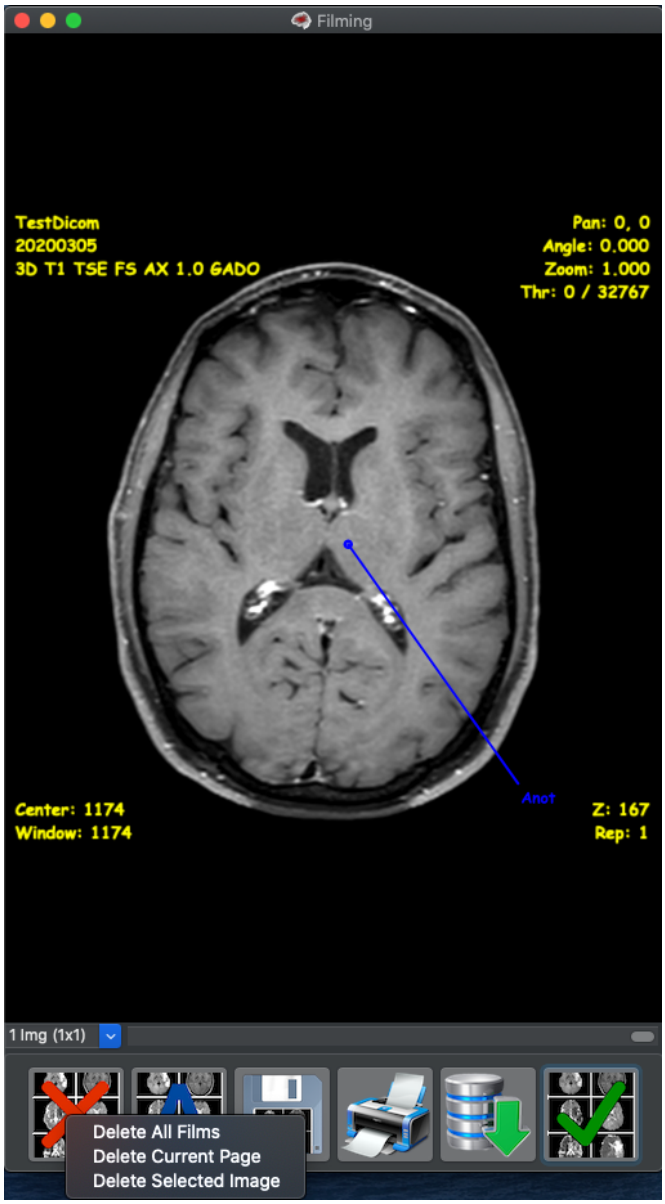
Shift + LC on image :



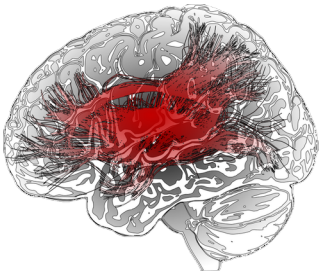
Delete Annotation by Ctrl + LC on the Annotate blue point.

Select Deletion Mode by RC on the Annotate Button.

Film Deletion :



Select the Deletion Mode by RC on the « Delete » Button.



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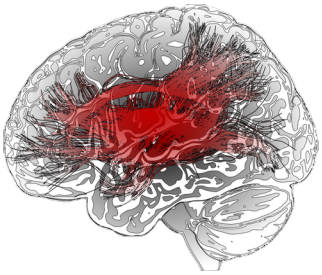
Please do not hesitate to report any bug, or improvement suggestion to: contact@brainanalyze.com.



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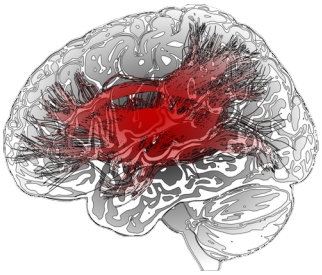
14. SUPPORT: Each customer is granted for a free of charge BrainAnalyze support. We offer a worldwide email support. There is a single email address for all messages: contact@brainalayze.com. For each support request, a first reply is issued in less than two opening days. If the support request describes a bug problem, a bug report procedure is opened. The support team will do his best to find a solution or a workaround to the support request.



BRAINANALYZE

To Analyze the Brain in Function

15. HARDWARE AND SOFTWARE REQUIREMENTS :Multi-cores Intel class CPU (at least twelve cores), 16 GB of RAM, an OpenGl 3.x compatible Graphic Card, 5 GB of free Disk Space for program (SSD / MVE are better), 10 GB per study of free Hard Disk space, Full HD or 4K Display Monitor, and effective internet connection (for online help, and remote tasks and services).

16. LIFESPAN: Manager & Visualize versions lifespan is limited by the lifespan of the hardware and operating system versions.