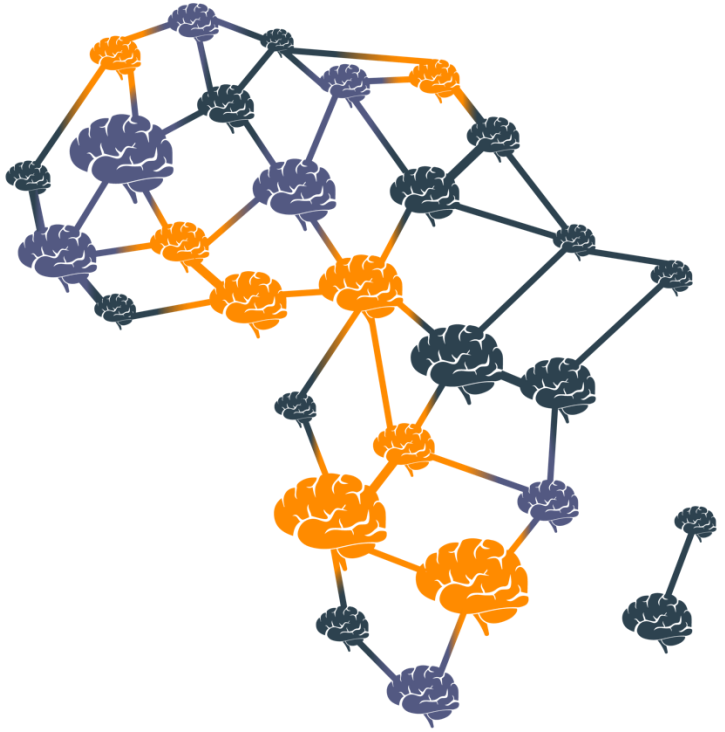
Where do you go from here?

Robert Oostenveld

Mikkel C. Vinding

Damian Eke

9-14 June 2025
Port Harcourt, Nigeria

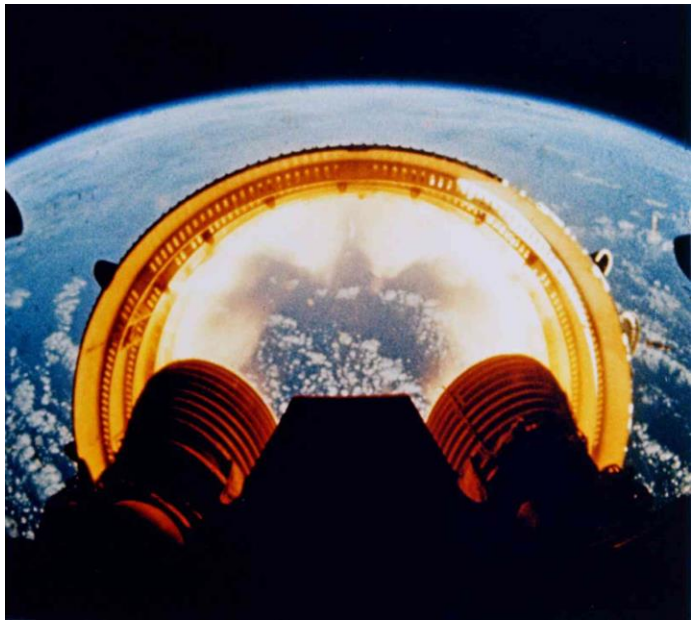


African Brain Data Network

This week…

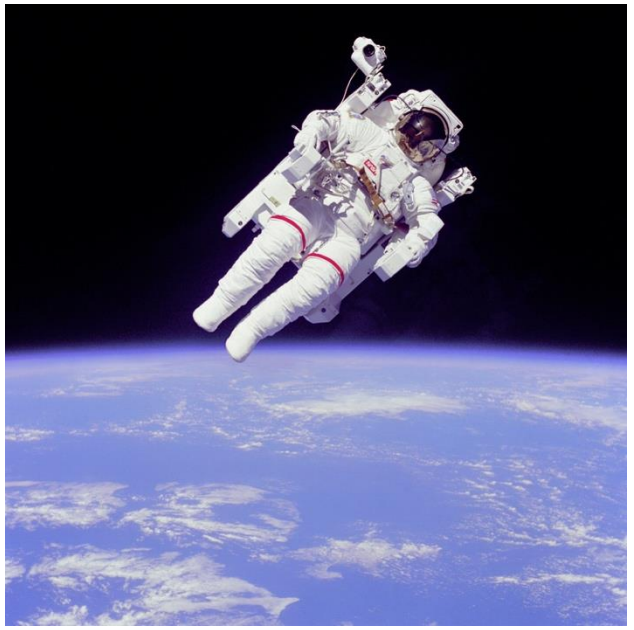
- What is EEG and how does it work
- Designing and running EEG experiments
- EEG equipment
- Doing EEG recordings
- Analysing EEG data
- ... And more

… today …

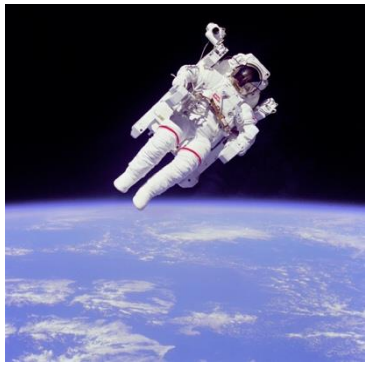


- How should I design and run my EEG experiment?
- How does my EEG system work?
- How am I doing my EEG recordings?
- How should I analyse my EEG data?
- Why does my data look different?
- ... And more questions

…the future



Where to get help when you are on your own?



Website tutorial documentation: everything from basics to advanced analyses

Material from this workshop will be collected and continue to be available

- www.fieldtriptoolbox.org/workshop/nigeria2025/

FieldTrip website

- www.fieldtriptoolbox.org
- www.fieldtriptoolbox.org/video/

Good introduction to MATLAB basics

- www.antoniahamilton.com/matlab_for_psychologists.pdf

Documentation

The tutorials will help you to get started by providing examples that you can copy-and-paste into MATLAB. The introduction tutorial provides a short introduction in the the ideas behind the FieldTrip toolbox. The Walkthrough will give you a more thorough overview of the conceptual ideas behind MEG and EEG analysis and how the toolbox is used.

The frequently asked questions section provides a lot of practical information. Furthermore, the example MATLAB scripts contain pieces of documentation that are often not so elaborate as the tutorials, but that go in more detail into specific aspects of the data, code or analysis.

In the reference documentation you find an overview of all main functions in FieldTrip and the configuration index has a list of their configuration options.

Sometimes we prepare dedicated course material for workshops, which is also shared on this website, together with video recordings of lectures.

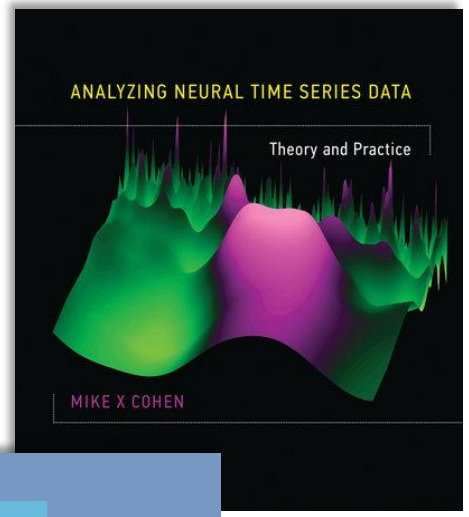
If you are very eager to get started with your specific data, please proceed to the user documentation section on importing your own data.

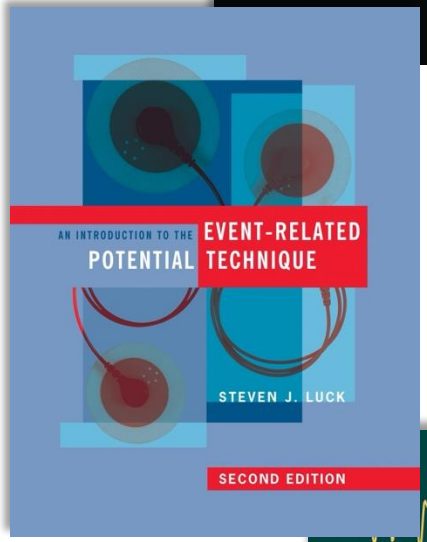
- Walkthrough
- Tutorial documentation
- Frequently asked questions
- Example MATLAB scripts
- Reference documentation and configuration index
- Video lectures
- References to implemented methods
- Review and teaching material
- Template models and data
- Realtime BCI

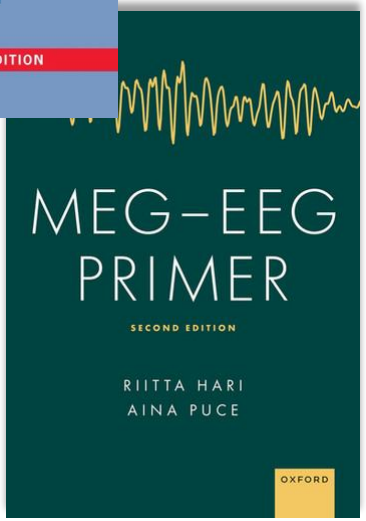
Where to get help when you are on your own?

Website tutorial documentation: everything from basics to advanced analyses

- Material from this workshop will continue to be available
  - https://www.fieldtriptoolbox.org/workshop/nigeria2025/
- Good introduction to MATALB basics
  - www.antoniahamilton.com/matlab_for_psychologists.pdf
- FieldTrip website
  - www.fieldtriptoolbox.org
- Other toolboxes (MNE, EEGlab, BrainStorm, SPM etc.)
- Books and articles
- YouTube – tutorials, and lectures by individual researchers and organised by toolbox developers







Learn more: EEG resources

Despite its age, EEG is still a rapid developing method

Stong user driven community – strong open science commitment

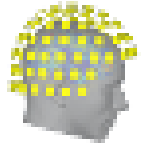
Lots of material available online

FieldTrip

EEGLAB

MNE

MEG + EEG ANALYSIS & VISUALIZATION



Brainstorm

Learn more: EEG resources

FieldTrip

Matlab toolbox (no GUI) for EEG/MEG/ECoG/fNIRS/etc.

Uses:

- Preprocessing
- Evoked responses
- Induced responses
- Source estimation (many methods implemented)
- Connectivity
- Statistics (focus on non-parametric statistics)

Documentation and tutorials at www.fieldtriptoolbox.org

Learn more: EEG resources

EEGLAB

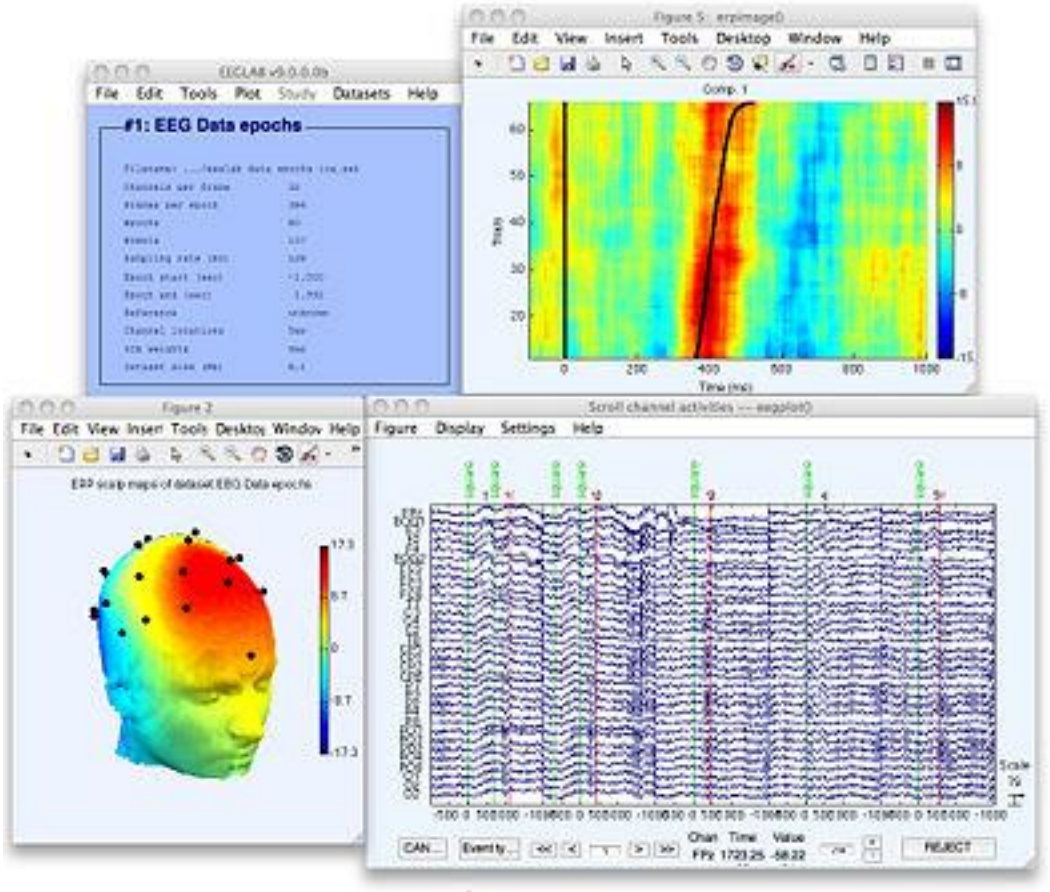
Matlab toolbox (GUI) for EEG

Uses:

- Preprocessing
- ICA
- Evoked responses
- Induced responses

Material and tutorials at
https://sccn.ucsd.edu/eeglab/index.php

EEGLAB



Learn more: EEG resources

MNE

Python (no GUI)

Developed for MEG analysis

Uses:

- Focus on source estimation (*Minimum Norm Estimation* and other methods)
- Preprocessing
- Evoked and induced responses
- Connectivity
- Decoding, MVPA, BCI
- Data visualization

Tutorial and examples at https://mne.tools

Learn more: EEG resources

SPM

Matlab toolbox (GUI)

Originally developed for (f)MRI and PET

Uses:

- Preprocessing
- Evoked responses
- Induced responses
- Statistics (similar approach as to fMRI)
- Dynamic Causal Modelling (DCM)

http://www.fil.ion.ucl.ac.uk/spm/

Learn more: EEG resources

Brainstorm

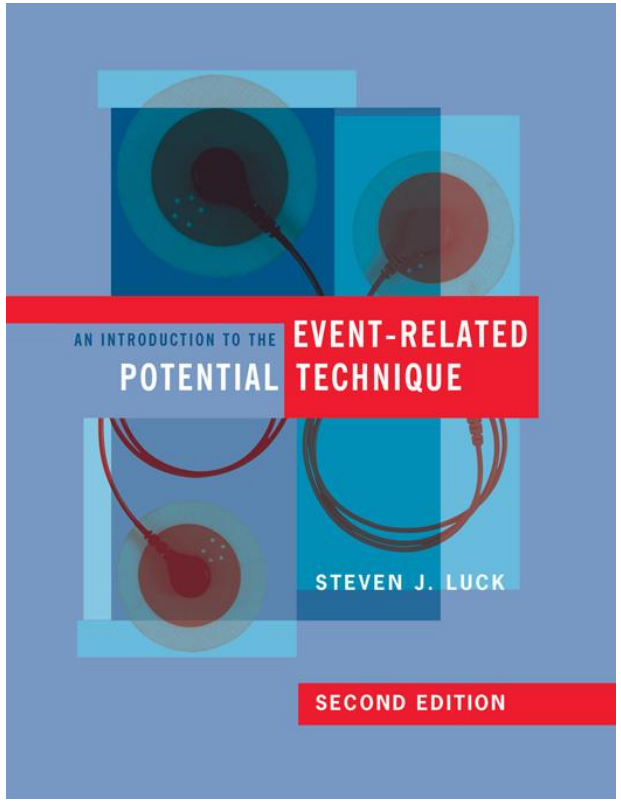
Matlab toolbox (GUI) and standalone

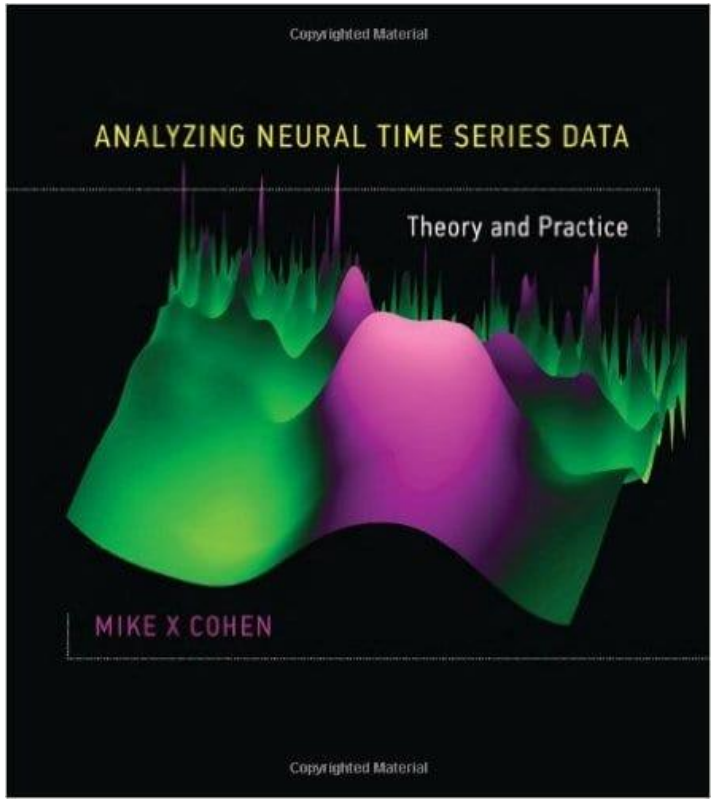
Uses:

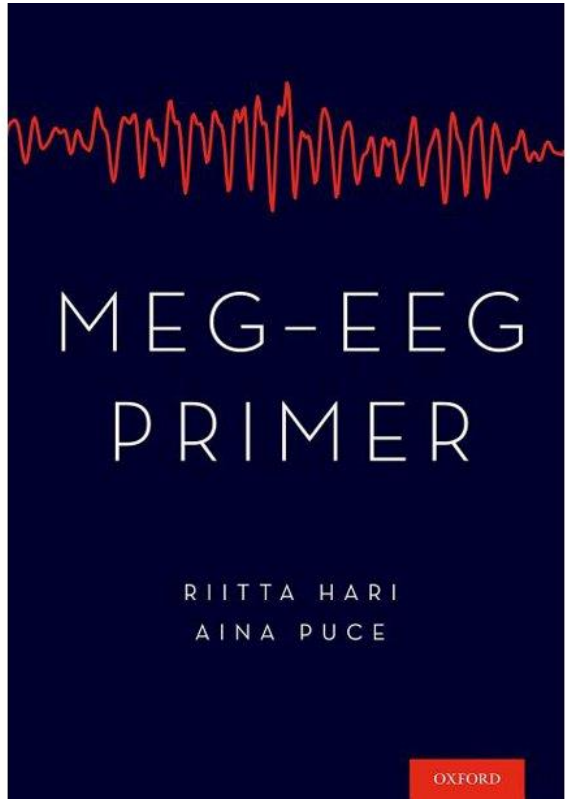
- Preprocessing
- Evoked responses
- Induced responses
- Source estimation (many methods implemented)
- Connectivity

http://neuroimage.usc.edu/brainstorm/

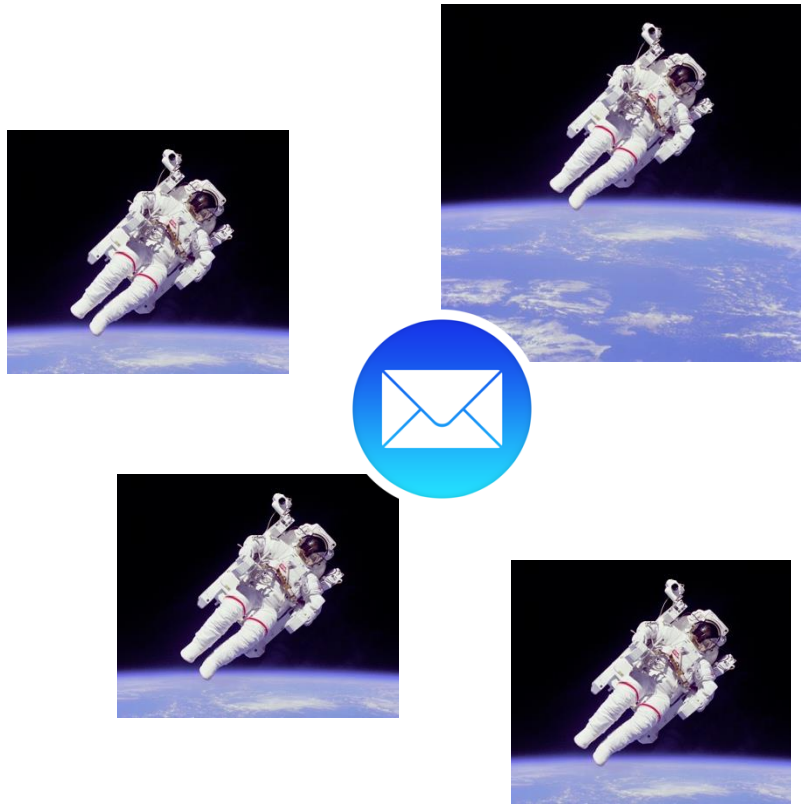
Learn more: EEG books





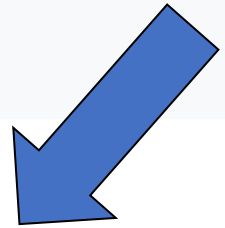


Where to get help when you are on your own?



… you are not alone!

- FieldTrip e-mail list
  - Ask questions,
  - See other researcher’s questions and answers,
  - Conference, workshop announcements, and job adverts
  - …and more



Support

Tags: support

If you have **questions about the use** of FieldTrip, please ask them on the email discussion list. The developers in general do not have time to address individual's questions. The community at large includes a much broader pool of expertise w.r.t. neuroscientific topics, experimental designs, specific data acquisition systems, and analysis strategies. Also, by sharing the questions and answers on a public forum, many more people benefit.

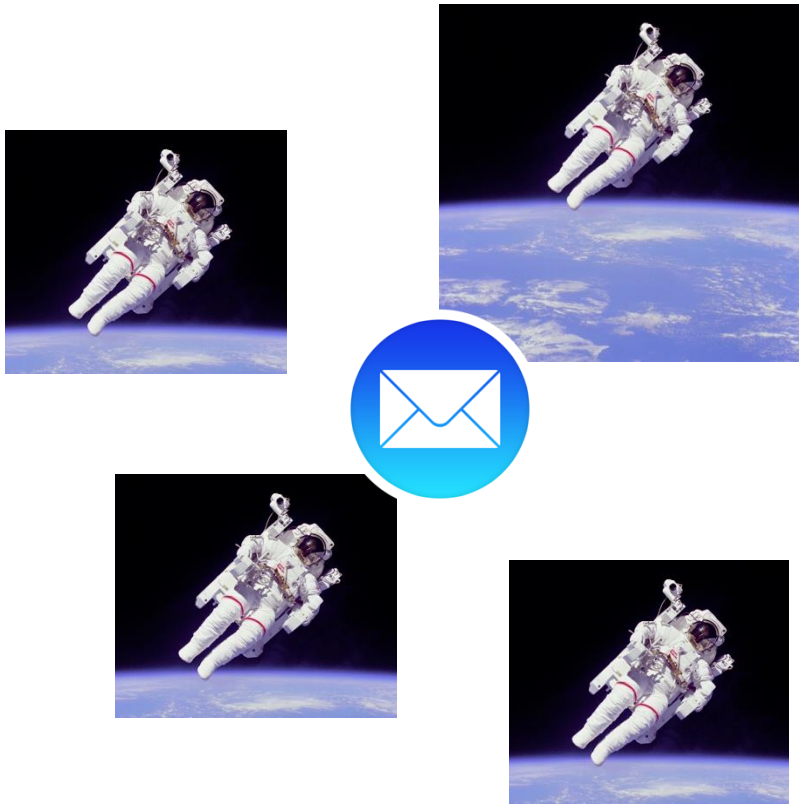
If you get a MATLAB error when using FieldTrip and you suspect that it is not due to you specifying the incorrect options to the function, but that it is due to a **problem in the implementation** of the software, please report it as an issue on GitHub.

For questions that are **not suitable** for the public email list or as GitHub issue, e.g., discussing potential contributions to the toolbox or requests for organizing a local workshop, you can send an email to Robert Oostenveld (robert.oostenveld at donders.ru.nl) or Jan-Mathijs Schoffelen (janmathijs.schoffelen at donders.ru.nl).

If needed, you can also contact us via regular mail:

Donders Centre for Cognitive Neuroimaging, c/o Robert Oostenveld
Radboud University
P.O. Box 9101
NL-6500 AH Nijmegen
The Netherlands

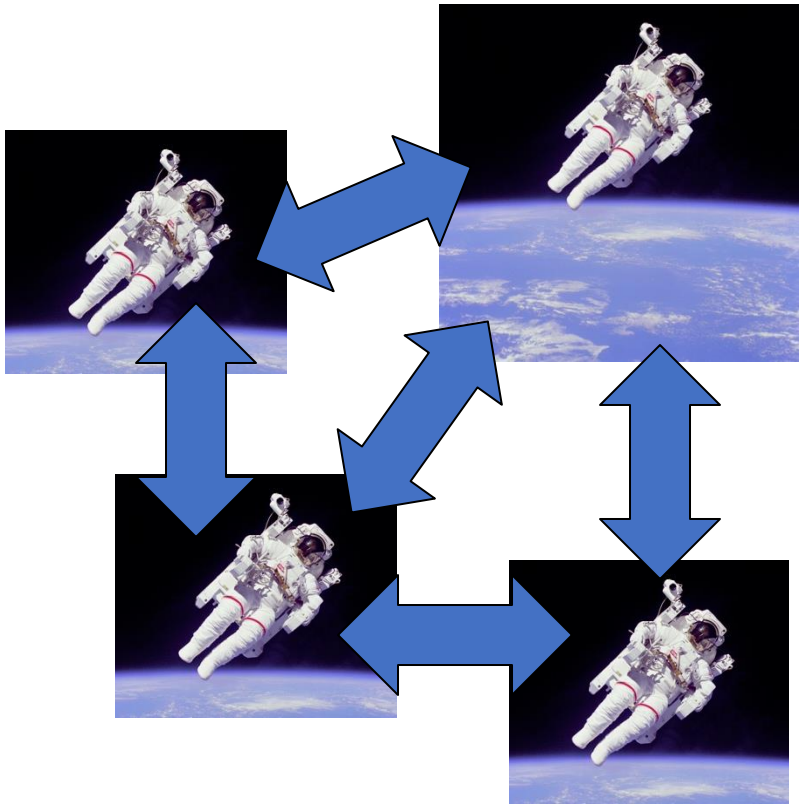
Where to get help when you are on your own?



… you are not alone!

- FieldTrip e-mail list
  - Ask questions,
  - See other researcher's questions and answers,
  - Conference, workshop announcements, and job adverts
  - …and more
- Other toolboxes also have e-mail lists
  - MNE-Python
  - EEGLAB
  - BrainStorm
  - SPM

EEG communities



Organisations

- ABDN
- CuttingEEG https://cuttingeeg.org
- BIOMAG
- OHBM

Community resources

- BIDS http://bids-standard.org/
- COBIDAS https://www.humanbrainmapping.org/cobidas/
- https://neurostars.org (general forum)

Build your own EEG communities

Purpose

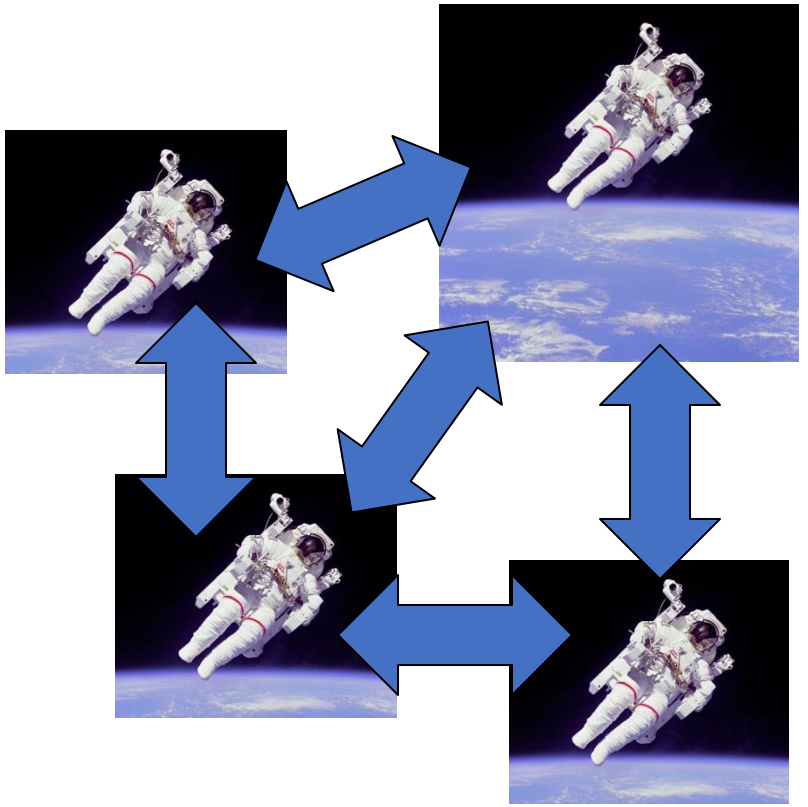
- Peer-to-peer learning: *more minds = more brainpower*

What?

- Arrange a series of meetings
- Agree on format
- Formal or informal meeting:
  - Research presentation of completed EEG project
  - Presentation of new projects -> get feedback
  - Present ongoing studies, analyses, “bring your data to work”, etc.

Who?

- Stay in contact with other workshop attendees
- Engage your local EEG researchers
- Reach out



How?

- Agree on a meeting structure (semi-regular meetings, online/in person, etc.)
- Assign a chair (or rotating chairs) to keep track of who, what, when, and where

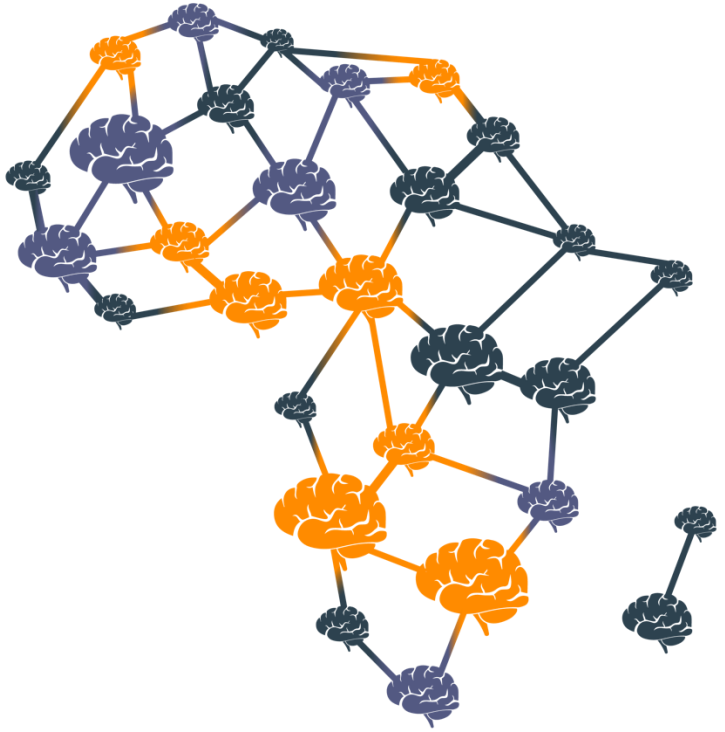
Where do you go from here?

Robert Oostenveld

Mikkel C. Vinding

Damian Eke

9-14 June 2025
Port Harcourt, Nigeria



African Brain Data Network