PREPROCESSING at DCCN

# TOOLS description:

## BIDS:

* + for MRI data quality checking with MRIqc and fmriprep
  + converts from dicom to bits format
  + recommended suggested name
  + BITS mapper to create the name, allocation and conversion to nifti
  + After every participant you run this, using the BITS coiner
  + De-face: by participant with participant number
  + If you do not remember check *.json* file

## MRIqc:

* + Check the data quality before pre-processing (T1 and movement)
  + Movement FD mm: bad above 0.5 => can check the group file

## fMRI prep:

* + For pre-processing
  + Use the same version across the study
  + No fieldmap: inverted instead
  + All the same pre-processing except for smoothing

## SPM

* + For smoothing
  + Smoothing depends on the functional voxel size (in our case is 2x2x2). It should be 3 times the number of voxels, so 6x6x6

How to pre-process

**Open Putty:**

* Set up a connection to a mentat005.dccn.nl, typing: *vncmanager* to establish a VNC session. <https://hpc.dccn.nl/docs/cluster_howto/access-internal.html#ssh-login-with-putty>
* Once it’s established, this step is not necessary any more.

**Open tiger:**

* Insert pw (\*…)
* Move to project folder: *cd /project/3018068.01*
* Type all the next command there

**Bidsmapper (searches your input environment for dicoms to change into bids):**

* Activate virtual conda environment:

% module add bidscoin/3.0.6

% source activate /opt/bidscoin

* To map and create a bidsmap.yaml file (Supposedly, you need to do this only once):

% bidsmapper source-folder bids-folder

% bidsmapper raw bids

it automatically opens bids editor

In case you need to change the name of the files or something else, you can do so calling the bids editor: *bidseditor bids-folder*)

* To use a pre-existing map:

% bidsmapper source-folder bids-folder -b /path/to/bidsmap.yaml

% bidsmapper raw bids -b bids/code/bidscoin/bidsmap.yaml or

% bidsmapper raw bids -t bidsmap\_dccn

* **Once you are happy with the result, you can run the conversion (uses your yaml file to change the mapped dicoms):**

% bidscoiner source-folder bids-folder -b path/to/bidsmap.yaml

% bidscoiner raw bids raw bids

**To check the output of bids coiner, you can use:**

* bids validator online, you only need to upload the bids folder. When there are errors but not crucial for proprecessing, to get fmriprep run, can skip the step of bids validation

**MRIqc**

* mriqc\_sub.py /project/3018068.01/bids

**FMRIPREP (22.0.1)**

* to check the module available: *module avail*
* load: *module add fmriprep/20.2.7*
* run a job of preprocessing of each subject: *fmriprep\_sub.py bids*
* check available option: *module help fmriprep* or *fmriprep\_sub -h*
* skip bids validation (only after using bidsvalidator to confirm no major errors): *fmriprep\_sub.py bids -a " --skip-bids-validation"*
* output: derivatives

**SPM: smoothing**

* using Ruben’s scripts!
* move: *cd project/3018068.01/Analysisi\_scripts/MRI\_preproc\_smoothing*
* run on the terminal: *matlab\_sub running\_script.m*
* fill out the info requested