



*NA-MIC*

*National Alliance for Medical Image Computing*

*<http://na-mic.org>*

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# **TBI Data Analysis**

Sonia Pujol, Ph.D.

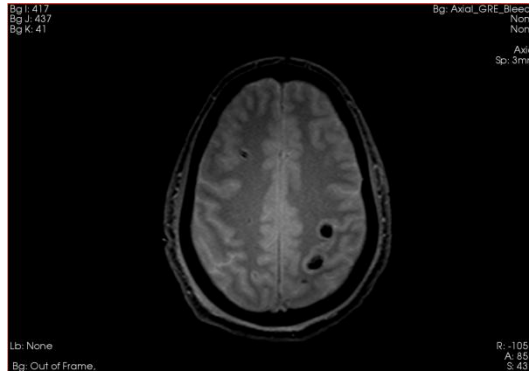
Surgical Planning Laboratory

Harvard Medical School

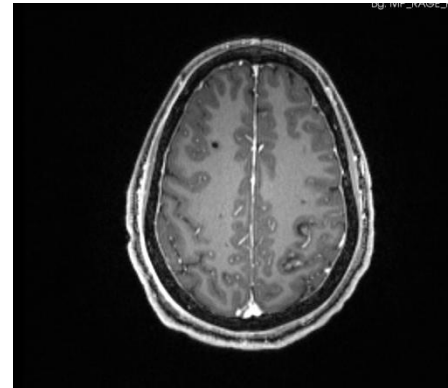
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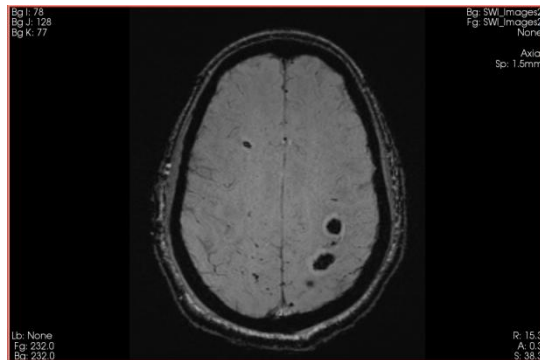
# TBI case 3T



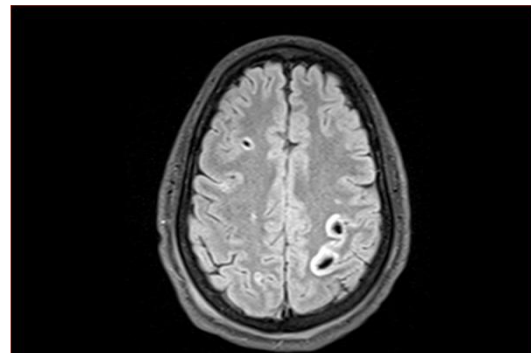
GRE



MP-RAGE



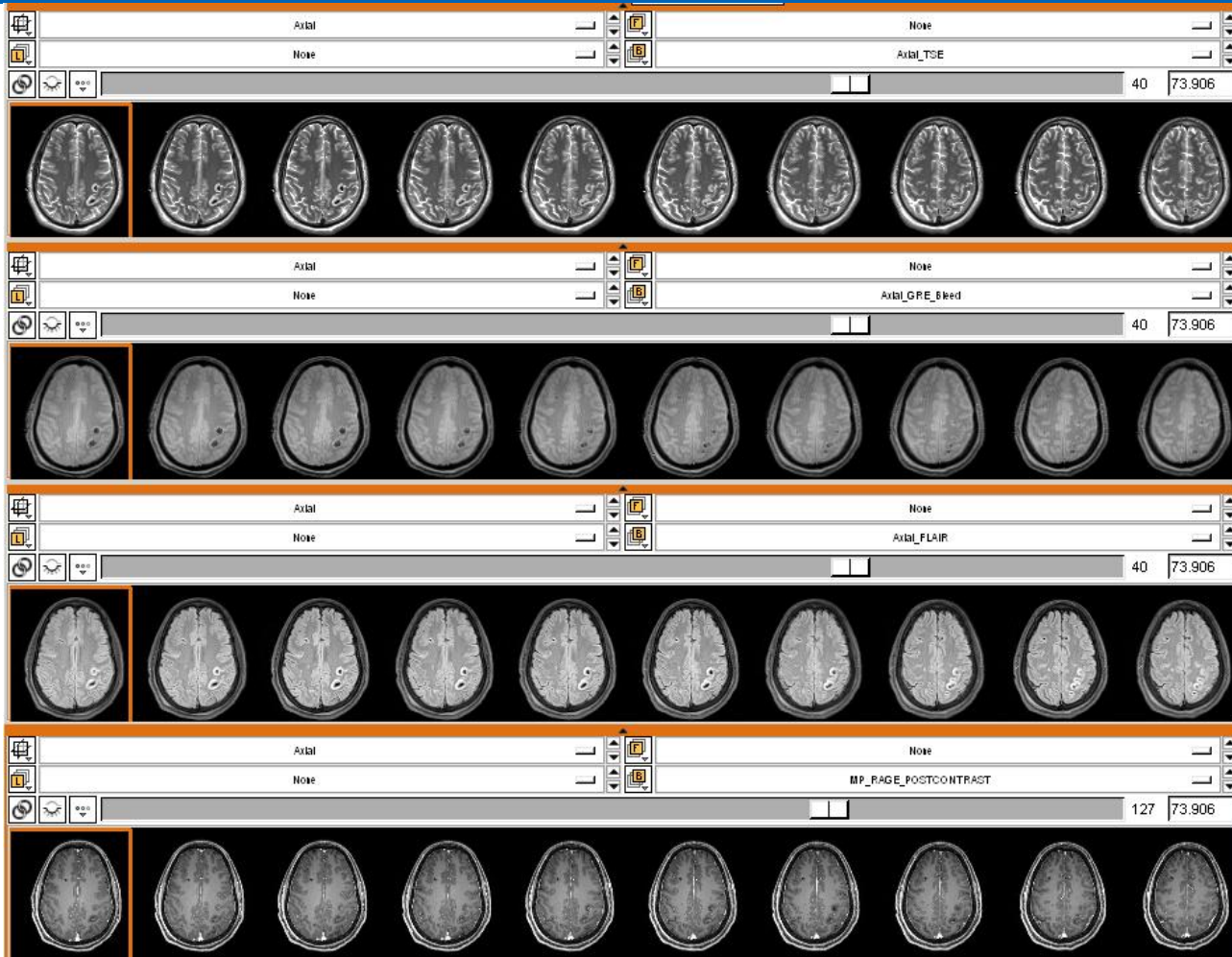
SWI



FLAIR

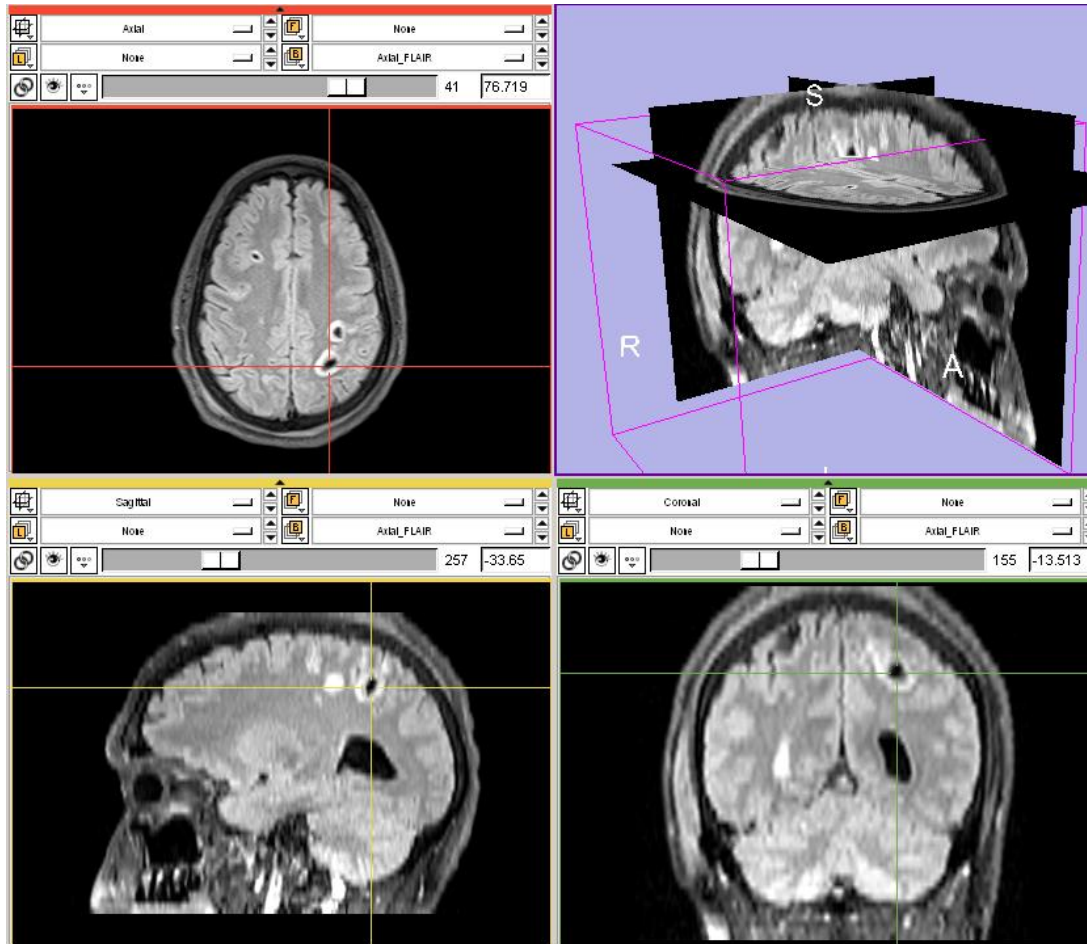


# Compare Layout



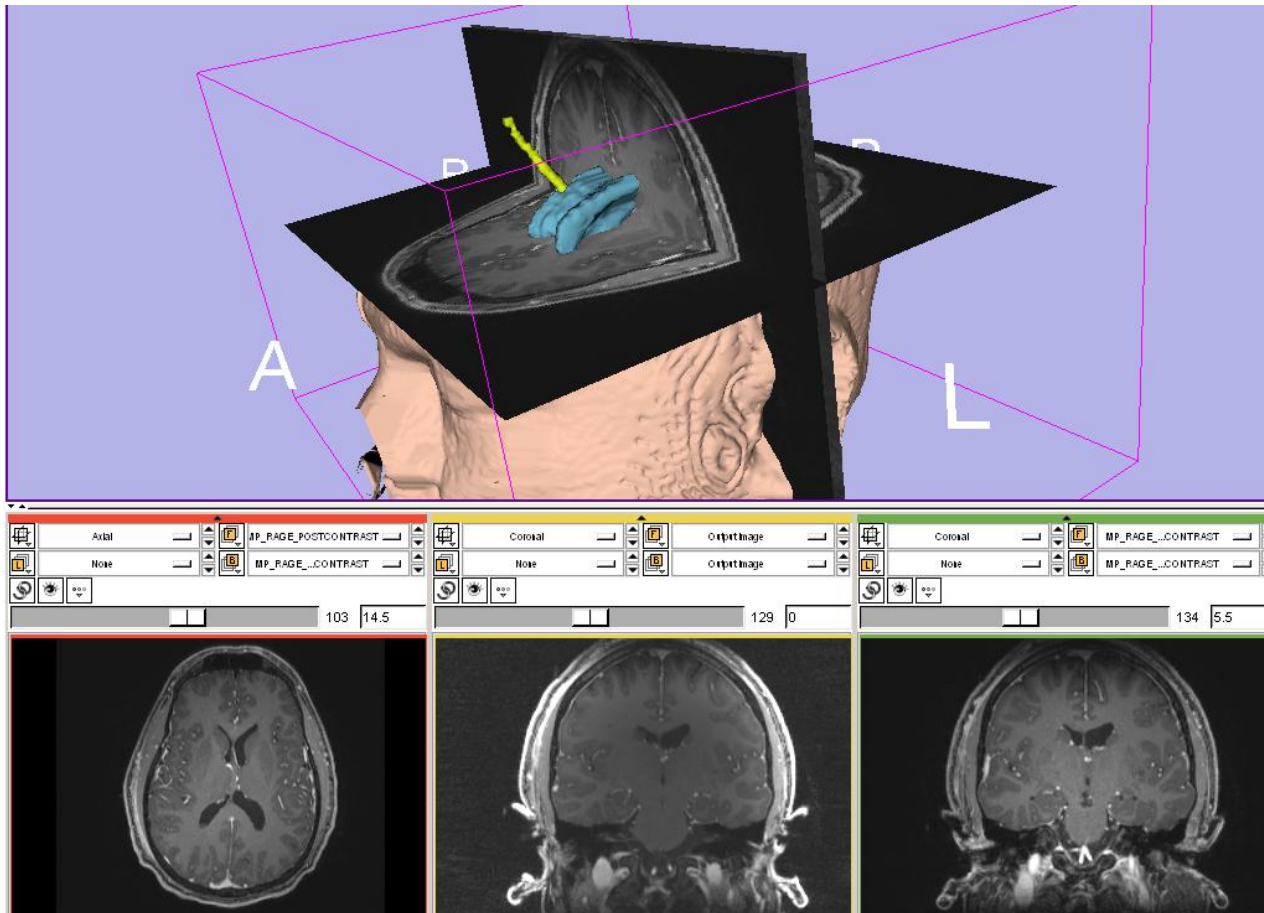


# Navigator





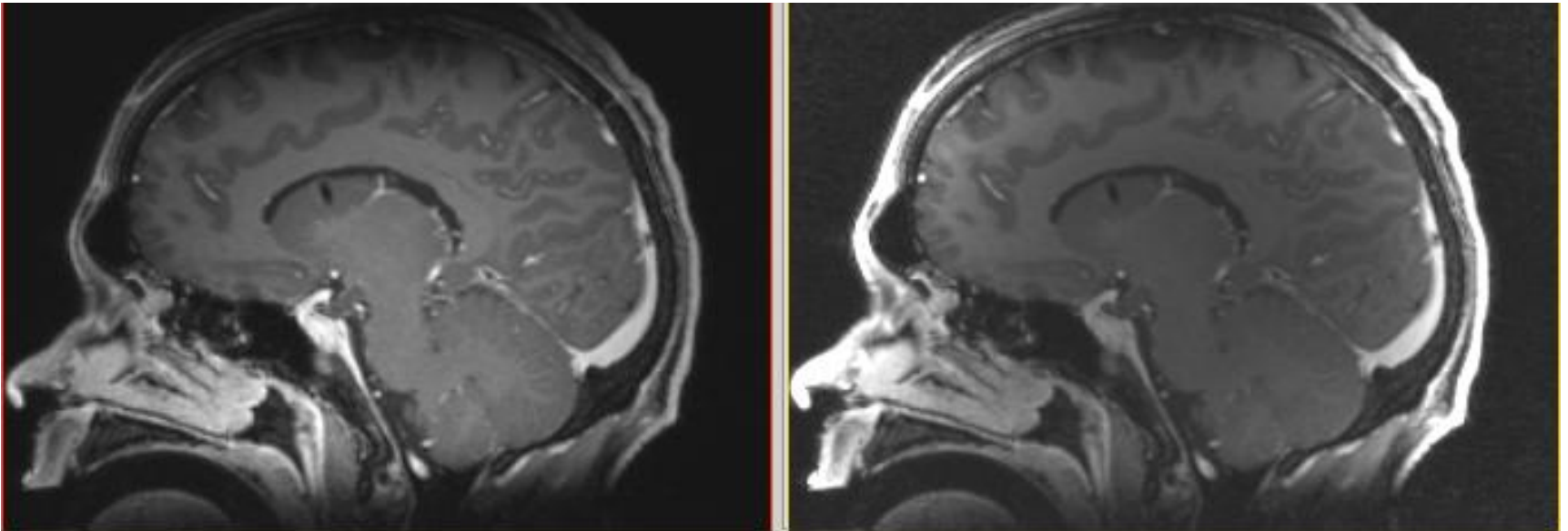
# 3D Modeling





# MR Bias Correction

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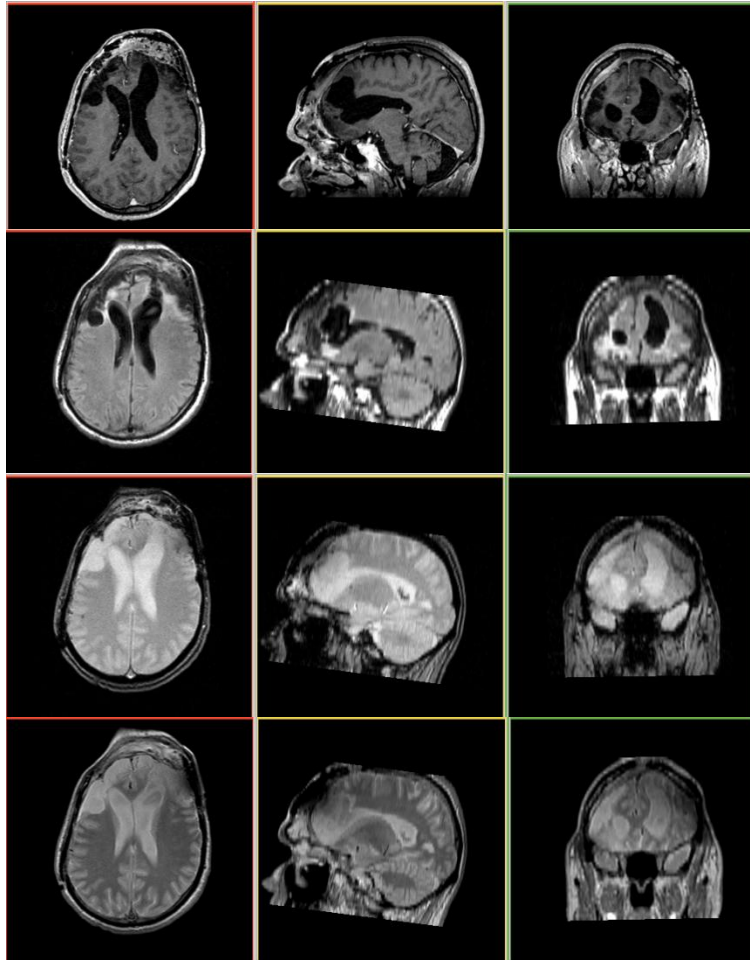


MPRage 3T  
Shading artefact  
correction





# TBI case 1.5T

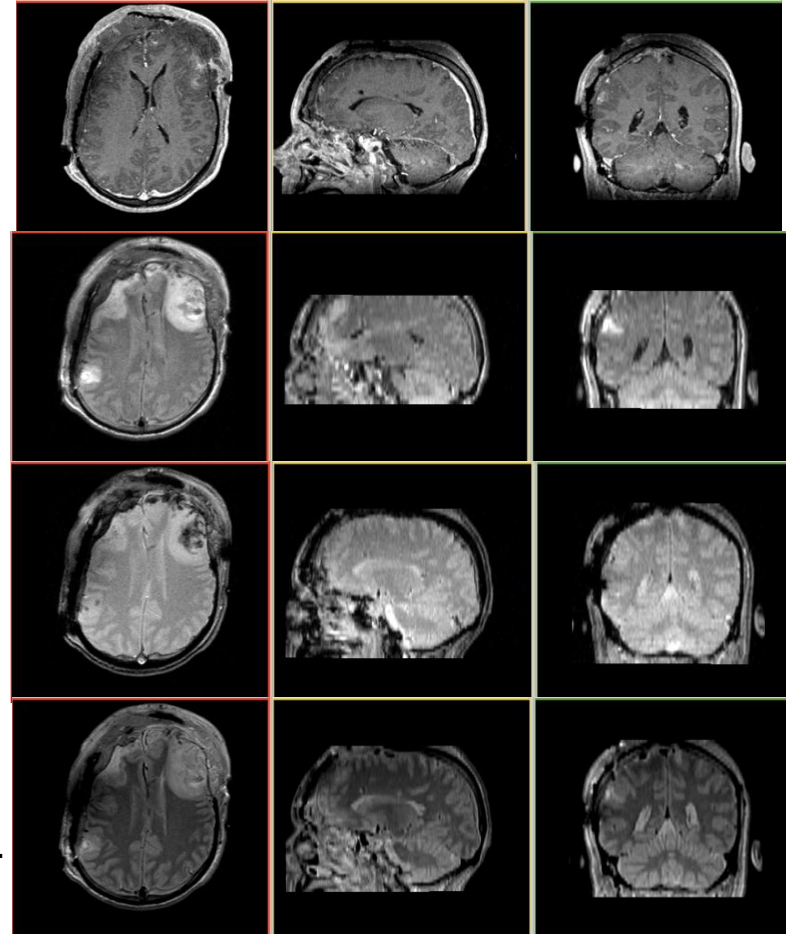


T1

FLAIR

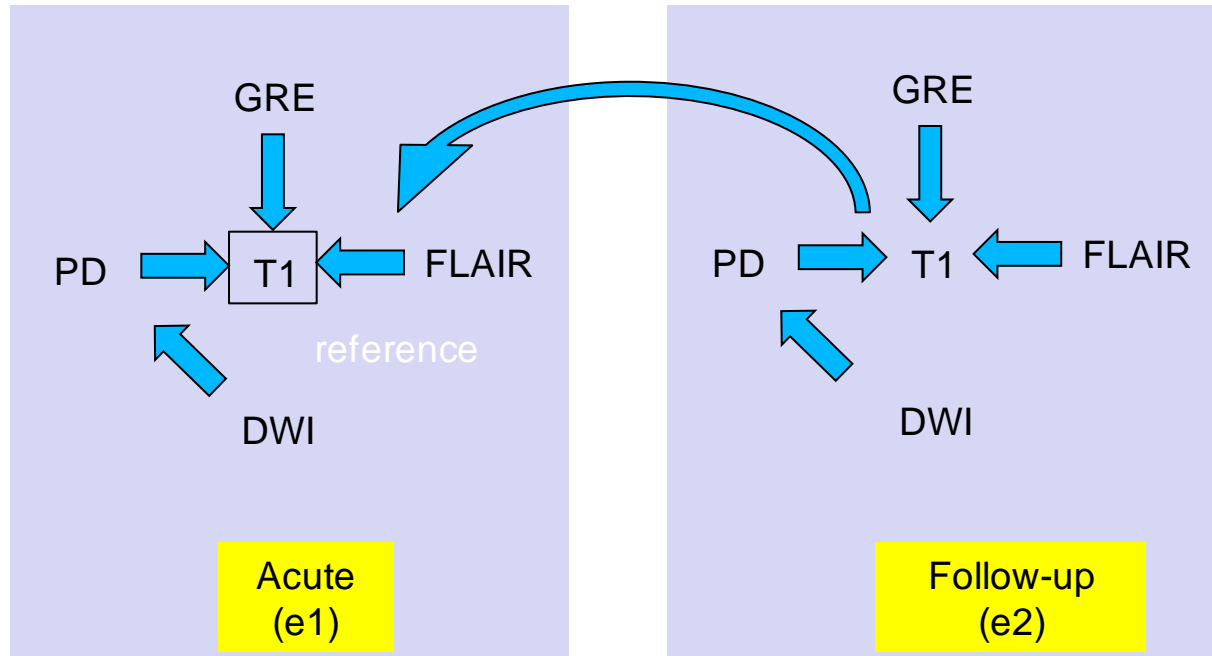
GRE

PD-DUAL





# Registration Strategy

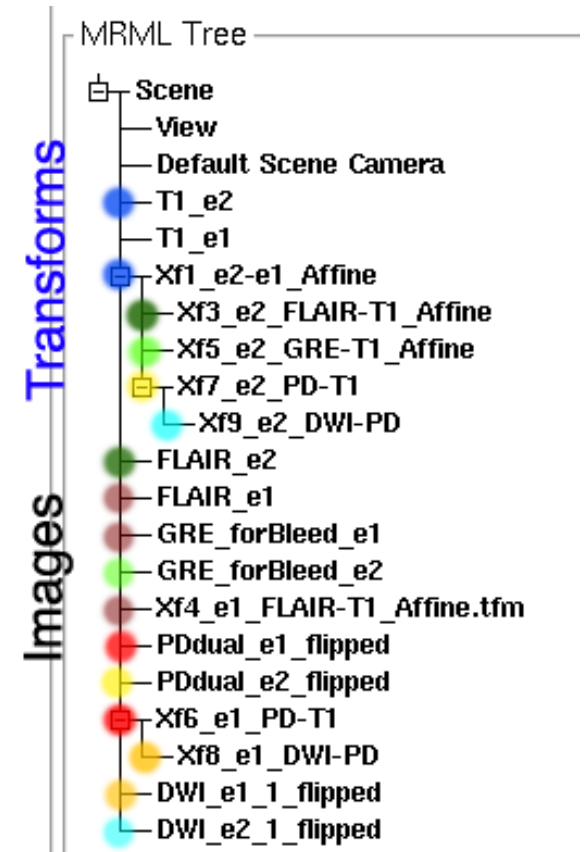
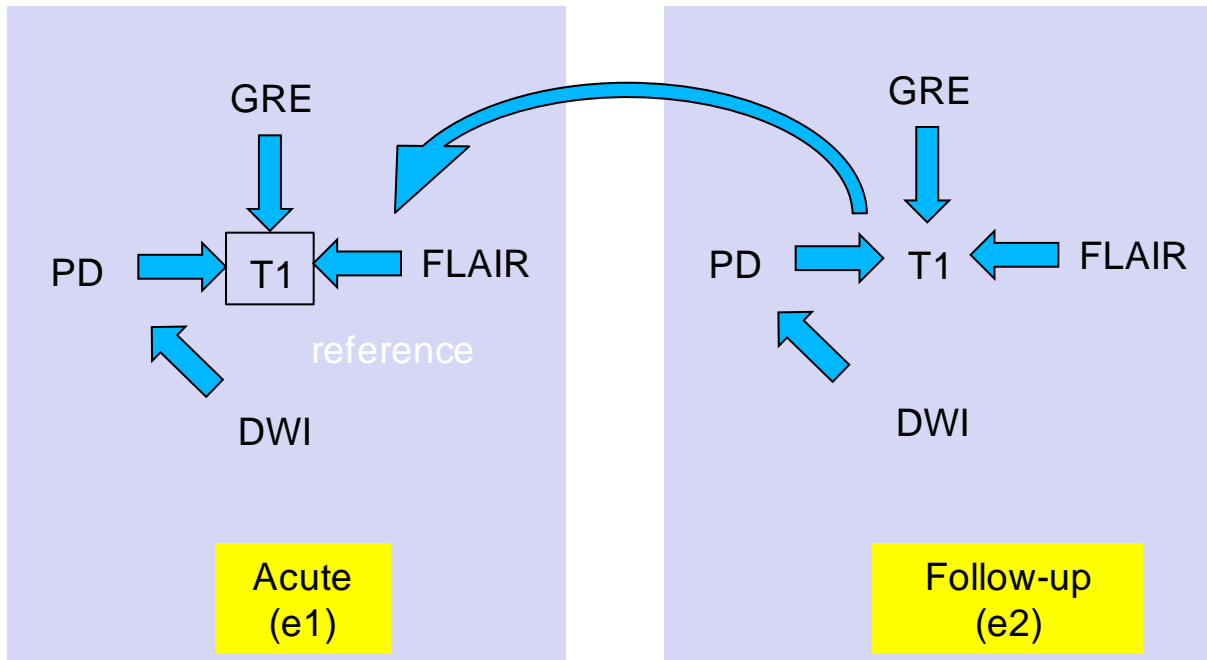


Courtesy of Dominik Meier, Ph.D.





# Registration Strategy



Courtesy of Dominik Meier, Ph.D.



# Registration Case Library

Projects:RegistrationLibrary:RegLib C31 - NAMIC - Windows Internet Explorer

http://www.na-mic.org/Wiki/index.php/Projects:RegistrationLibrary:RegLib\_C31

File Edit View Favorites Tools Help

Projects:RegistrationLibrary:RegLib C31 - NAMIC

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Google Custom Search

GO

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- NA-MIC website (www)
- Wiki Main Page
- NA-MIC-Kit
- Collaborations
- Cores
- Download Data & Software
- Events
- People
- Publications
- Resources

administration

- Annual Reports
- Contact Us
- Editing Guide
- Recent changes

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- What links here
- Related changes
- Special pages
- Printable version
- Permanent link


page discussion view source history

## Projects:RegistrationLibrary:RegLib C31

[Back to ARRA main page](#)  
[Back to Registration main page](#)  
[Back to Registration Use-case Inventory](#)

**Contents [hide]**

- v3.6.1 Slicer Registration Library Case xx: TBI
  - Download
  - Modules
  - Objective / Background
  - Input Data
  - Registration Challenges
  - Key Strategies
  - Procedure Overview
  - Procedure
  - Resampling
  - Registration Results

v3.6.1  **Slicer Registration Library Case xx: TBI**

**Download**

- DATA
  - TBI case: registered, but not applied/resampled** (Data & Solution Xforms, zip file 123 MB)
  - TBI case: registered and resampled** (image volumes, zip file 100 MB)

**Modules**

Courtesy of Dominik Meier, Ph.D.



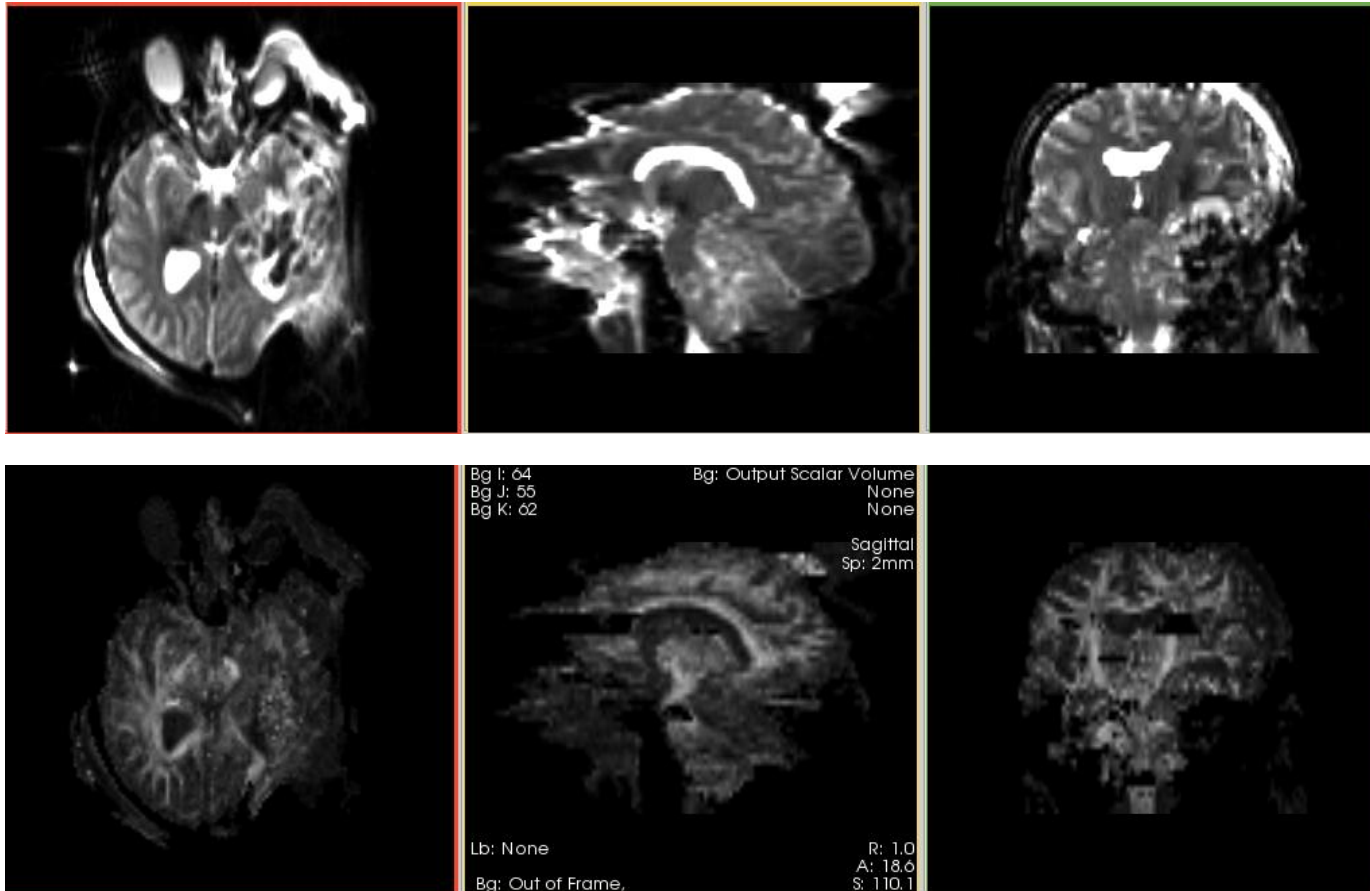
# DTI Data: Nrrd File Format

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- The Nrrd file format accurately represents N-dimensional raster information for scientific visualization and medical image processing.
- The format includes a single header file and image file(s) that can be separate or combined. (.nhdr & .raw, or .nrrd)
- NA-MIC has developed a way of using the Nrrd format to represent Diffusion Weighted Images (DWI) volumes and Diffusion Tensor Images (DTI).
- Nrrd DWI and Nrrd DTI data can be read into 3D Slicer, to visually confirm that the orientation of the tensors is consistent with expected neuroanatomy

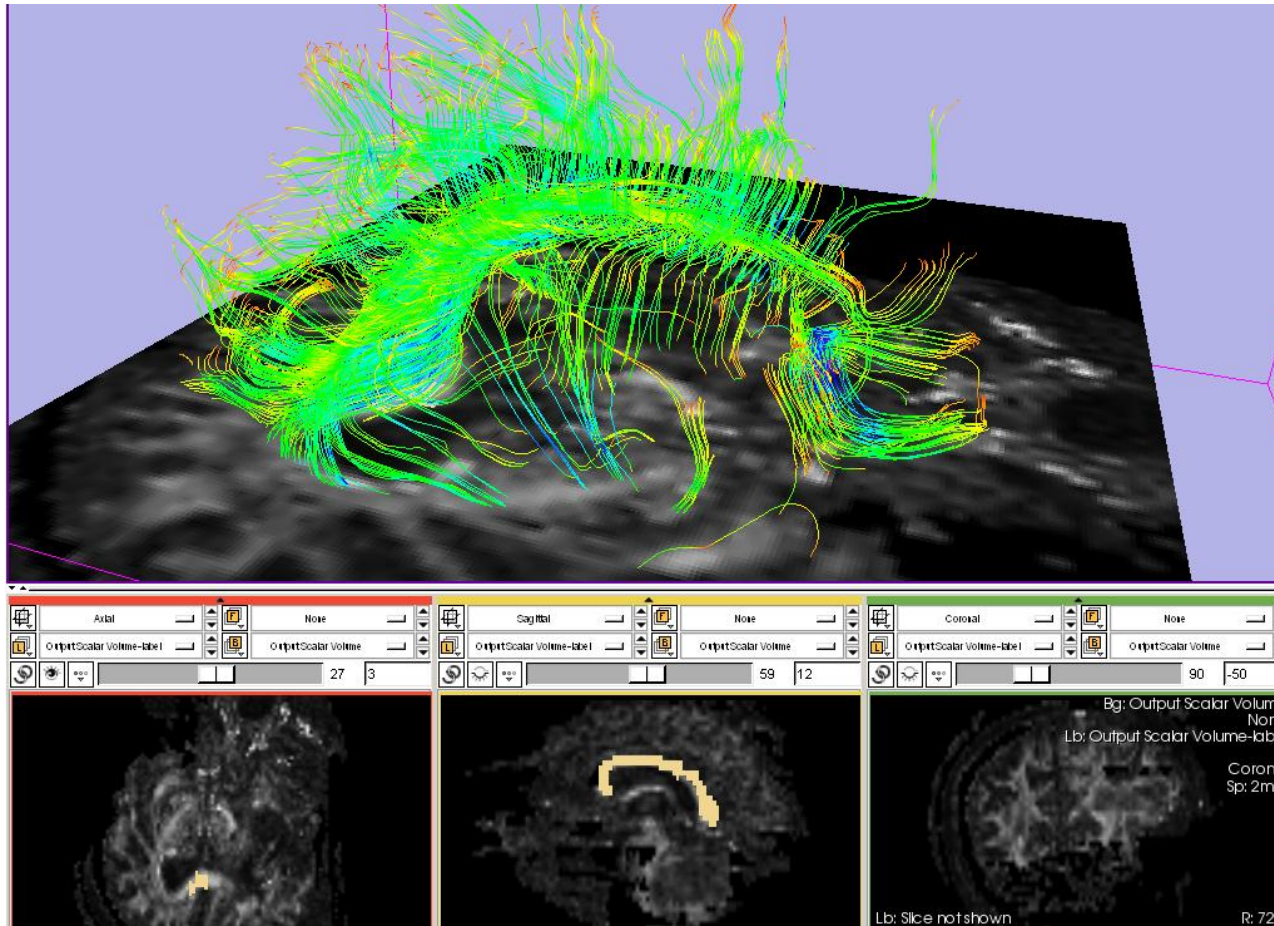


# Diffusion Data





# Diffusion Data





# Slicer3 Modules for TBI analysis

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- Compare Layout
- Navigator
- Interactive Editor
- Model Maker
- MR Bias Correction
- Dicom To Nrrd Converter
- Diffusion Tensor Estimation
- Diffusion Scalar Measurement
- Labelmap Seeding Tractography
- BrainsFit
- ABC Module



# Acknowledgments

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NIH P41RR013218



**Dominik Meier, Ph.D., Center for Neurological Imaging**





# Compare layout

