freesurfer freeview SPM Meshlab

T1.nii

autorecon1
Steps 1–4 of
reconstruction (~20 min)

skullstripping
SPM

brainmask.nii

Convert brainmask
to freesurfer
format
(.nii → .mgz)

brainmask.mgz

autorecon2,3
Steps 6–31 of
reconstruction (~ 8h)

T1.mgz
wm.mgz
brainmask.mgz

Quality check
Check for artifacts in
freeview

aseg.mgz

rh.stl
lh.stl

Process cerebellum
(areas 7, 8, 46, 47)

subcortical7.stl
subcortical8.stl
subcortical46.stl
subcortica48.stl

Meshlab
3D refinement (smoothing)
RH, LH, cerebellum

Send the 3 files to 3d printing team

rh_final.stl
lh_final.stl
cerebellum_final.stl

Freesurfer Autorecon Processing Stages

1. Motion Correction and Conform
2. NU (Non-Uniform intensity normalization)
3. Talairach transform computation
4. Intensity Normalization 1
5. ~~Skull Strip~~
6. EM Register (linear volumetric registration)
7. CA Intensity Normalization
8. CA Non-linear Volumetric Registration
9. Remove Neck
10. LTA with Skull
11. CA Label (Volumetric Labeling, ie Aseg) and Statistics
12. Intensity Normalization 2 (start here for control points)
13. White matter segmentation
14. Edit WM With ASeg
15. Fill (start here for wm edits)
16. Tessellation (begins per-hemisphere operations)
17. Smooth1
18. Inflate1
19. QSphere
20. Automatic Topology Fixer
21. Final Surfs (start here for brain edits for pial surf)
22. Smooth2
23. Inflate2
24. Spherical Mapping
25. Spherical Registration
26. Spherical Registration, Contralateral hemisphere
27. Map average curvature to subject
28. Cortical Parcellation – Desikan_Killiany and Christophe (Labeling)
29. Cortical Parcellation Statistics
30. Cortical Ribbon Mask
31. Cortical Parcellation mapping to Aseg