



# PRIME 2014 BRISBANE AUSTRALIA

PROJECT:

KEPLER WORKFLOWS FOR MRI IMAGE GENERATION

WEEK 3 JULY 16<sup>TH</sup> REPORT

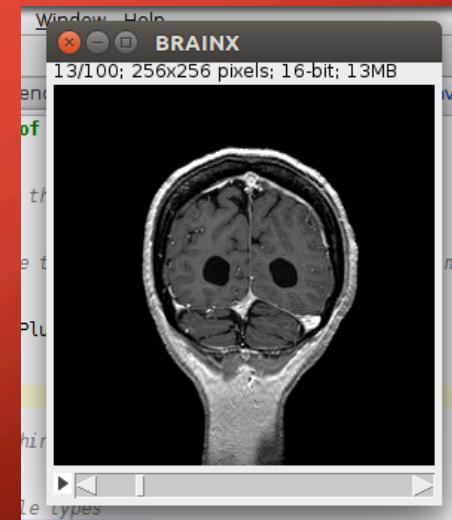
BY MATTHEW SCHWEGLER

# A NEW PLAN FOR MRI IMAGE GENERATION

- After a good deal of research on file types for MRI data I decided to use DICOM
  - They are the standard file type for medical data. They hold both patient information and image data in a secure manner.
- The NIH Program ImageJ
  - I found a program built to handle image generation and manipulation in java centering around medical file types
  - I began learning ImageJ and getting the API's working on my native environment

# BREAKTHROUGHS WITH IMAGE GENERATION

- Generating single DICOM MRI images in DICOM
  - I found methods and plugins that allowed me to read in DICOM files and generate a single 2D image from java code using the ImageJ API
- Sequences of images
  - After further research and experience with ImageJ and additional DICOM plugins to the API. I managed to generate arrays of DICOM images and display them. The display is 2D but allows for users to scroll through the depth with a toolbar.



# GOALS FOR THE UPCOMING WEEK

- Render DICOM images in 3D
  - I will continue to research to find a method that allows me to accomplish my original goal of rendering MRI images in three dimensions
  - Find an existing API as I have for 2D images or look into potential creating my own
- Stretch Goal: Integrate 2D images into Kepler
  - Create Kepler actors for the code I have thus far
  - Plan out what Kepler actors I will need and how best to split their functionality in to modular usable actors.

# NOOSA AND AUSTRALIA ZOO



## ACKNOWLEDGMENTS

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