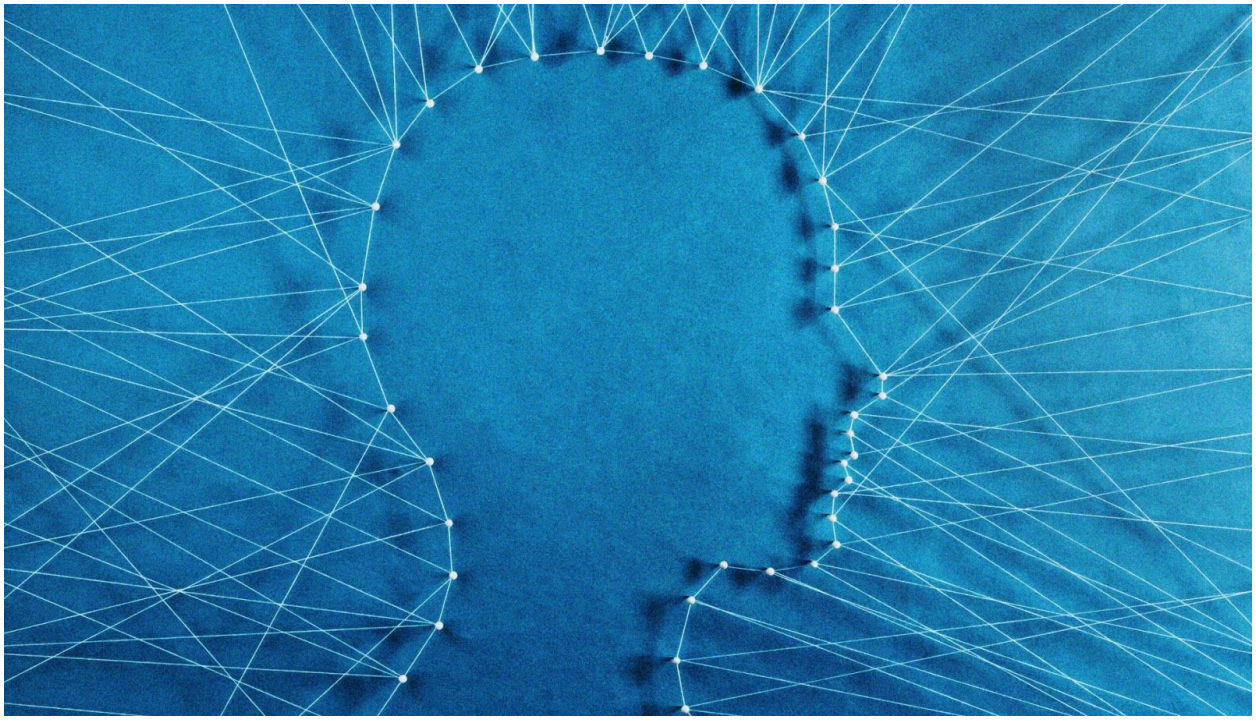
Making BIDS Datasets, Step By Step Guideline



Requirements:

- Python
  Install Python on your device

- Docker
  Install docker on your device and make an account (USE VPN!)

Install these requirements before starting step by step guide. You will need other packages or software but to explain this guideline as simple as we can, we haven't mentioned them.

Step one: Set the environment

Log in to your docker account and after that set an environment for your laptop or pc by using one of the tags listed here. You can easily use the command below for this step:

docker pull nipy/heudiconv:latest

'Docker' calls the docker engine and is the base command for docker CLI. ***'docker pull'*** Pulls an image or a repository from a registry to run the following container. ***'nipy'*** is a docker container for running the heuristic Dicom converter. Then you should use ***'heudiconv'*** and specify the desired tag for converting data after ***':'*** symbol. Here we've used ***'latest'*** tag.

Step two: Make a heuristic file

Now we want to make a heuristic file. For this purpose, we should know different parts of the below command:

docker run --rm -it -v /Users/apple/Desktop/ECoG/MRI/DICOMS:/base nipy/heudiconv:latest -d /base/sub-{subject}//* -o /base/Nifti/ -f convertall -s 01 -c none --overwrite*

'docker run --rm -it' is a command for setting up docker to run the command. In the general form, we should use ***'docker run [OPTIONS] IMAGE [COMMAND] [ARG...]'.*** We used ***'--rm'*** to automatically remove the container when it exits and ***'-it'*** shows we are running the container in an interactive manner with the terminal. The next part is related to the setting directory. In ***'-v /Users/apple/Desktop/ECoG/MRI/DICOMS:/base'*** we should put an address as a base directory after ***'-v'*** and assign it by ***':base'*** in the end. Here the ***'DICOMS'*** folder includes dicoms files. Base address will be used in the following of the command. ***'nipy/heudiconv:latest'*** is for choosing heudiconv container with the selected tag. ***'-d /base/sub-{subject}/*/*'*** this is the pass to DICOMS. ***'-o'*** indicate the output path. ***'-f'*** is default heuristic file that will generate desired outputs. In the next steps, we put a python file after ***'-f'*** and manage generating BIDS data. ***'-c'*** is the convertor we want to use. ***'-s'*** indicates the subject id and we have used --overwrite at the end to use the instruction for all runs.

Now, we have hidden a heuristic file in the directory and we should copy it in the desired address. So, we use the following command:

Cp /Users/apple/Desktop/ECoG/MRI/DICOMS/Nifti/.heudiconv/01/info/dicominfo.tsv /Users/apple/Desktop/ECoG/MRI/DICOMS

The first directory has been created in the Nifti file. We should copy ***'dicominfo.tsv'*** in the second directory which we defined as a base file in the previous command. Here we copied the first directory in the second directory in command by ***'cp'*** command.

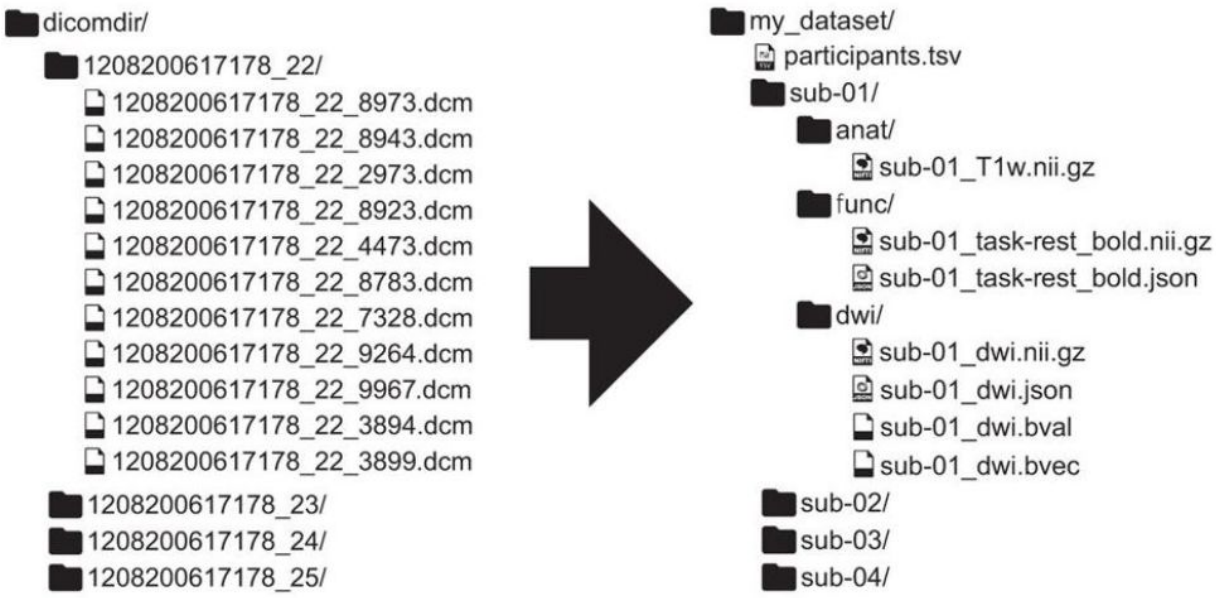
Step three: Manipulate the heuristic file

In this step, we should manipulate heuristic.py file and customize it according to our data. Then, we should execute the mentioned command in step two but with specifying the convertor after ***'-c'*** as ***'dcm2niix'*** and put the ***'heuristic.py'***[1] file after ***'-f'*** for generating results. So the command will look like as below:

docker run --rm -it -v /Users/apple/Desktop/ECoG/MRI/DICOMS:/base nipy/heudiconv:latest -d /base/sub-{subject}//* -o /base/Nifti/ -f /base/Nifti/code/heuristic.py -s 01 -c dcm2niix -b --overwrite*

Step four: Create a BIDS file

Use structure showed in the following image to make your final BIDS file and then verify it.



Step five: Verify the outputs

Finally, we can verify our BIDS output by uploading it in the following link:
http://bids-standard.github.io/bids-validator/

[1] See other guidelines for making heuristic.py file

Generally, you can see the following state diagram to make a BIDS file from inputs and verify it.