

BIDScoin: an easy toolkit to convert your imaging data to the BIDS standard

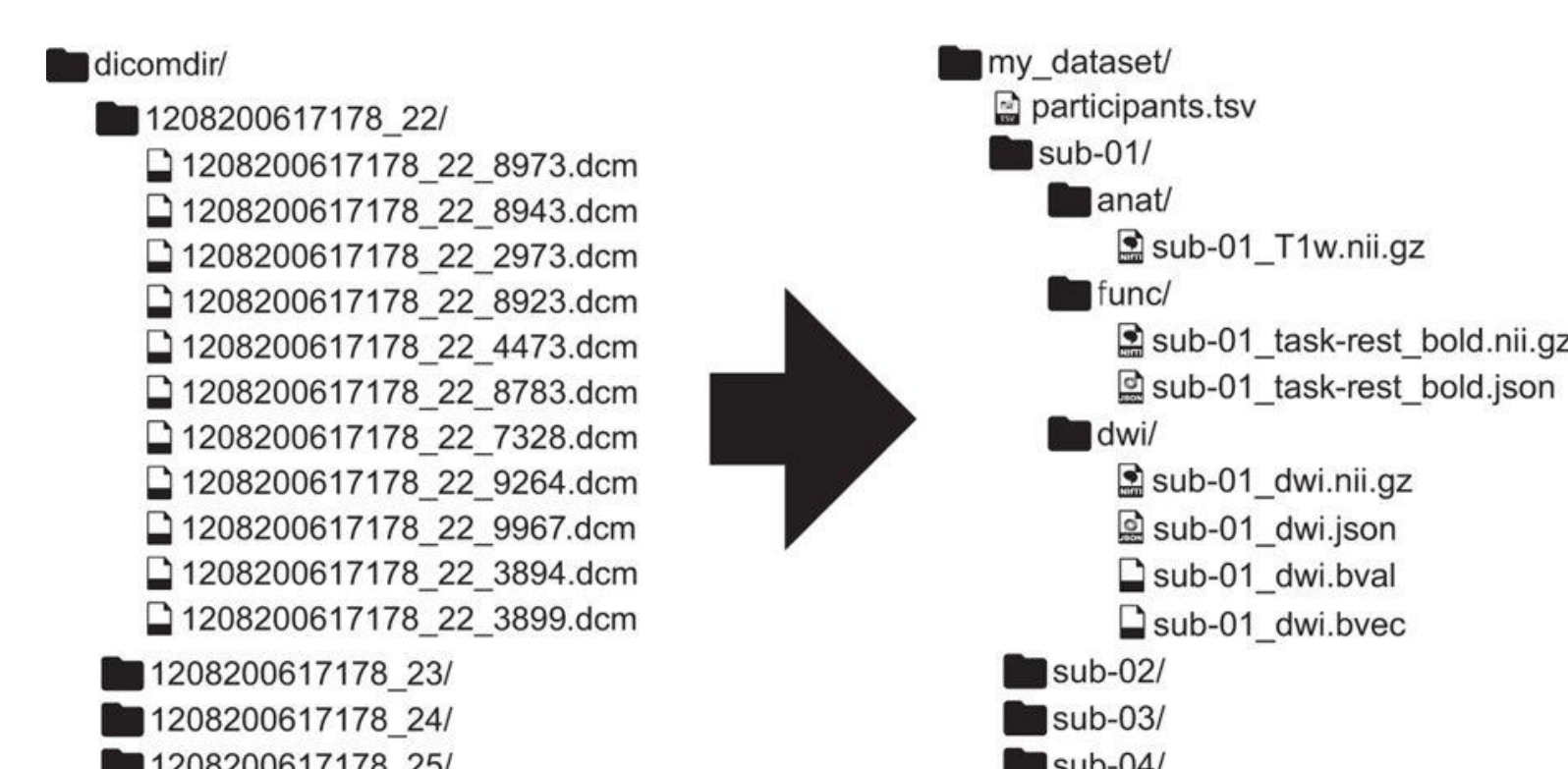
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INTRODUCTION

- BIDScoin is an open-source python toolkit that converts ("coins") source-level (raw) neuroimaging data-sets to the BIDS standard
- BIDScoin uses a direct mapping approach between the data sources and BIDS outputs
- The user does not need programming knowledge and can directly edit the mapping with a GUI
- Institutes can provide their users with a custom template already containing the mappings for the scans that are typically performed in the institute

BIDS



References

- The brain imaging data structure, a format for organizing and describing outputs of neuroimaging experiments. Gorgolewski KJ, et al. Sci Data. 2016:160044. doi: 10.1038/sdata.2016.44
- <https://bids.neuroimaging.io/>

The Brain Imaging Data Structure (BIDS) standardizes and describes outputs of neuroimaging experiments (left) in a way that is intuitive to understand and easy to use with existing analysis tools(right).

DESIGN

BIDS editor

File Help

File browser BIDS map

	DICOM input sample	BIDS modality	BIDS output name	Action
1	00001_1.3.12.2.1107.5.2.43.66068.2019040819361792477841719.IMA	anat	sub-POM1FM0031237_ses-mri01_acq-3dfair1mmserialimagingadaptedND_run- <<1>>_FLAIR	Edit
2	00001_1.3.12.2.1107.5.2.43.66068.2019040819243925853102923.IMA	dwi	sub-POM1FM0031237_ses-mri01_acq-diffukBioBankAdaptedMB350b100050b20008b0SRef_run- <<1>>_dwi	Edit
3	00001_1.3.12.2.1107.5.2.43.66068.2019040819244061321103183.IMA	dwi	sub-POM1FM0031237_ses-mri01_acq-diffukBioBankAdaptedMB350b100050b20008b0_run- <<1>>_dwi	Edit
4	00073_1.3.12.2.1107.5.2.43.66068.2019040819301282781840881.IMA	dwi	sub-POM1FM0031237_ses-mri01_acq-diffukBioBankAdaptedMB3invertedSRef_run- <<1>>_dwi	Edit
5	00001_1.3.12.2.1107.5.2.43.66068.2019040819301443079241259.IMA	dwi	sub-POM1FM0031237_ses-mri01_acq-diffukBioBankAdaptedMB3inverted_run- <<1>>_dwi	Edit
6	00001_1.3.12.2.1107.5.2.43.66068.2019040818520241574619609.IMA	extra_data	sub-POM1FM0031237_ses-mri01_acq-localizer_run- <<1>>	Edit
7	00001_1.3.12.2.1107.5.2.43.66068.2019040818580312385121448.IMA	extra_data	sub-POM1FM0031237_ses-mri01_acq-T1p21mmfov256sagT1880ukbiobank_run- <<1>>	Edit
8	00001_1.3.12.2.1107.5.2.43.66068.2019040819002138085426936.IMA	extra_data	sub-POM1FM0031237_ses-mri01_acq-MB8	Edit
9	00001_1.3.12.2.1107.5.2.43.66068.2019040819002162138127114.IMA	extra_data	sub-POM1FM0031237_ses-mri01_acq-MB8	Edit
10	00001_1.3.12.2.1107.5.2.43.66068.2019040819135564837635013.IMA	extra_data	sub-POM1FM0031237_ses-mri01_acq-MB6	Edit

Edit

DICOM

Provenance

path C:\Users\marzw\Bidscoin\data\test - Copy\raw\sub-POM1FM0031237_ses-mri01\015-3dfair_1mm-serialimagingadapted_ND

filename 00001_1.3.12.2.1107.5.2.43.66068.2019040819361792477841719.IMA

Attributes

SequenceName *spcIR_280ns

ScanningSequence ['SE', 'IR']

SeriesDescription 3dfair_1mm-serialimagingadapted_ND

SequenceVariant ['SK', 'SP', 'MP']

MRAcquisitionType 3D

SliceThickness 1

SpacingBetweenSlices

FlipAngle 120

EchoNumbers 1

EchoTime 397

RepetitionTime 5000

ImageType ['ORIGINAL', 'PRIMARY', 'M', 'ND', 'NORM']

ProtocolName 3dfair_1mm-serialimagingadapted

PhaseEncodingDirection

BIDS

Modality anat

Labels

acq 3dfair1mmserialimagingadaptedND

rec

run <<1>>

mod

suffix FLAIR

ce

Output name

sub-POM1FM0031237_ses-mri01_acq-3dfair1mmserialimagingadaptedND_run- <<1>>_FLAIR

Workflow:

Step 1: Running the bidsmapper

```
usage: bidsmapper.py [-h] [-t TEMPLATE] [-n SUBPREFIX] [-m SESPREFIX]
sourcefolder bidsfolder
```

Step 2: Running the bidseditor

```
usage: bidseditor.py [-h] [-s SOURCEFOLDER] [-b BIDSMAP] [-t TEMPLATE]
bidsfolder
```

Step 3: Running the bidscoiner

```
usage: bidscoiner.py [-h] [-p PARTICIPANT_LABEL [PARTICIPANT_LABEL ...]]
[-f] [-s] [-b BIDSMAP] [-n SUBPREFIX] [-m SESPREFIX] [-v]
sourcefolder bidsfolder
```

RESULTS

- Used to successfully coin over 1000 subject datasets from various research projects
- Tested over a broad spectrum of (DICOM) input data, including fieldmaps, mutli-echo data, multi-coil data, PET scans and various kinds of anatomical, diffusion and functional MRI scans.

FUTURE WORK

- Add support for other source data formats, such as PAR/REC (Philips) and .7 (GE)
- Add a plug-in for parsing behavioural log-files, such as from Presentation