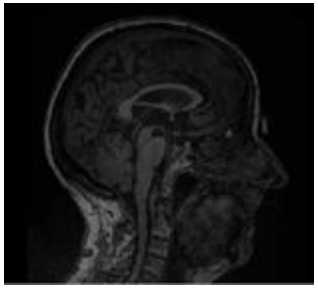
fMRIprep Output

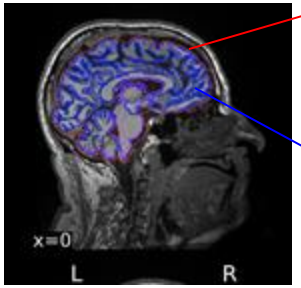
10/29/2021

Individual's brain



Brain extraction

Extracted brain



Red line: A mask of the brain

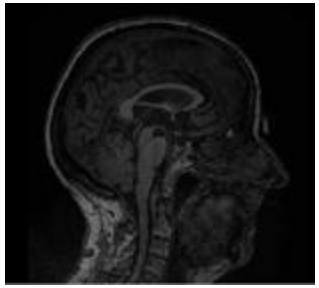
Blue&Magenta line: segmentation of white matter and grey matter

Part1:

1. Make sure the red line is extracting the brain - not cutting off much brain tissue or including much non-brain (skull/dura) area
2. Make sure the blue line divides between white and grey matter.

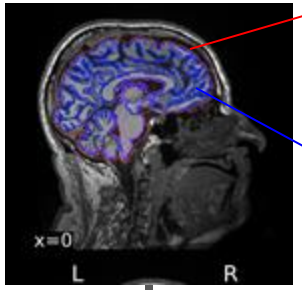
Bad example

Individual's brain



Brain extraction

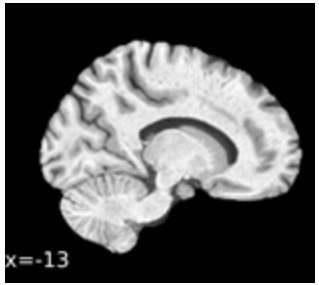
Extracted brain



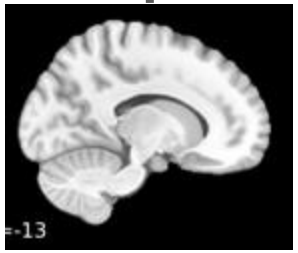
Red line: A mask of the brain

Blue & Magenta line: segmentation of white matter and grey matter

Normalized brain



Normalization

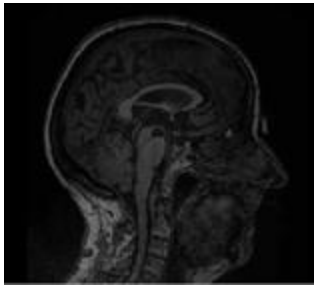


Standard MNI space

Part 2:

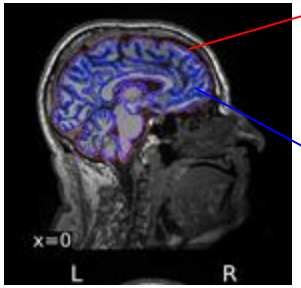
1. Check if the ventricles for both images are roughly in the same place
2. Check if the boundary between white and grey matter for both images are basically the same
3. Check if there's any stretched/distorted pictures

Individual's brain



Brain extraction

Extracted brain



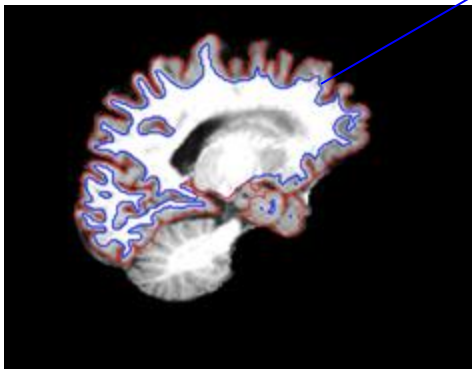
Red line: A mask of the brain

Blue & Magenta line:
Segmentation of white matter and grey matter

Part3

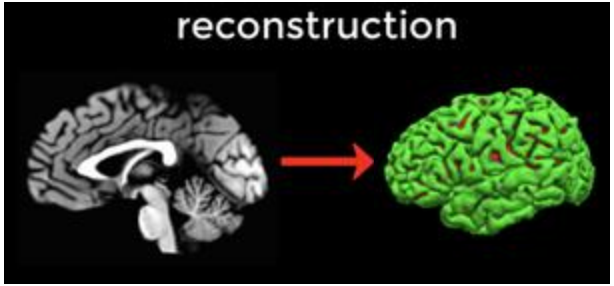
1. Make sure the red line is on the boundary of grey matter and not including cerebellum
2. Make sure the blue line is on the boundary between white matter and grey matter.

Reconstructed brain

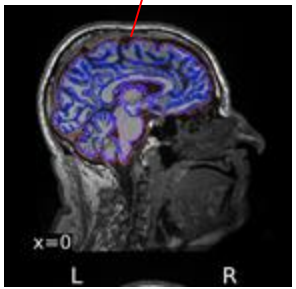


Blue line: interface between white matter and grey matter

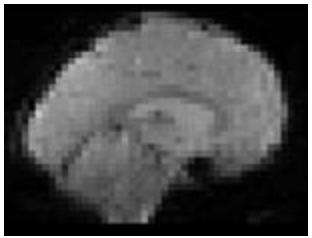
What is reconstruction?



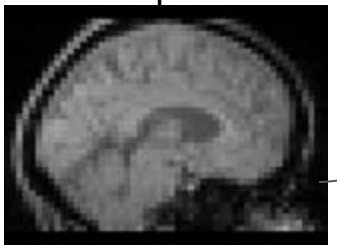
Red line: A mask of the brain

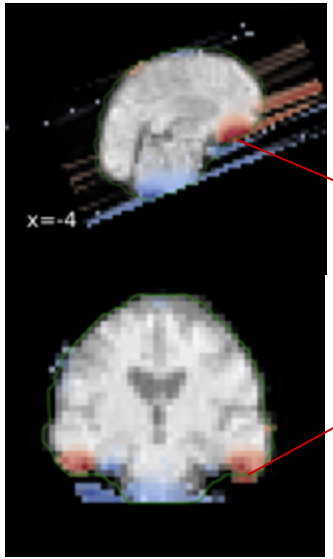


Individual's brain activity



Fieldmap



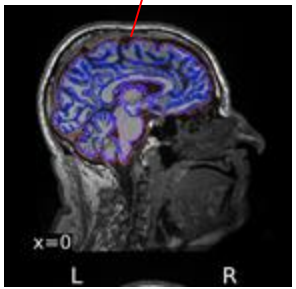


Places that distortion is likely happening

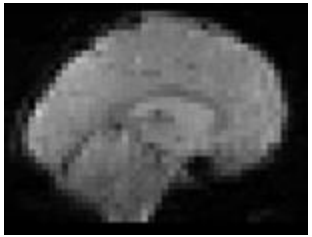
Part4

1. Check if the ventricles for both EPI and magnitude are roughly in the same place
2. Check if there is any distortion or shifting between EPI and magnitude

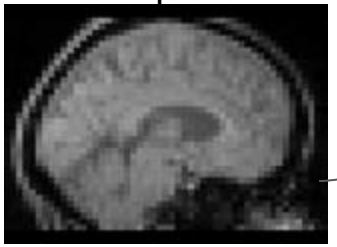
Red line: A mask of the brain



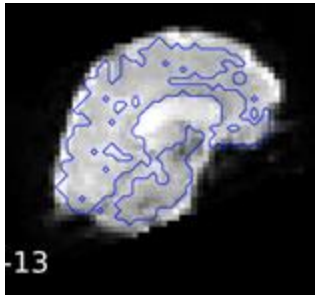
Individual's brain activity



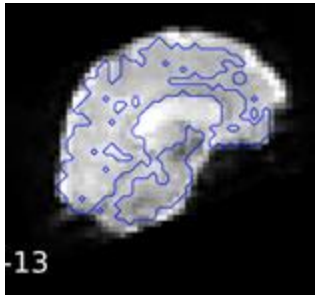
Fieldmap



Before distortion correction



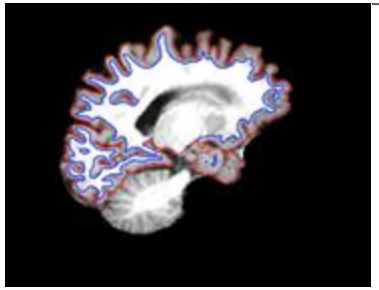
After distortion correction



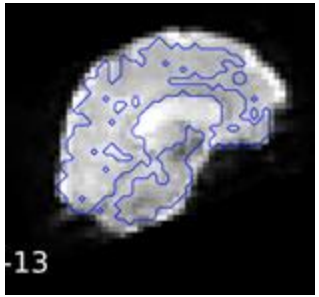
Part5

1. Check if the functional image aligned with the blue line better after the distortion correction (the changes could be very subtle)
2. Check if the after images stand like a normal brain (no distortion/shifting)

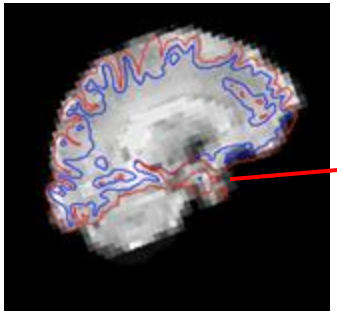
Structural brain



Functional brain



Functional brain registered with structural brain

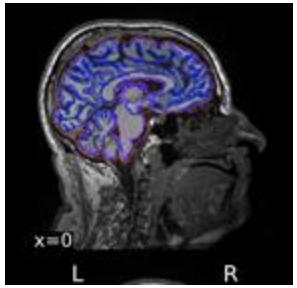


Might be signal loss here but you only need to check the area that does signals

Part 6

1. Check if the blue line aligns with the boundary between grey matter and white matter
2. No distortion or shifting between “Fixed” and “Moving”

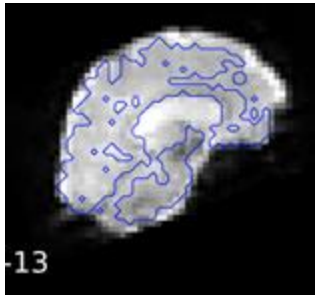
Extracted brain

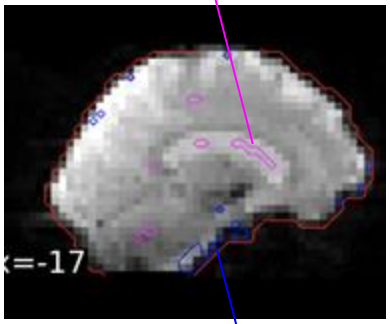


We used the brain mask

Finding the noise in white matter and CSF

Functional brain





Finding the movements

Part 7

1. Check if the red line is outside of the functional brain and not cutting of any functional brain
2. Check if the magenta line is inside of white matter and CSF area
3. Check if the blue line is generally in areas with high CSF or blood flow (e.g., between the hemispheres, in ventricles, and between the cortex and the cerebellum, etc)

Part 8

1. Check the average movements of this participant

Mean movement > 0.2 - this person is potentially a mover!