MNE-BIDS and MNE-BIDS-Pipeline Tutorial

Máté Aller

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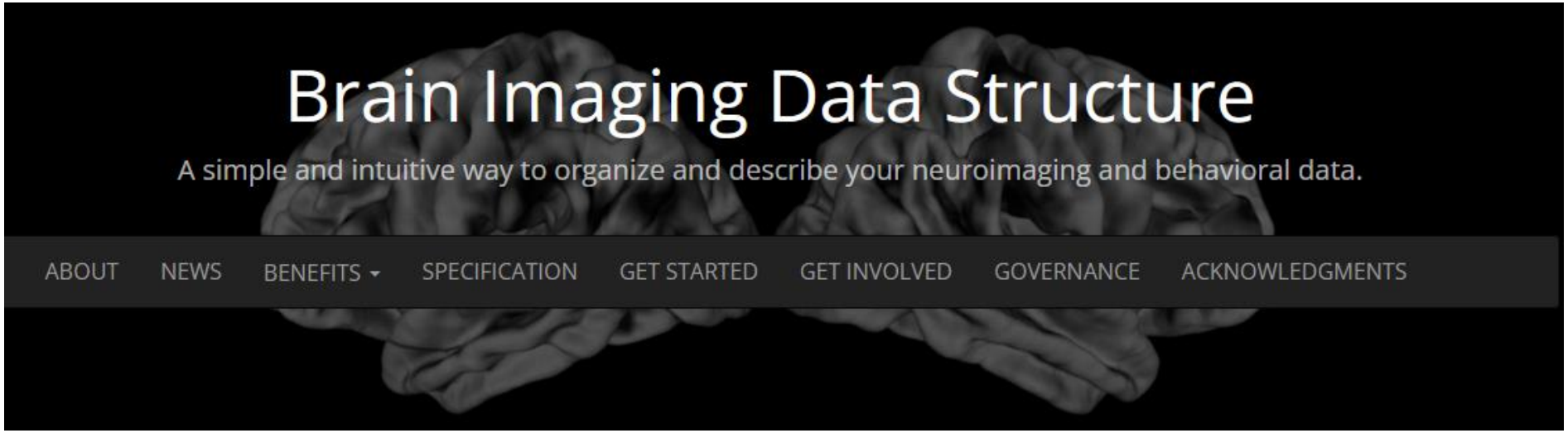
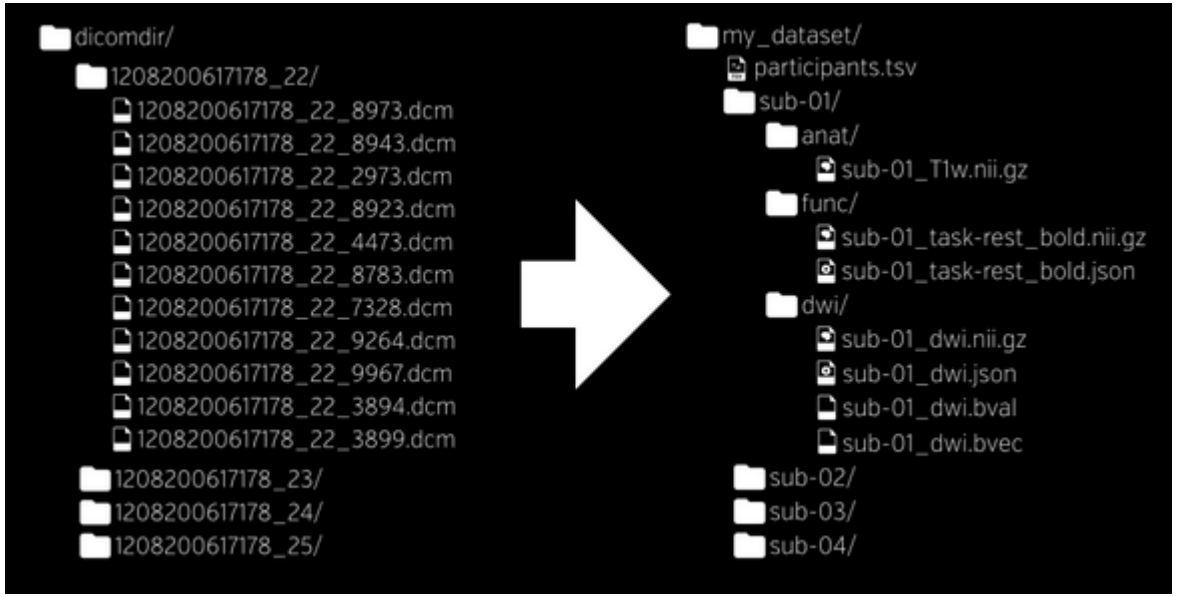
Outline

- Brain Imaging Data Structure (BIDS)
- MNE-BIDS
- MNE-BIDS-Pipeline
- Code demo throughout





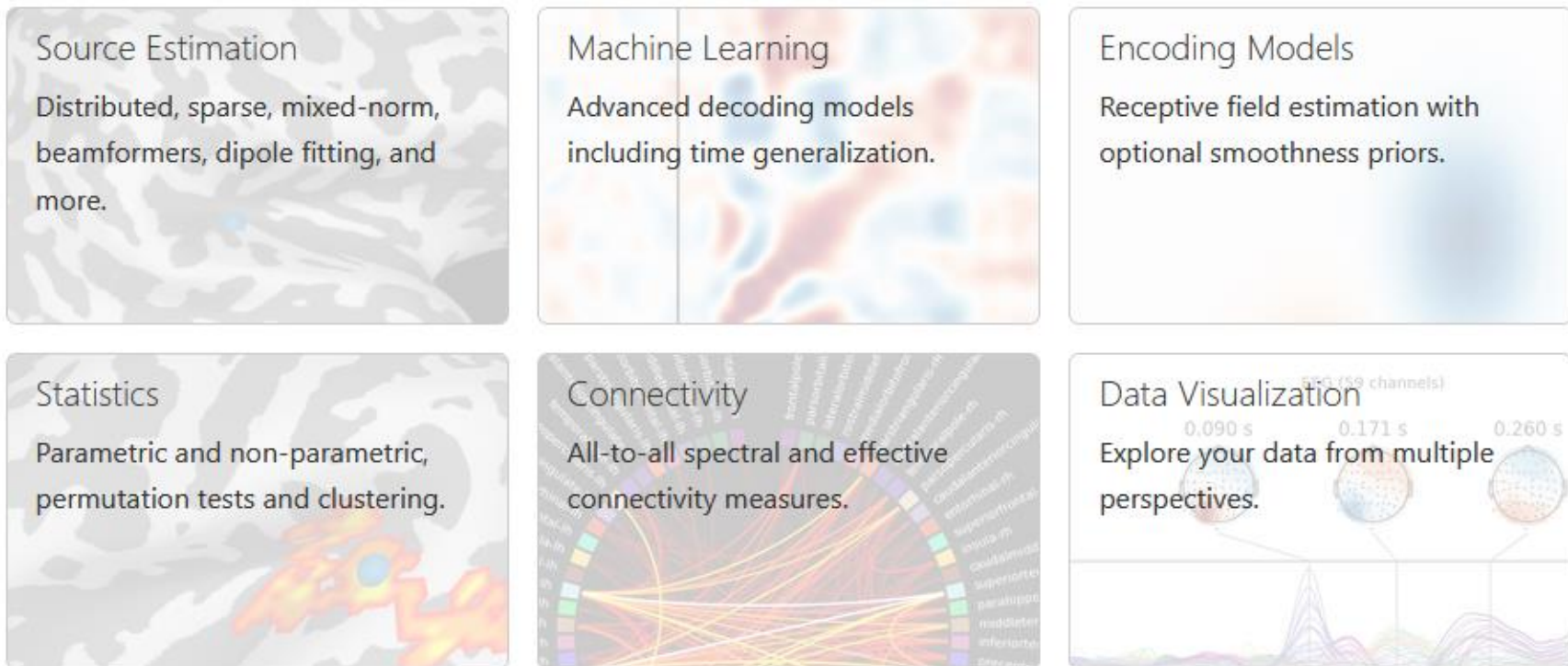
MEG, EEG, iEEG support included!

https://bids.neuroimaging.io/
https://bids-specification.readthedocs.io/en/stable/

MNE

MEG + EEG ANALYSIS & VISUALIZATION

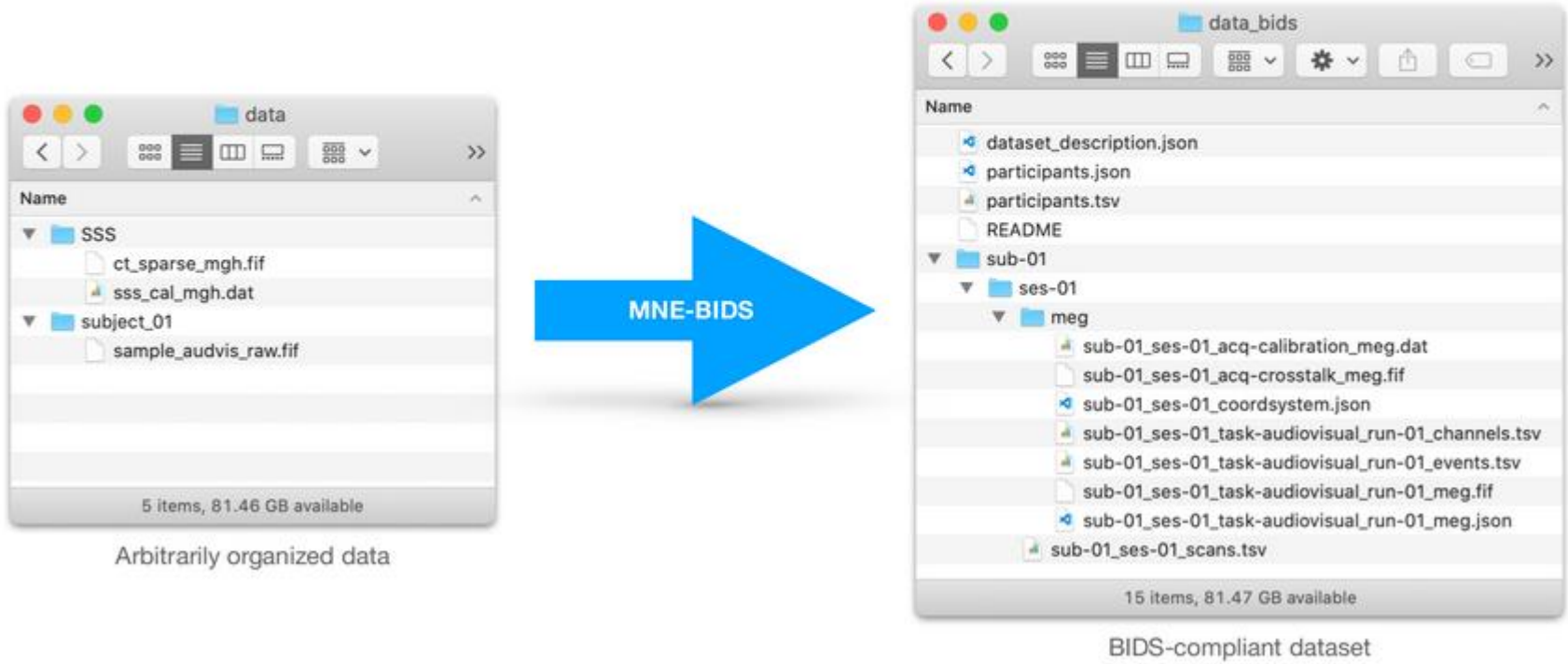
Open-source Python package for exploring, visualizing, and analyzing human neurophysiological data: MEG, EEG, sEEG, ECoG, NIRS, and more.



https://mne.tools/stable/index.html

MNE-BIDS

MNE-BIDS is a Python package that allows you to read and write BIDS-compatible datasets with the help of MNE-Python.



Arbitrarily organized data

BIDS-compliant dataset

https://mne.tools/mne-bids/stable/index.html

What is MNE-BIDS-Pipeline?

MNE-BIDS-Pipeline is a full-flegded processing pipeline for your MEG and EEG data.

- It operates on data stored according to the Brain Imaging Data Structure (BIDS).
- Under the hood, it uses MNE-Python.

Get started | Learn more

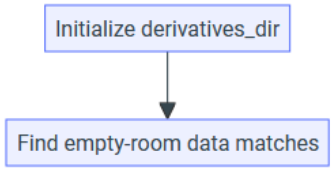
What the pipeline offers

- 🏆 Automated processing of MEG and EEG data from raw data to inverse solutions.
- 🛠️ Configuration via a simple text file.
- 📘 Extensive processing and analysis summary reports.
- 👫 Process just a single participant, or as many as several hundreds of participants – in parallel.
- 💻 Execution via an easy-to-use command-line utility.
- 🆘 Helpful error messages in case something goes wrong.
- 👣 Data processing as a sequence of standard processing steps.
- ⏩ Steps are cached to avoid unnecessary recomputation.
- ⏏️ Data can be "ejected" from the pipeline at any stage. No lock-in!
- ☁️ Runs on your laptop, on a powerful server, or on a high-performance cluster via Dash.

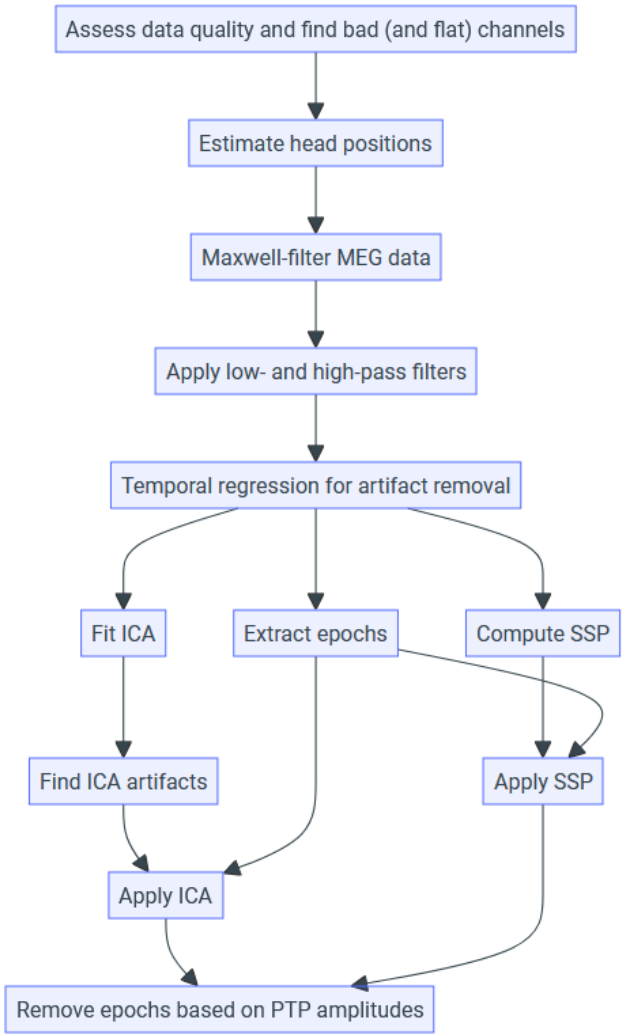
Get started

https://mne.tools/mne-bids-pipeline/stable/index.html

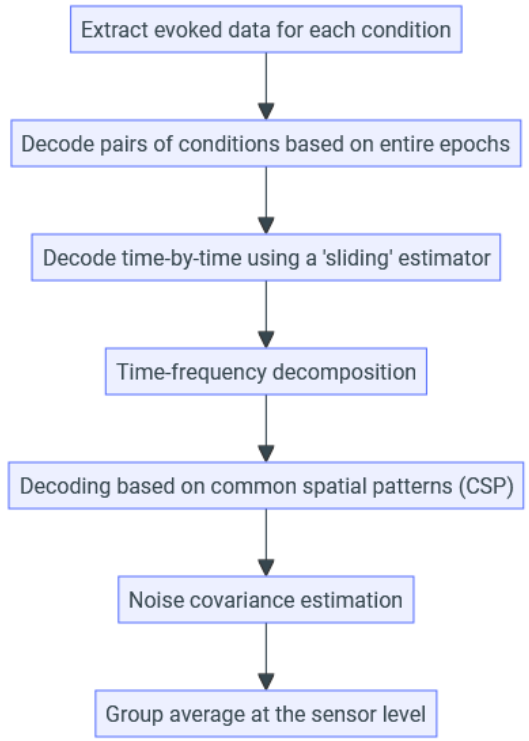
1. 📂 Filesystem initialization and dataset inspection



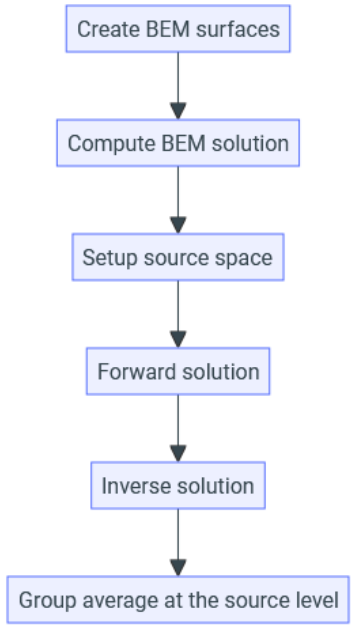
2. 🧹 Preprocessing



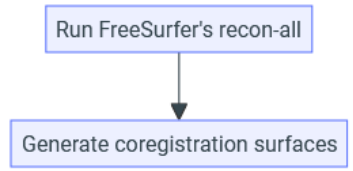
3. 📡 Sensor-space analysis

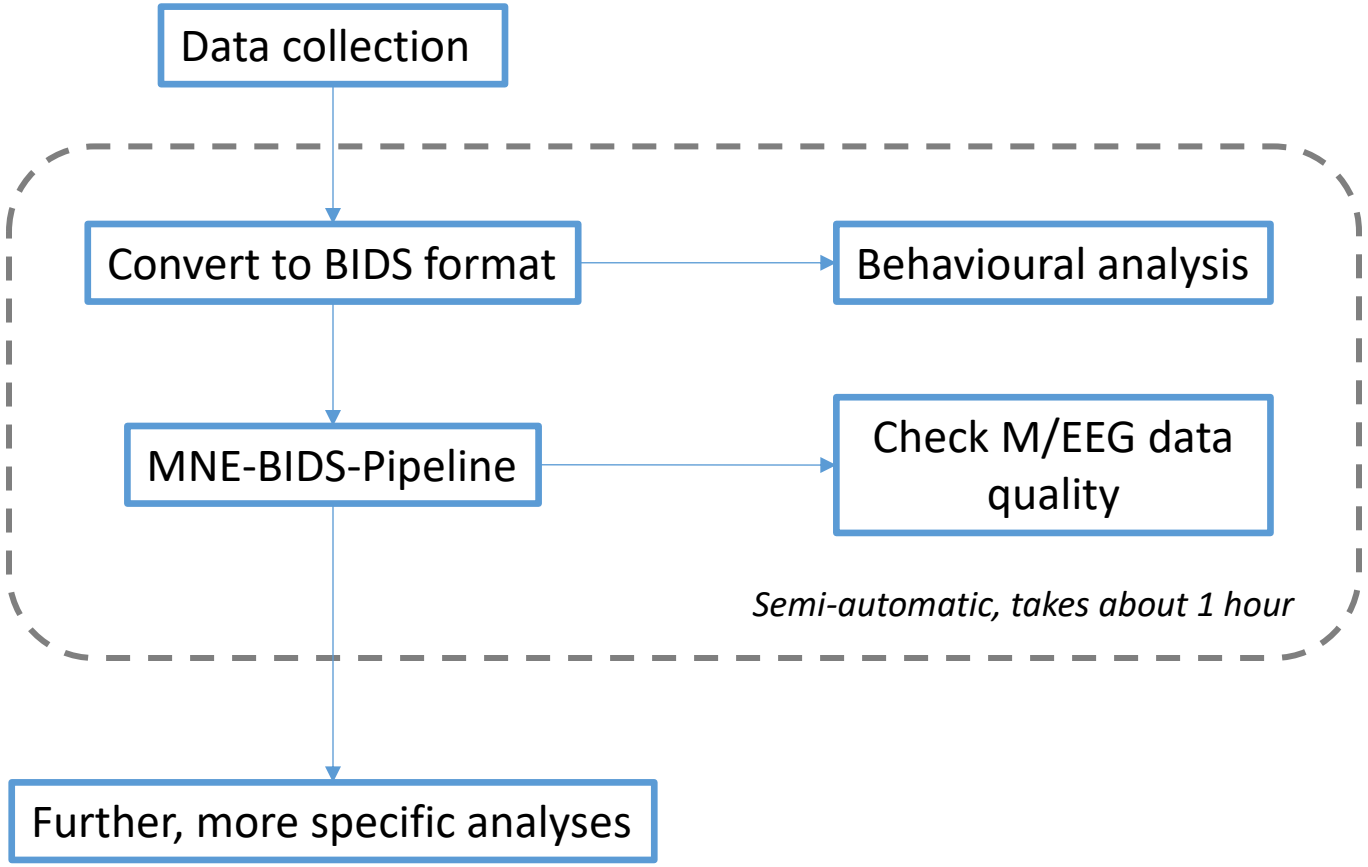


4. 🧠 Source-space analysis



5. 🏄 FreeSurfer-related processing




Data collection
Convert to BIDS format
Behavioural analysis
MNE-BIDS-Pipeline
Check M/EEG data quality
Semi-automatic, takes about 1 hour
Further, more specific analyses