



# PRIME 2014 BRISBANE AUSTRALIA

PROJECT:

KEPLER WORKFLOWS FOR MRI IMAGE GENERATION

WEEK 5 JULY 29<sup>TH</sup> REPORT

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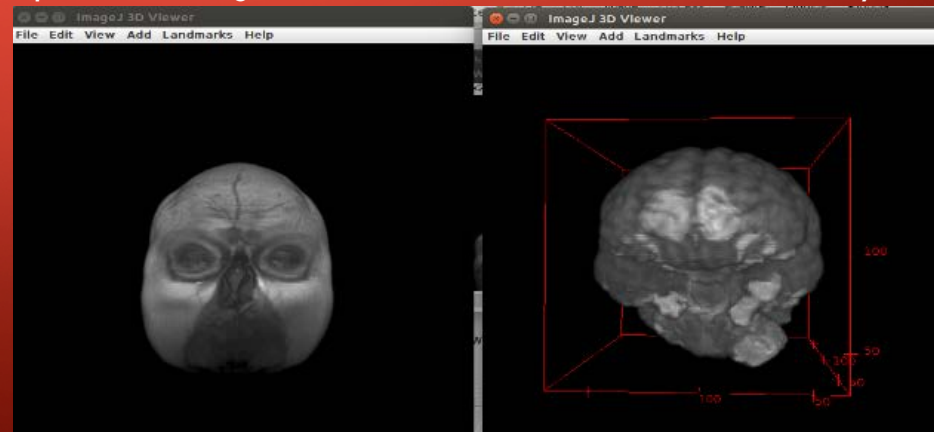
# FSL TOOLSET BASED KEPLER WORKFLOWS

- Using FSL
  - After a productive meeting I had with Andrew Janke Last week I moved my project into MRI manipulation tools.
  - My goal will be to create Kepler based workflows that can perform useful functions on MRI data
  - These function include Brain Extractoin (BET), Linear Image Registration (FLIRT) just to name a few. Kepler would lend itself well to these types of workflows.

# BET - BRAIN EXTRACTION TOOL

- Using FSL tool BET
  - The first tool I wanted to get running was BET or Brain Extraction tool. This tool is designed to remove the skull and tissue that obscures the brain in MRI Structural data.
  - After getting the FSL tools set up and running I was able to extract the brain from my MRI data via command line tools.

Images to the right depicts a 200 image DICOM sequence visualized in 3D before and after BET extraction.



# ROAD BLOCKS & BREAKTHROUGHS

- Roadblocks

- Stanford Python Script

- My initial project foundation turned out to be an unusable dead end due to incompatible python code with Kepler. I was able to start over with a better understanding of Keplers capabilities and eventually found Java API's that led to superior image generation.

- Breakthroughs

- 3D Image Generation

- Digging through pages of poor ImageJ API documentation lead to my eventual success in using ImageJ in tandem with several 3<sup>rd</sup> party plugins to generate useful detailed 3D images.

- Seeking out experts

- Through talking with experts in the field of MRI image analysis I was able to better identify useful tools I could create to aid in MRI image analysis and generation. This is quickly leading to useful Kepler workflows

# THE GOLD COAST & SURFERS PARADISE



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