

FreeSurfer Tutorial: Useful recon-all flags.

This page extends ReconAllDevTable. The following flags can be used in conjunction with individual steps or the entire process:

-autorecon-all	either of these flags will work to run the entire recon-all process.
-all	
-dontrun	useful for debugging. just prints the commands that will run (does not execute them).
-legacy	use this flag on data that was previously processed with a different version of freesurfer. Use this flag THE FIRST TIME only. It will automatically keep all your prior edits (talairach, control points, white matter etc).
-clean-tal	trashes any manual edits to the talairach, makes talairach.xfm and talairach.auto.xfm the same and runs using the automatically generated talairach.xfm
-clean-seed	trashes all saved seed point for the cutting planes and uses the automatically set cutting planes.
-clean-cp	trashes control points and runs the normalization without control points.
-clean-bm	trashes any manual edits to the brainmask.mgz volume, makes brainmask.mgz and brainmask.auto.mgz the same and runs using the automatically generated brainmask.mgz
-clean-wm	trashes any manual edits to the wm.mgz volume and runs using the automatically generated wm.mgz.
-clean-aseg	trashes any manual edits to the aseg.mgz and runs using the automatically generated aseg.mgz
-clean-cpwm	combination of -clean-cp and -clean-wm.
-clean	use this flag to clear all of your manual edits and run it completely fresh.
-noaseg	use this flag on subjects that either cannot use an aseg (i.e., baby brains or non-human primates) or for those for which you will never want an aseg. It skips the subcortical segmentation and will not try and use it (aseg.mgz) in any of the subsequent steps.
-norandomness	use this flag on a subject when it is necessary to ensure that results are exactly the same from run to run. it seeds the random number generator used by some algorithms with the same number, removing any variability.
-multistrip	use this flag on a subject when you would like to get skullstrip results using several different watershed preflood heights simultaneously. Output will be nu, orig, and T1 volumes stripped at these heights: 5, 10,

-multisup		20, 30. You can change which preflood heights are used by setting this variable first: setenv WATERSHED_PREFLOOD_HEIGHTS '20 30 40 50'. Be sure to use -clean-bm with this flag.
recon-all flag	Used with step	Description
-no-ca-align	-careg	this flag should be used if the data to be processed comes from the same scanner platform and pulse sequence as the atlas. With the FreeSurfer RB40 atlas this means MPAGE on a 1.5T Siemens scanner.
	-calabel	
-subcortseg	-gcareg	runs the subcortical segmentation and associated statistics
	-canorm	
	-careg	
	-rmneck	
	-skull-lta	
	-calabel	
	-segstats	
-cc-xyz <X Y Z>	-fill	manually sets the corpus callosum seed point
-pons-xyz <X Y Z>	-fill	manually sets the pons seed point
-rh-xyz <X Y Z>	-fill	manually sets the right hemisphere seed point
-lh-xyz <X Y Z>	-fill	manually sets the left hemisphere seed point
-jacobian_dist0		Computes how much an individual surface must be distorted in order to perfectly match the atlas (ie, distance constraints are turned off).
-old-atlas	-gcareg	Use this flag in conjunction with other steps of recon-all and it will default to the old set of atlases. Uses talairach_mixed.gca for the subcortical segmentation, ? h.average.tif for the surface morph, and ? h.atlas2002_simple.gcs for the cortical parcellations.
	-canorm	
	-careg	
	-calabel	
	-surfreg	
	-contrasurfreg	
	-avgcurv	
	-cortparc	
-deface		removes the face from the orig volume to anonymize it.

The following flags can be used after certain manual intervention to regenerate accurate volumes and surfaces (if a data set has or needs spherical morphing, add the -autorecon3

flag):

recon-all step	Individual Flag	Input	Command Line	Output
recon-all -autorecon2-cp -subjid subj (use this after setting control points. This flag will preserve your wm.mgz edits and remake all necessary volumes and surfaces)	-normalization2	brainmask.mgz	mri_normalize -mask brainmask.mgz norm.mgz brain.mgz	brain.mgz
		norm.mgz		
		brain.mgz	mri_mask brain.mgz brainmask.mgz brain.finalsurfs.mgz	brain.finalsurfs.mgz
		brainmask.mgz		
	-segmentation	brain.mgz	mri_segment brain.mgz wm.seg.mgz	wm.seg.mgz
		wm.seg.mgz	mri_edit_wm_with_aseg wm.seg.mgz brain.mgz aseg.mgz wm.asegedit.mgz	wm.asegedit.mgz
		aseg.mgz		
		brain.mgz		
		wm.asegedit.mgz	mri_preless wm.asegedit.mgz norm.mgz wm.mgz	wm.mgz
		norm.mgz		
	-fill	wm.mgz	mri_fill -a ./scripts/ponscc.cut.log -xform transforms/talairach.lta -segmentation aseg.mgz wm.mgz filled.mgz	filled.mgz
		aseg.mgz		./scripts/ponscc.cut.log
		transforms/talairach.lta		
	-tessellate	filled.mgz	mri_tessellate filled.mgz 255 ./surf/lh.orig.nofix	lh.orig.nofix
			mri_tessellate filled.mgz 127 ./surf/rh.orig.nofix	rh.orig.nofix
	-smooth1	?h.orig.nofix	mrisc_smooth -nw ? h.orig.nofix ? h.smoothwm.nofix	?h.smoothwm.nofix
	-inflate1	?h.smoothwm.nofix	mrisc_inflate -no-save-sulc ?h.smoothwm.nofix ?h.inflated.nofix	?h.inflated.nofix
	-qsphere	?h.inflated.nofix	mrisc_sphere -q -0 ? h.inflated.nofix ? h.inflated.nofix ? h.qsphere.nofix	?h.qsphere.nofix
	-fix	?h.orig.nofix	cp ?h.orig.nofix ?h.orig	?h.orig
		?h.inflated.nofix	cp ?h.inflated.nofix ? h.inflated	?h.inflated
		?h.qsphere.nofix	mrisc_fix_topology -errors -mgz -sphere qsphere.nofix -ga	?h.orig

			<subj> ?h	
-finalsurfs	brain.finalsurfs.mgz	mris_make_surfaces - mgz -w 0 -T1 brain.finalsurfs.mgz subj ?h		?h.white
				?h.pial
				?h.thickness
				?h.curv
				?h.area
-smooth2	?h.white	mris_smooth ?h.white ? h.smoothwm		?h.smoothwm
-inflate2	?h.white	mris_inflate ?h.white ? h.inflated		?h.inflated
				?h.sulc
-cortribbon	orig.mgz	mri_surf2vol --mkmask --hemi ?h --fillribbon -- template orig.mgz -- volregidentity subj -- outvol ?h.ribbon.mgz		?h.ribbon.mgz
	?h.white			
	?h.pial			

recon-all step	Individual Flag	Input	Command Line	Output
recon-all - autorecon2- wm -subj subj (use this after doing manual wm edits. This	-fill	wm.mgz	mri_fill -a	filled.mgz
		aseg.mgz	./scripts/ponsec.cut.log -xform	./scripts/ponsec.cut.log
		transforms/talairach.lta	transforms/talairach.lta -segmentation aseg.mgz wm.mgz filled.mgz	
	-tessellate	filled.mgz	mri_tessellate filled.mgz 255 ./surf/lh.orig.nofix	lh.orig.nofix
			mri_tessellate filled.mgz 127 ./surf/rh.orig.nofix	rh.orig.nofix
	-smooth1	?h.orig.nofix	mris_smooth -nw ? h.orig.nofix ? h.smoothwm.nofix	?h.smoothwm.nofix
	-inflate1	?h.smoothwm.nofix	mris_inflate -no-save- sulc ? h.smoothwm.nofix ? h.inflated.nofix	?h.inflated.nofix
	-qsphere	?h.inflated.nofix	mris_sphere -q -0 ? h.inflated.nofix ? h.inflated.nofix ? h.qsphere.nofix	?h.qsphere.nofix
		?h.orig.nofix	cp ?h.orig.nofix ? h.orig	?h.orig

flag will regenerate all necessary volumes and surfaces)	-fix	?h.inflated.nofix	cp ?h.inflated.nofix ?h.inflated	?h.inflated
		?h.qsphere.nofix	mrif_fix_topology -errors -mgz -sphere qsphere.nofix -ga <subjid> ?h	?h.orig
	-finalsurfs	brain.finalsurfs.mgz	mrif_make_surfaces -mgz -w 0 -T1 brain.finalsurfs.mgz subj ?h	?h.white
				?h.pial
		?h.orig		?h.thickness
				?h.curv
				?h.area
	-smooth2	?h.white	mrif_smooth ?h.white ?h.smoothwm	?h.smoothwm
	-inflate2	?h.white	mrif_inflate ?h.white ?h.inflated	?h.inflated
				?h.sulc
	-cortribbon	orig.mgz	mri_surf2vol --mkmask --hemi ?h --fillribbon --template orig.mgz --volregidentity subj --outvol ?h.ribbon.mgz	?h.ribbon.mgz
		?h.white		
		?h.pial		

recon-all step	Individual Flag	Input	Command Line	Output
recon-all -autorecon2-pial -subjid subj (use this after editing brain.mgz to alter pial surface. This flag will regenerate all final surfaces)	-finalsurfs	brain.finalsurfs.mgz	mris_make_surfaces -mgz -w 0 -T1 brain.finalsurfs.mgz subj ?h	?h.white
				?h.pial
		?h.orig		?h.thickness
				?h.curv
				?h.area
	-smooth2	?h.white	mris_smooth ?h.white ?h.smoothwm	?h.smoothwm
	-inflate2	?h.white	mris_inflate ?h.white ?h.inflated	?h.inflated
				?h.sulc
	-cortribbon	orig.mgz	mri_surf2vol --mkmask --hemi ?h --fillribbon --template orig.mgz -volregidentity subj --outvol ?h.ribbon.mgz	?h.ribbon.mgz
		?h.white		
		?h.pial		

recon-all step	Individual Flag	Input	Command Line	Output
recon-all -autorecon2-perhemi -subjid subj (use this to run only the steps that are run per-hemisphere, in conjunction with the '-hemi' flag. This is useful if one hemisphere failed and you need to run them separately)	-tessellate	filled.mgz	mri_tessellate filled.mgz 255 ../surf/lh.orig.nofix	lh.orig.nofix
			mri_tessellate filled.mgz 127 ../surf/rh.orig.nofix	rh.orig.nofix
	-smooth1	?h.orig.nofix	mris_smooth -nw ? h.orig.nofix ? h.smoothwm.nofix	? h.smoothwm.nofix
	-inflate1	?h.smoothwm.nofix	mris_inflate -no-save-sulc ? h.smoothwm.nofix ?h.inflated.nofix	?h.inflated.nofix
	-qsphere	?h.inflated.nofix	mris_sphere -q -0 ? h.inflated.nofix ? h.inflated.nofix ? h.qsphere.nofix	?h.qsphere.nofix
	-fix	?h.orig.nofix	cp ?h.orig.nofix ? h.orig	?h.orig
		?h.inflated.nofix	cp ?h.inflated.nofix ?h.inflated	?h.inflated
		?h.qsphere.nofix	mris_fix_topology -errors -mgz -sphere qsphere.nofix -ga <subjid> ?h	?h.orig
	-finalsurfs	brain.finalsurfs.mgz	mris_make_surfaces -mgz -w 0 -T1 brain.finalsurfs.mgz subj ?h	?h.white
		?h.orig		?h.pial
				?h.thickness
				?h.curv
				?h.area
	-smooth2	?h.white	mris_smooth ? h.white ? h.smoothwm	?h.smoothwm
	-inflate2	?h.white	mris_inflate ? h.white ?h.inflated	?h.inflated
				?h.sulc
-cortribbon	orig.mgz	mri_surf2vol --mkmask --hemi ?h --fillribbon --template orig.mgz - -volregidentity subj --outvol ?	?h.ribbon.mgz	
	?h.white			
	?h.pial			

			h.ribbon.mgz	
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OtherUsefulFlags (last edited 2010-04-01 20:09:41 by AllisonStevens)