Mems Pipeline Documentation

1 MAIN SCRIPT /USR/LOCAL/BIN/DOMEMS.PY

User cd to data directory and calls the /usr/local/bin/domems.py (python script that setup PBS queue parameters and calls the /apps/matlabcode/domems/initstudyinfo.m matlab function passing the current directory and pipes the logs to /var/log/mems/<usernamedate.log> file)

2 MAIN MATLAB MODULE /APPS/MATLABCODE/DOMEMS/INITSTUDYINFO.M

This function takes one input (current directory) and consists of four parts

Checks for errors email and write to user status file to confirm each step

Stores info about the run in a postgresql database

Part one: check to make sure we have valid input

Part two: Call and run recon script

Part three: Call and run qa script

Part four: Call and run processtop script

3 DATA VALIDATION MODULE /APPS/MATLABCODE/DOMEMS/DATAVALIDATION.M

Usage: [dvf, pfname, isdataav,numofRS] = datavalidation

Checks current directory and figure out which PFile is which to pass to

the recon and processtop module

Input:

Output:

dvf the flag is set to 1 if the data is valid

pfname cell array with pfilenames in the right order for recon

isdataav cell array to define whether the data set will be recon

numofRS set to 2 if fwd and rev, 1 only fwd and -1 only rev

4 RECON MODULE /APPS/MATLABCODE/DOMEMS/RUN_RECON.M

Usage: run_recon()

Function configure parameters before calling spiralfmap2 based on the

datavalidation module (function modified from Valur orig implementation)

5 QA MODULE /APPS/MATLABCODE/DOMEMS/QA_MEMS.M

Input:

sname: name of the data (in AFNI briks or NIFTI)

If AFNI briks, include '+orig' in the name

If NIFTI: include 'nii' or 'nii.gz'

Output:

QA.jpg

6 PROCESSTOPUP MODULE /APPS/MATLABCODE/DOMEMS/PROCESSTOPUP.M

Usage: processtopup

Function prep data for registration, motion correction using

align_epi_anat.py afni script

and distortion correction using FSL topup tool.

Input:

Output:

Corrected resting state data set written to disk.

Function calls getRep.m (returns the subbrik with a motion withing the range

7 OTHERS

a. /apps/matlabcode/domems/sendmailto.m

Usage: sendmailto (to,subject,body)

Function sends email to user/mems-team to confirm processing success or report error messages

Input:

to

subject

body

Output:

b. /apps/matlabcode/domems/getmemsinfo.m

Usage: [u8 u9 u13 u14] = getmemsinfo(pfilename)

Function gets info off pfile header

Input:

pfilename

Output:

userdata8

userdata9 (SpinEcho (1))

userdata13

userdata14 (PhaseEncoding Dir)

c. /apps/matlabcode/domems/getUserName.m

Usage: name = getUserName()

Function gets current user name

Input:

Output:

name login user name

d. /apps/matlabcode/domems/getpsdname.m

Usage: [psdname] = getpsdname(pfilename)

Function gets info off pfile header

Input:

pfilename

Output:

psdname

e. /apps/matlabcode/domems/getsqldate.m

getsqldate

Returns current date as an sql format

f. /apps/matlabcode/domems/getuniquePfileID.m

Usage: [uniquePfileID] = getuniquePfileID(pfilename)

Function gets info off pfile header

Input:

pfilename

Output:

uniquePfileID (includes which scanner and orig pfilename to be inserted into database)

g. /apps/matlabcode/domems/run_recon_Testing.m

Similar program as run_recon.m but it disables the parallel processing toolbox and allows to run with fewer reps

h. misc. database functions

To setup the database connection, insert and update database records called from within the initstudyinfo.m program.