Makefile Documentation

Documenting makefiles: `Flex.mk`

Fri 3rd Jun, 2016

Contents

1 This File

This documentation covers the following makefiles, and was prepared on Fri 3rd Jun, 2016 at 10:11 by `tkmday`

Flex.mk Identifies WM hyperintensities copied from act-plus PrepSubject.mk

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

2 Targets

Target	Definition & Description	File
`Flex`	Identify wm hyperintensities	`Flex.mk`

3 Variables

Variable	Definition & Description	File
`FLEXPATH`	`$(BIN)/wmprogram/sb/cross_platform/scripts` where the flex scripts are stored	`Flex.mk`
`SBBINDIR`	`$(BIN)/wmprogram/sb/linux` where the linux wrappers for the flex scripts are stored	`Flex.mk`
`SCALE`	`0.00266` scalar to adjust intensities, found through trial and error	`Flex.mk`

4 Intermediate Files

`QA/images/checkflex.gif` (`Flex.mk`) check flex output - this is a quickie image for checking skull stripping and whether the hyperintensities seem at least to be in the right places

`flair/Flair_RO.nii.gz` (`Flex.mk`) reorient to standard

flair/Flair_brain.hdr (Flex.mk) skull-strip and export as ANALYZE filetype for the sb_flex script

flair/Flair_brain_flwmt_lesions.hdr (Flex.mk) identify wm lesions

flair/Flair_restore.nii.gz (Flex.mk) produce bias-field corrected image that is segmented

flair/Flair_scaled.nii.gz (Flex.mk) The default Flair image has crazy-high intensities that flex doesn't like, so we lower the intensities

flair/Flair_wmh_mask.nii.gz (Flex.mk) create mask of wm lesions

flair/wmhstats.csv (Flex.mk) ??

5 Makefiles

5.1 Flex.mk

```
## Identifies WM hyperintensities
## copied from act-plus PrepSubject.mk

#! where the flex scripts are stored
FLEXPATH=$(BIN)/wmprogram/sb/cross_platform/scripts

#! where the linux wrappers for the flex scripts are stored
SBBINDIR=$(BIN)/wmprogram/sb/linux

#! scalar to adjust intensities, found through trial and error
SCALE=0.00266

.PHONY: Flex

#? Identify wm hyperintensities
Flex: flair/Flair.nii.gz flair/Flair_scaled.nii.gz flair/Flair_brain.hdr flair/
    Flair_brain_flwmt_lesions.hdr flair/Flair_wmh_mask.nii.gz QA/images/checkflex.gif

#> The default Flair image has crazy-high intensities that causes FLEX to crash
#> so we lower the intensities
flair/Flair_scaled.nii.gz: flair/Flair.nii.gz
        cp $< $@ ;\
        fslmaths $@ -mul $(SCALE) $@ -odt float


#> produce bias-field corrected image for input to FLEX
flair/Flair_restore.nii.gz: flair/Flair_scaled.nii.gz
        fast -B -o flair/Flair -t 2 $<

#> skull-strip and export as ANALYZE filetype for the sb_flex script
flair/Flair_brain.hdr: flair/Flair_restore.nii.gz
        niftiname=$(basename $@).nii.gz ;\
        bet $< $${niftiname} -R ;\
        fslchfiletype ANALYZE $${niftiname} $@ ;\
        rm $${niftiname}

#> Run FLEX to identify wm lesions (white matter hyperintensities)
flair/Flair_brain_flwmt_lesions.hdr: flair/Flair_brain.hdr
        @echo "Flex processing " $< ;\
        export PATH=$(FLEXPATH):$(SBBINDIR):$$PATH ;\
        export SBBINDIR=$(SBBINDIR) ;\
        $(FLEXPATH)/sb_flex -fslinstalled -fl $<

#> create mask of wm lesions. False positives are labeled with 2
flair/Flair_wmh_mask.nii.gz: flair/Flair_brain_flwmt_lesions.hdr
        fslmaths $< -uthr 1 $@

#> check flex output - this is a quickie image for checking skull stripping
#> and whether the hyperintensities seem at least to be in the right places
QA/images/checkflex.gif: flair/Flair_brain.hdr flair/Flair_wmh_mask.nii.gz
        mkdir -p QA/images ;\
        pngname=$(basename $@).png ;\
        slicer flair/Flair_brain.hdr flair/Flair_wmh_mask.nii.gz -l "orange" -a $${pngname} ;\
        convert $${pngname} $@ ;\
        rm $${pngname}

# we have to use backticks here because $() is interpeted to be a make command,
# not a command expansion of a shell command - we can use make::basename, but
# there is no make::fslstats
#> Create output statistics. This is a placeholder for now.
flair/wmhstats.csv: flair/Flair_wmh_mask.nii.gz
        wmh=$(shell fslstats $^ -V | awk '{print $$2}') ;\
        echo $(subject)","  $$wmh> $@
```