Integration of EEG inside Connectome Mapper 3

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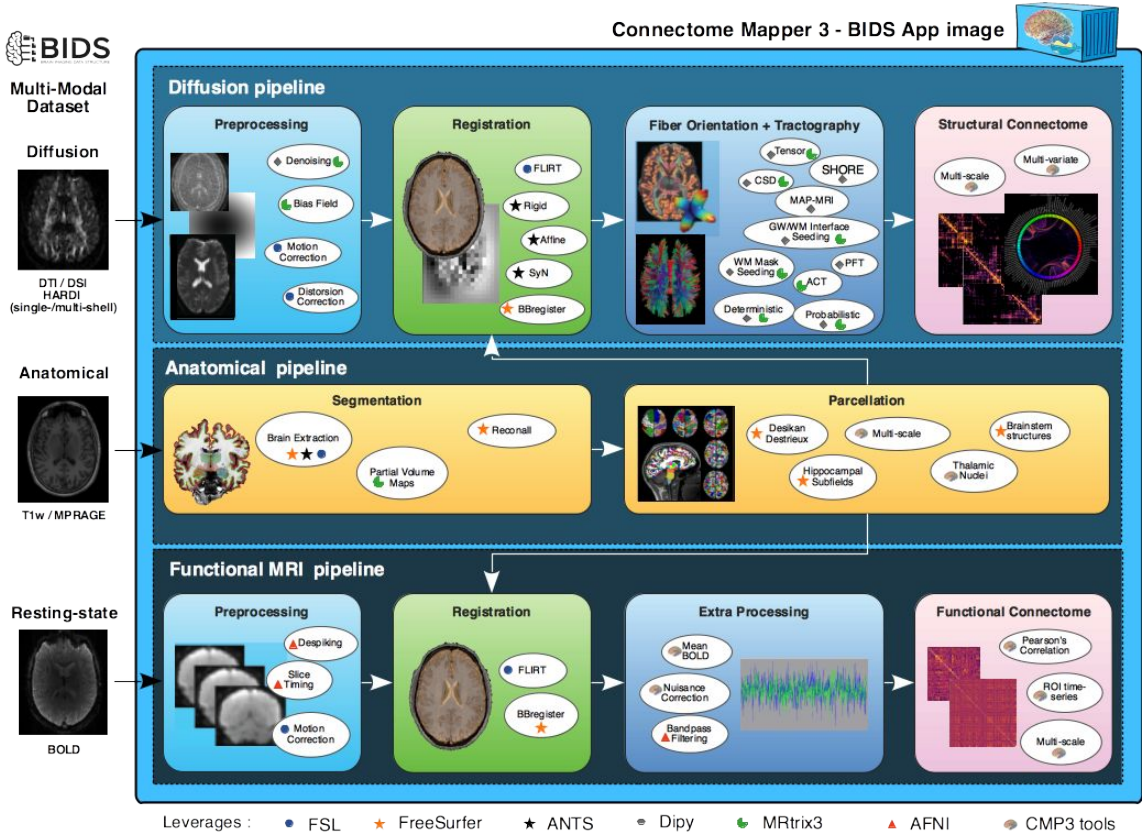
OHBM Brainhack 2020

Project_214

Goal


BIDS
Multi-Modal Dataset
Diffusion
DTI / DSI HARDI (single-/multi-shell)
Anatomical
T1w / MPRAGE
Resting-state
BOLD
Connectome Mapper 3 - BIDS App image
Diffusion pipeline
Preprocessing
Denoising
Bias Field
Motion Correction
Distorsion Correction
Registration
FLIRT
Rigid
Affine
SyN
BBregister
Fiber Orientation + Tractography
Tensor
CSD
SHORE
MAP-MRI
GWWM Interface Seeding
WM Mask Seeding
PFT
ACT
Deterministic
Probabilistic
Structural Connectome
Multi-scale
Multi-variate
Anatomical pipeline
Segmentation
Brain Extraction
Partial Volume Maps
Reconall
Parcellation
Desikan Destrieux
Multi-scale
Brainstem structures
Hippocampal Subfields
Thalamic Nuclei
Functional MRI pipeline
Preprocessing
Despiking
Slice Timing
Motion Correction
Registration
FLIRT
BBregister
Extra Processing
Mean BOLD
Nuisance Correction
Bandpass Filtering
Functional Connectome
Pearson's Correlation
ROI time-series
Multi-scale
Leverages :
FSL
FreeSurfer
ANTS
Dipy
MRtrix3
AFNI
CMP3 tools

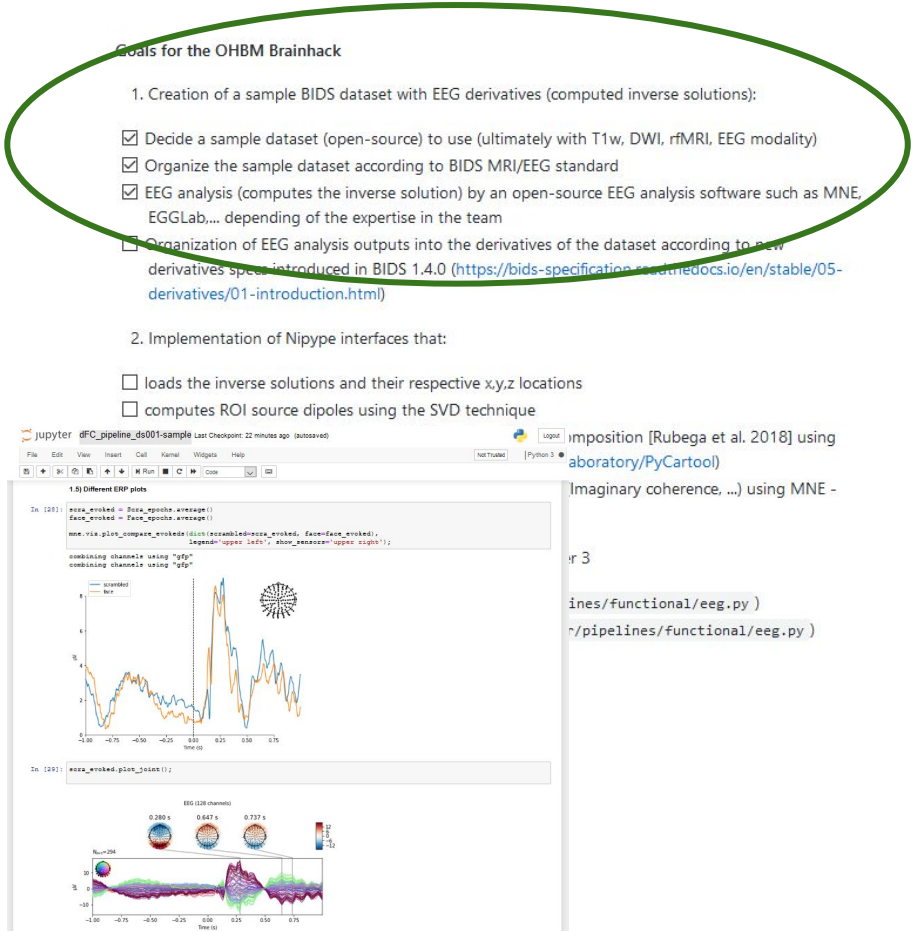
+ EEG

Achievements

- Creation of two sample BIDS-MRI/EEG datasets (Contact us)

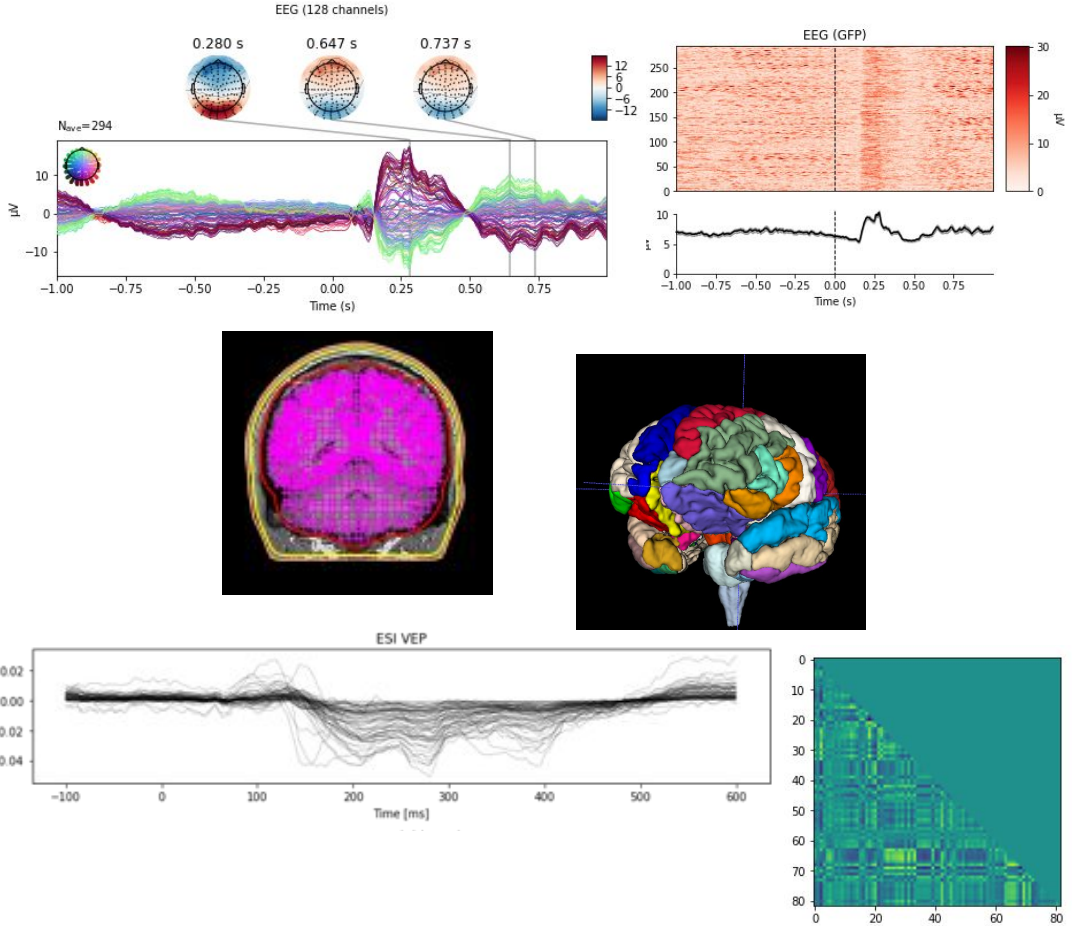
- First sketches of FC pipeline for the 2 datasets produced in the form of jupyter notebooks, available at

  https://github.com/connectomicslab/connectomemapper3/blob/ohbm-brainhack-2020/ohbm-brainhack-2020/project_progress.md

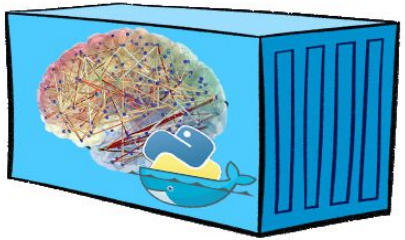


CMP3-EEG Pipeline

1. Load EEG-BIDS data
2. Setup source space
3. Compute forward solution
4. Parcellate source space
5. Generate ROI time series from dipoles
6. Functional Connectivity



What's next?



- Implementation of Nipype interfaces
- Implementation of the Nipype EEG pipeline

See current and upcoming progress at

https://github.com/connectomicslab/connectomemapper3/blob/ohbm-brainhack-2020/ohbm-brainhack-2020/project_progress.md

Development on going!
Anyone welcome to join us!
Happy also to receive any feedback!

Thank you