



PRIME 2014 BRISBANE AUSTRALIA

PROJECT:

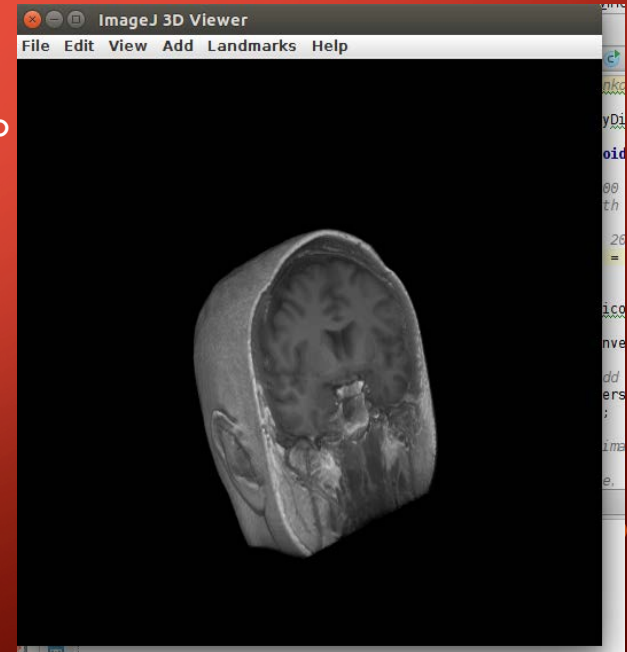
KEPLER WORKFLOWS FOR MRI IMAGE GENERATION

WEEK 4 JULY 22TH REPORT

BY MATTHEW SCHWEGLER

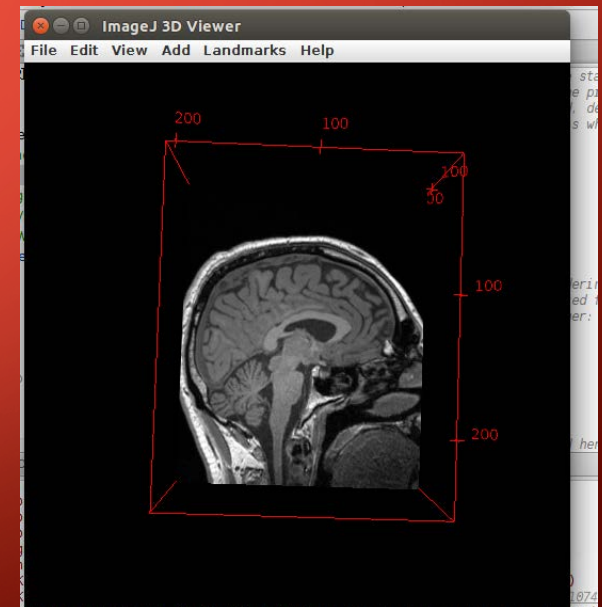
MRI IMAGE GENERATION IN 3D

- Display of 3D volumes
 - Using an ImageJ plugin called 3D viewer's API I was able to write code utilizing the image stacks I created last week to generate 3D volumes
 - The 3D image generation is accomplished by taking and aligning each image in the stack and then stitching them together through the depth of the image.



ADDITIONAL 3D FUNCTIONALITY

- Using orthogonal slices to see past the skull
 - A problem with the volume rendering was seeing past the skull. To increase the usefulness of the images I used another functionality that displays the images as ortho slices. This allows the user to see inside the skull and also scroll through the depth in all 3 axes.
 - This means users can look through the entire 3D image slice by slice in x, y and z axes.



GOALS FOR THE UPCOMING WEEK

- Looking into new tools

- I met with Andrew Janke who works at the National Imaging Facility here on UQ.
 - I learned of another package of MRI tools called FSL that is widely used in the neuroscience community both here and abroad.
- I plan to install these tools next week and see what range of function they provide.

- Kepler Workflow

- I will start designing and working on creating a simple Kepler workflow to take DICOM MRI files convert them to NIFTI format and then extract and display the brain in 3D.

BYRON BAY & NIMBIN



ACKNOWLEDGMENTS

- My hosts in Australia
 - David Abramson, Hoang Nguyen, Andrew Janke the University of Queensland
- My mentor in UCSD
 - Ilkay Altintas
- Financial supporter: PRIME
 - Dr. Gabriele Wienhausen