

Makefile Documentation

Documenting makefiles: PrepSubject.mk

June 9, 2016

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1 This File

This document was prepared on June 9, 2016 at 14:48 by tkmday.

Called from: /mnt/home/tkmday/sdmf/make-document

1.1 Description

This documents makefiles for Udall Project 2. This is a longitudinal study to investigate the effect of genetic risk factors on systems neurophysiology. Blah blah blah blah blah. Funding: P50xxxxxx

1.2 Files

PrepSubject.mk No description supplied.

Note that the items are sorted uppercase, then lowercase: [A-Za-z]

2 Targets

Target	Definition & Description	File
ConvertCommon	Convert survey, flair, T1 PAR/RECS to nifti.	PrepSubject.mk
ConvertOff	Convert OFF scans	PrepSubject.mk
ConvertOn	Convert ON scans	PrepSubject.mk
PrepStructurals	Combining, Reorienting and Skullstripping	PrepSubject.mk
PrepSubject	No comment supplied	PrepSubject.mk
PrepSubject	No comment supplied	PrepSubject.mk

3 Variables

Variable	Definition & Description	File
MATLABCompiler	/usr/local/MATLAB/MATLAB_Runtime/v81 #! always use the same vresion of MATLAB No comment supplied	PrepSubject.mk

4 Intermediate Files

PrepStructuralsOff No comment supplied	PrepSubject.mk
axcpt-%/rest_e001.nii.gz Convert task scan	PrepSubject.mk
dti/blipA.nii.gz Convert DTI	PrepSubject.mk
fieldmap-%/B0_mag_fMRI.nii.gz convert B0 fieldmap	PrepSubject.mk
fieldmap-%/B0_mag_fMRI_brain.nii.gz skull-stripped fieldmap	PrepSubject.mk
flair/Flair.nii.gz Convert and reorient Flair	PrepSubject.mk
mprage/T1.nii.gz Convert and reorient MPRAGE	PrepSubject.mk
mprage/T1_brain.nii.gz skull-stripped brain	PrepSubject.mk
mprage/T1_in_fs.nii.gz No comment supplied	PrepSubject.mk
pcasl-%/Pcasl.nii.gz PCASL conversion should be done with mcverter in subject_setup	PrepSubject.mk
rest-%/rest_e001.nii.gz Convert resting state	PrepSubject.mk
test-grp No comment supplied	PrepSubject.mk

5 Makefiles

5.1 PrepSubject.mk

```
### Unpacks nifties, PARRECs

.PHONY: PrepSubject ConvertCommon ConvertOn ConvertOff PrepStructurals
#.SECONDARY:

MATLABCompiler=/usr/local/MATLAB/MATLAB_Runtime/v81 #! always use the same version
of MATLAB

# all:

# test whether this is a control or PD
ifeq ($(strip $(GROUP)),CONTROL)
PrepSubject: ConvertCommon ConvertOn PrepStructurals
else
PrepSubject: ConvertCommon ConvertOn ConvertOff PrepStructurals PrepStructuralsOff
endif

## Convert survey, flair, T1 PAR/RECS to nifti.
ConvertCommon: flair/Flair.nii.gz mprage/T1.nii.gz dti/blipA.nii.gz

## Convert ON scans
ConvertOn: pcasl-on/Pcasl.nii.gz rest-on/rest_e001.nii.gz axcpt-on/rest_e001.nii.
gz fieldmap-on/B0_mag_fMRI.nii.gz

## Convert OFF scans
ConvertOff: pcasl-off/Pcasl.nii.gz rest-off/rest_e001.nii.gz axcpt-off/rest_e001.
nii.gz fieldmap-off/B0_mag_fMRI.nii.gz

#
# Scans for which there is only one per subject
#

#> Convert and reorient Flair
flair/Flair.nii.gz: parrec/FLAIR.zip
    mkdir -p flair
    unzip $(word 1,$^) -d flair/ ;\
    $(BIN)/run_ConvertR2A.sh $(MATLABCompiler) $(SubjDIR)/flair/ ;\
    rm -f flair/*.PAR flair/*.REC flair/*.XML flair/*.LOG ;\
    mv flair/*FLAIR*.nii flair/Flair.nii ;\
    gzip flair/*.nii ;\
    fslreorient2std flair/Flair.nii.gz flair/Flair.nii.gz

#> Convert DTI
dti/blipA.nii.gz: parrec/DTI-BlipA.zip parrec/DTI-BlipP.zip
    mkdir -p dti ;\
    unzip parrec/DTI-BlipA.zip -d dti/ ;\
    unzip parrec/DTI-BlipP.zip -d dti/ ;\
    parrec2nii -v -b -c --scaling fp --overwrite -d --field-strength=3 -o dti
    dti/*PAR ;\
    rm -f dti/*.PAR dti/*.REC dti/*.XML dti/*.LOG ;\
    mv dti/*BlipA*.nii.gz dti/blipA.nii.gz ;\
    mv dti/*BlipA*.bvals dti/blipA.bvals ;\

```

```
mv dti/*BlipA*.bvecs dti/blipA.bvecs ;\
mv dti/*BlipP*.nii.gz dti/blipP.nii.gz ;\
mv dti/*BlipP*.bvals dti/blipP.bvals ;\
mv dti/*BlipP*.bvecs dti/blipP.bvecs
```

#> Convert and reorient MPRAGE

```
mprage/T1.nii.gz: parrec/MPRAGE.zip
mkdir -p mprage ;\
unzip $(word 1,$^) -d mprage ;\
$(BIN)/run_ConvertR2A.sh $(MATLABCompiler) $(SubjDIR)/mprage/
rm -f mprage/*.PAR mprage/*.REC mprage/*.XML mprage/*.LOG ;\
mv mprage/*.nii mprage/T1.nii ;\
gzip mprage/T1.nii ;\
fslreorient2std mprage/T1.nii.gz mprage/T1.nii.gz
```

#

ON/OFF scans

#

#> PCASL conversion should be done with mcuverter in subject_setup

this comment should be removed

```
pcasl-%/Pcasl.nii.gz:
mkdir -p pcasl-$*
cp dicom/*PCASL*.nii.gz pcasl-$* ;\
mv pcasl-$*/PCASL_pld*.nii.gz pcasl-$*/Pcasl.nii.gz
```

#> Convert resting state

```
rest-%/rest_e001.nii.gz: parrec/rest_%.zip
mkdir -p rest-$* ;\
unzip $(word 1,$^) -d rest-$*/ ;\
$(BIN)/run_ConvertR2A.sh $(MATLABCompiler) $(SubjDIR)/rest-$*/ ;\
rm -f rest-$*/*.PAR rest-$*/*.REC rest-$*/*.XML rest-$*/*.LOG ;\
for i in `seq 1 3`; do mv rest-$*/RS*-e00$$${i}*.nii rest-$*/rest_e00$$${i}
}.nii; done ;\
gzip rest-$*/*.nii
```

#> Convert task scan

```
axcpt-%/rest_e001.nii.gz: parrec/axcpt_%.zip
mkdir -p axcpt-$* ;\
unzip $(word 1,$^) -d axcpt-$*/ ;\
$(BIN)/run_ConvertR2A.sh $(MATLABCompiler) $(SubjDIR)/axcpt-$*/ ;\
rm -f axcpt-$*/*.PAR axcpt-$*/*.REC axcpt-$*/*.XML axcpt-$*/*.LOG ;\
for i in `seq 1 3`; do mv axcpt-$*/Task*-e00$$${i}*.nii axcpt-$*/
rest_e00$$${i}.nii; done ;\
gzip axcpt-$*/*.nii
```

#> convert B0 fieldmap

```
fieldmap-%/B0_mag_fMRI.nii.gz: parrec/B0-ME_%.zip
mkdir -p fieldmap-$* ;\
unzip $(word 1,$^) -d fieldmap-$*/ ;\
$(BIN)/run_ConvertR2A.sh $(MATLABCompiler) $(SubjDIR)/fieldmap-$*/ ;\
rm -f fieldmap-$*/*.PAR fieldmap-$*/*.REC fieldmap-$*/*.XML fieldmap-$*/*.
LOG ;\
mv fieldmap-$*/B0_ME*2.nii fieldmap-$*/B0_mag_fMRI.nii ;\
mv fieldmap-$*/B0_ME*5.nii fieldmap-$*/B0_phase_fMRI.nii ;\
gzip fieldmap-$*/*.nii
```

```

#
# PrepStructurals
#

#? Combining, Reorienting and Skullstripping
PrepStructurals: mprage/T1_brain.nii.gz fieldmap-on/B0_mag_fMRI_brain.nii.gz
PrepStructuralsOff: fieldmap-off/B0_mag_fMRI_brain.nii.gz

#> skull-stripped brain
mprage/T1_brain.nii.gz: mprage/T1.nii.gz
    bet $< $@ -B -f .1

#> skull-stripped fieldmap
fieldmap-%/B0_mag_fMRI_brain.nii.gz: fieldmap-%/B0_mag_fMRI.nii.gz
    bet fieldmap-$*/B0_mag_fMRI.nii.gz fieldmap-$*/B0_mag_fMRI_brain.nii.gz -R

# requires freesurfer
mprage/T1_in_fs.nii.gz: $(SUBJECTS_DIR)/$(subject).s1/mri/T1.mgz
    source $(FREESURFER_SETUP) ;\
    export SUBJECTS_DIR=$(SUBJECTS_DIR) ;\
    mri_convert $(word 1,$^) $@

#
# Testing
#

test-grp:
    @echo $(GROUP)

```