

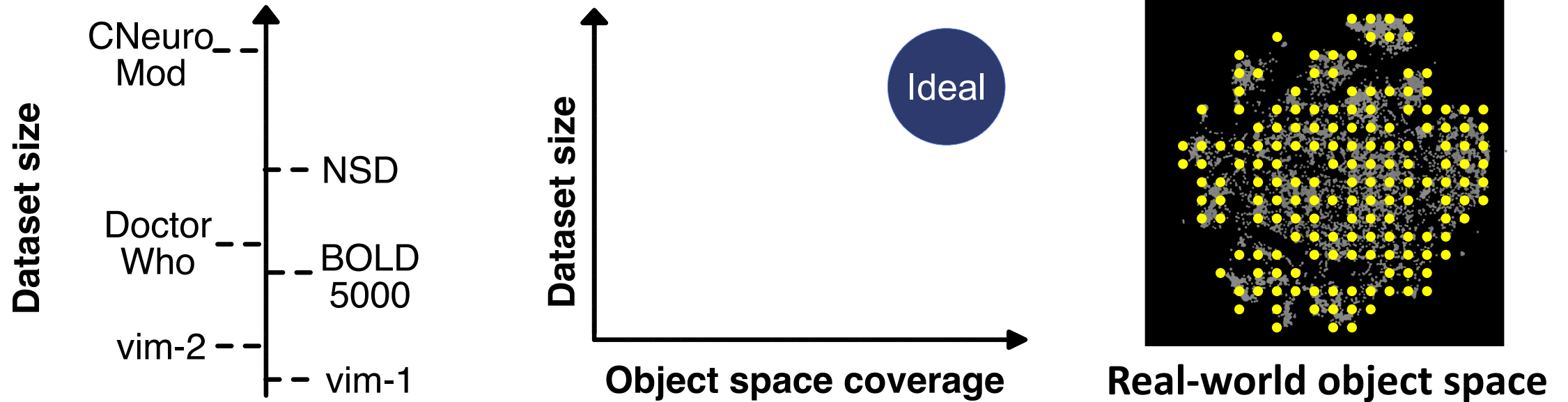


THINGS-fMRI/MEG

A densely sampled-multimodal neuroimaging dataset of brain responses to a broad range of natural object images

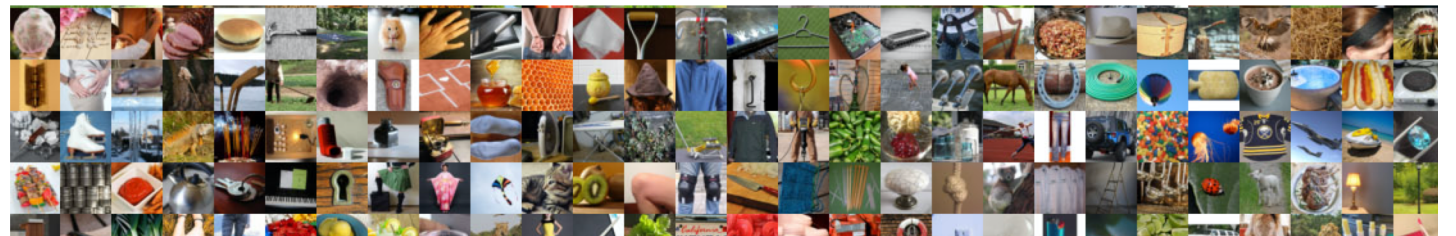
Contier, O., Hebart, M. N., Dickter, A. H., Teichmann, L., Kidder, A., Corriveau, A., Zheng, C., Vaziri-Pashkam, M., Baker, C. I.

Motivation



THINGS object image database¹: Extensive and representative sampling

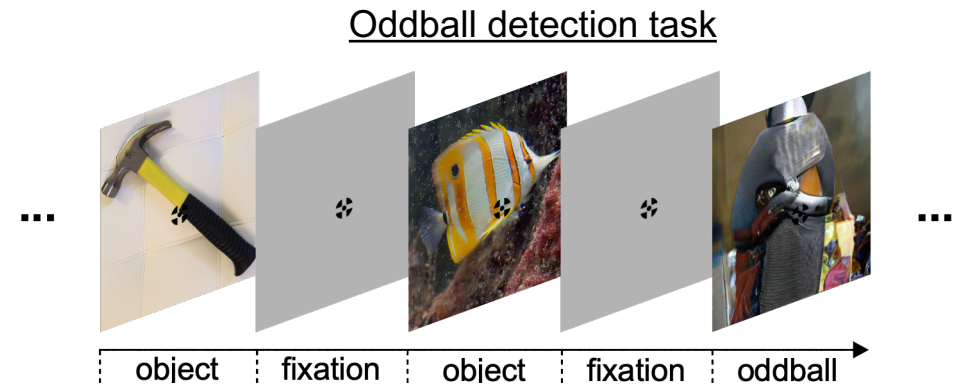
- 1,854 object "concepts"
- 26,107 images



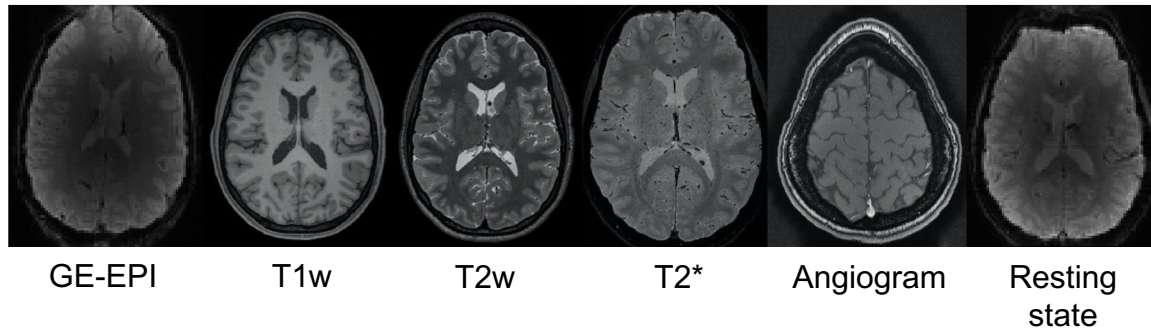
THINGS-fMRI/MEG

Neural responses to images from the THINGS database

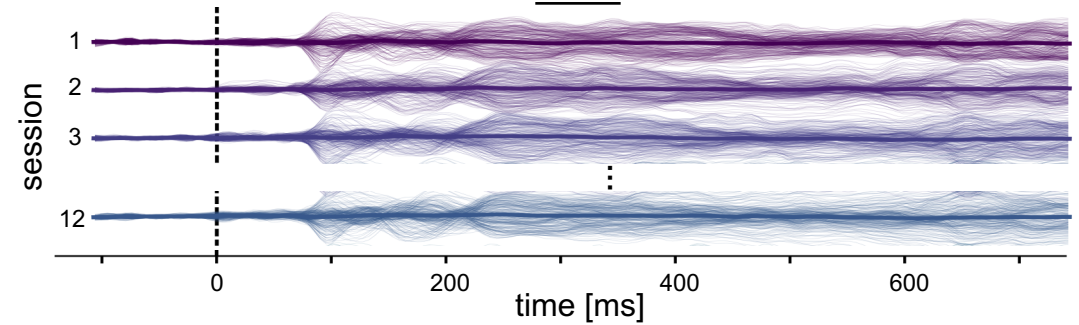
- 14-15 sessions
- fMRI: 3 participants, **8,740 unique images of 720 objects**
- MEG: 4 participants, **22,448 unique images of 1,854 objects**



MRI (3T)

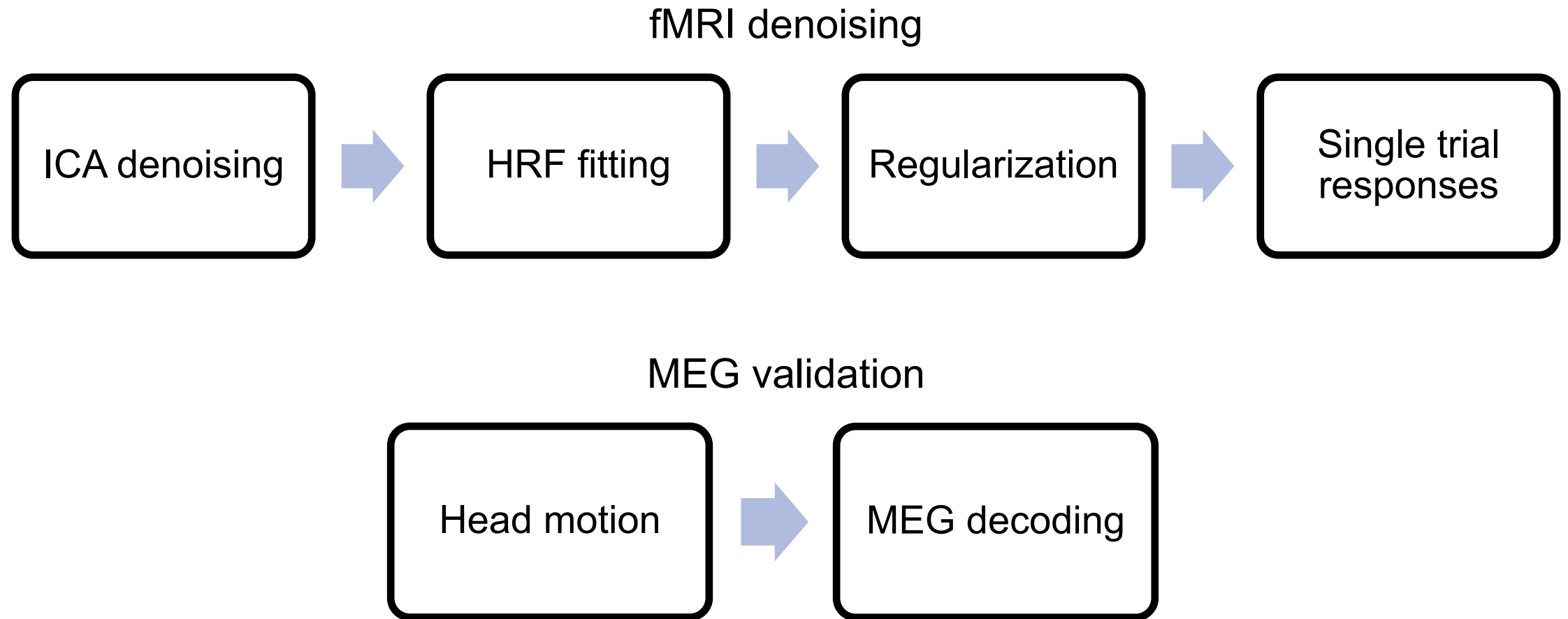


MEG

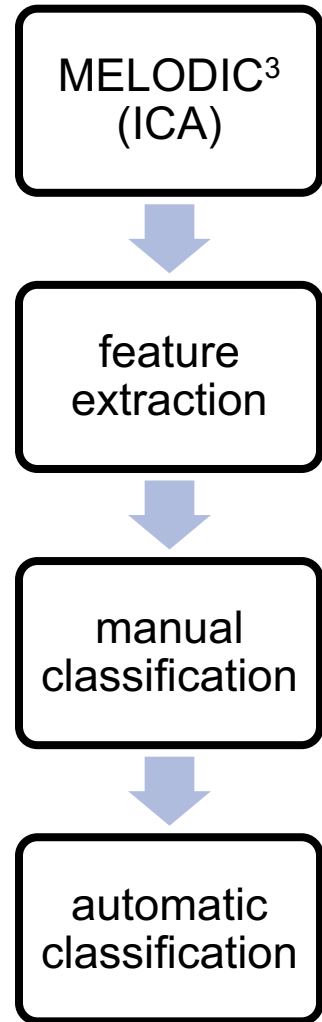


Data quality, reliability, validity → VSS poster²

New extensions

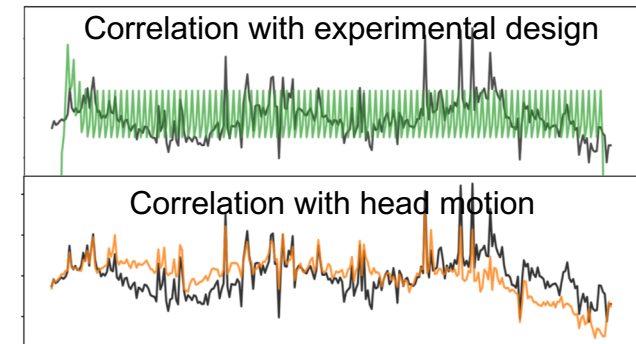
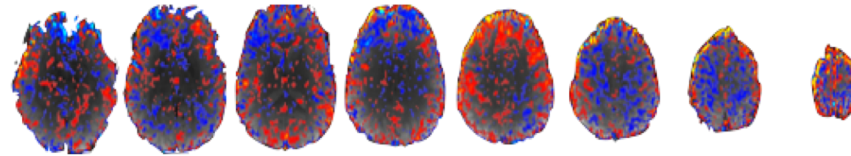


ICA denoising



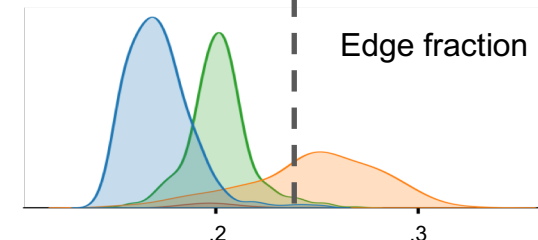
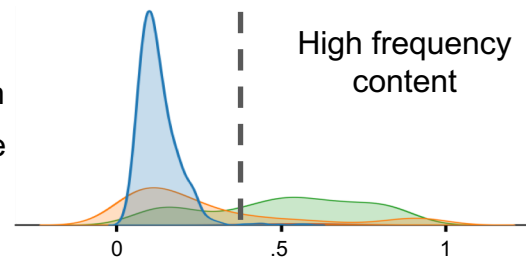
For each functional run \rightarrow \sim 20,000 independent components (ICs)

- Correlation with design, head motion, heartbeat, respiration
- High frequency content, edge fraction



signal vs. noise? 2 raters \rightarrow \sim 2,500 components

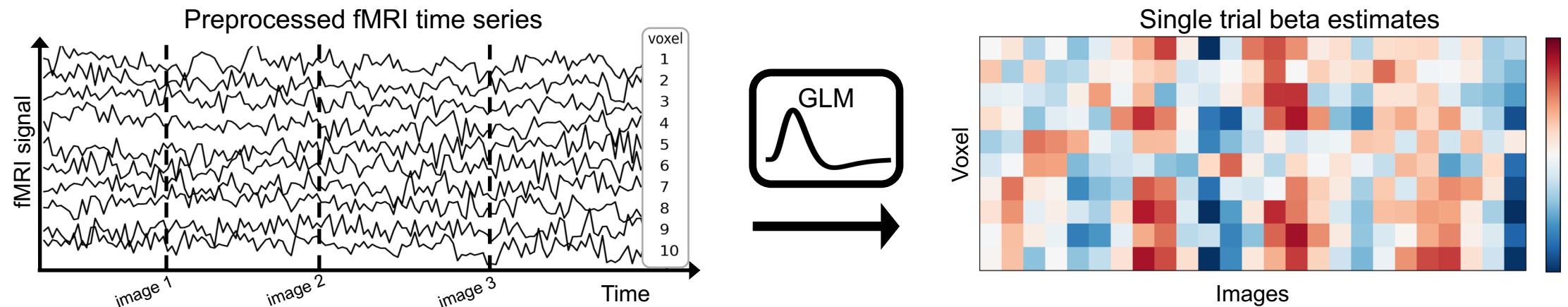
- signal
- head motion
- physio noise
- threshold



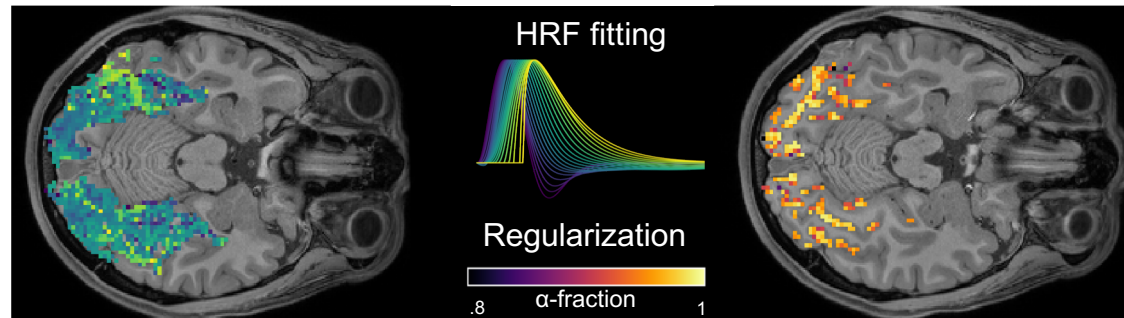
Automatic classification

Single trial responses

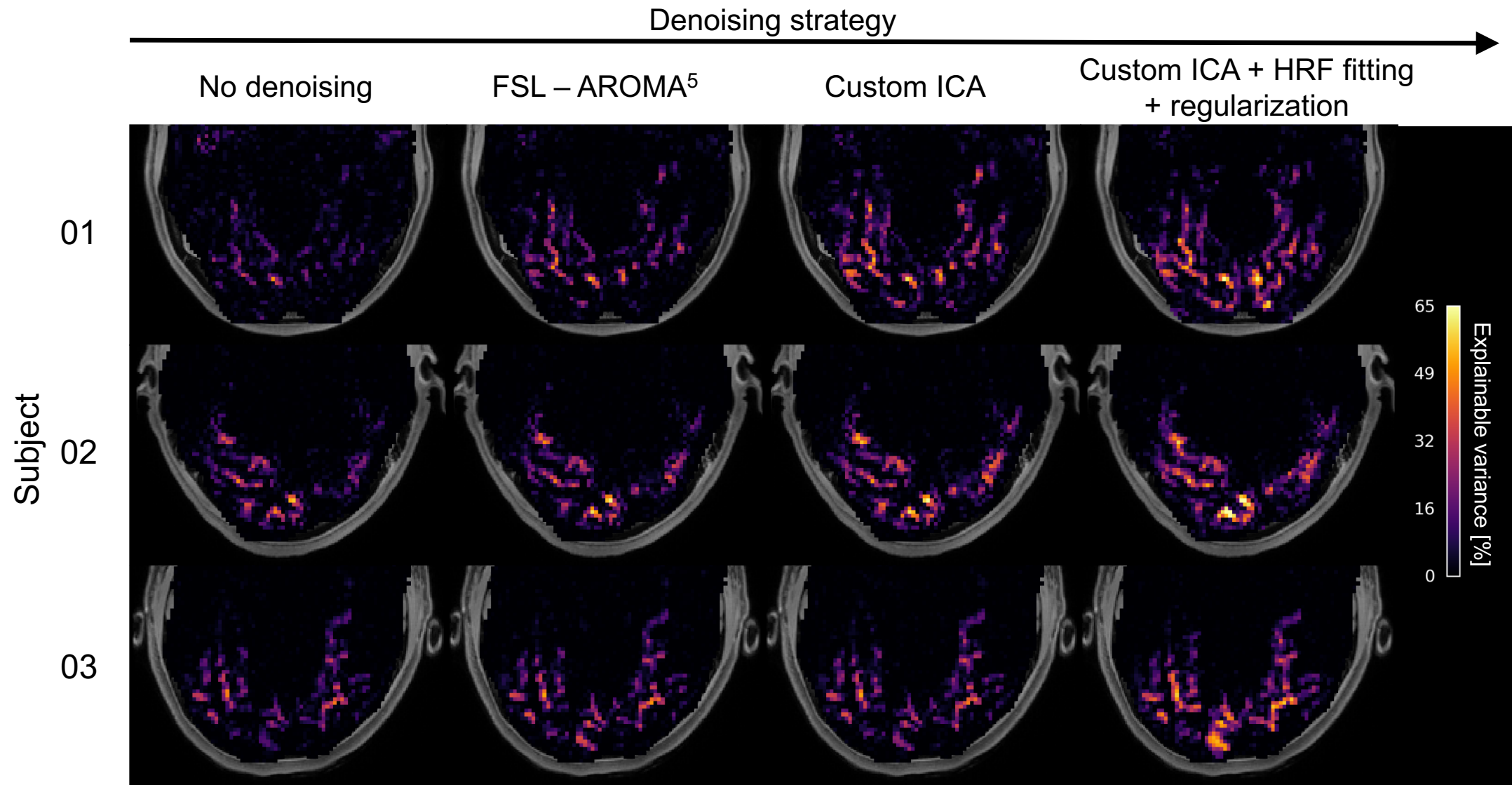
fMRI time series are large, computationally cumbersome, and not ideal for data driven analyses



Voxel-wise optimization of split-half reliability

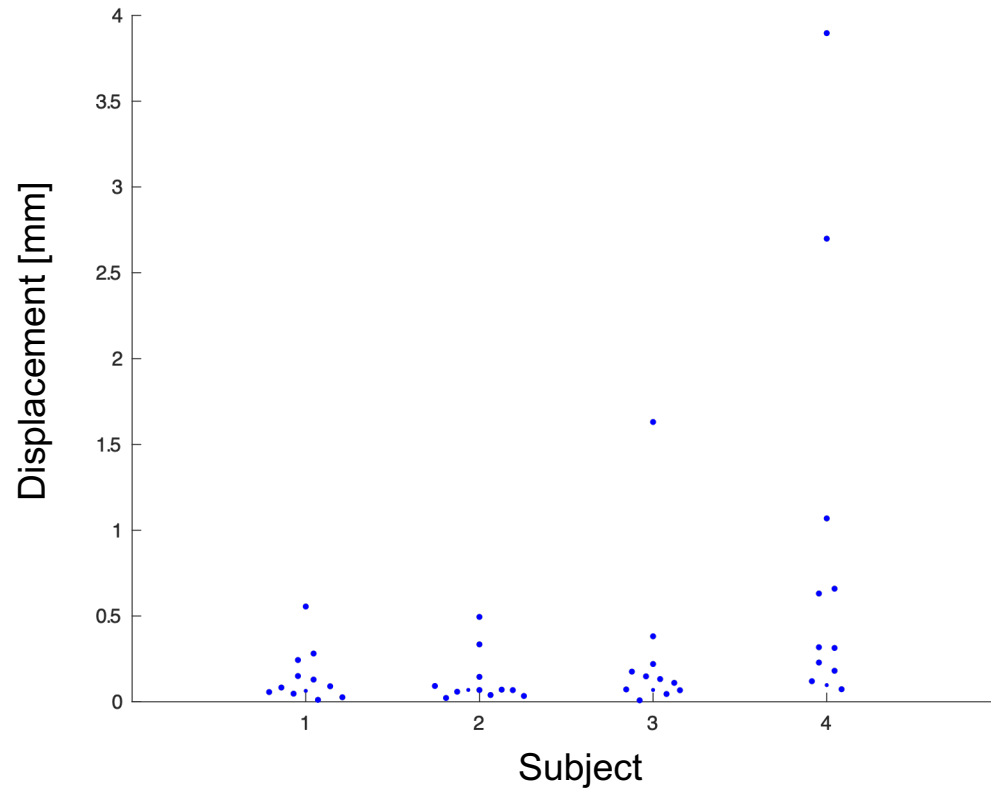


Effects of denoising

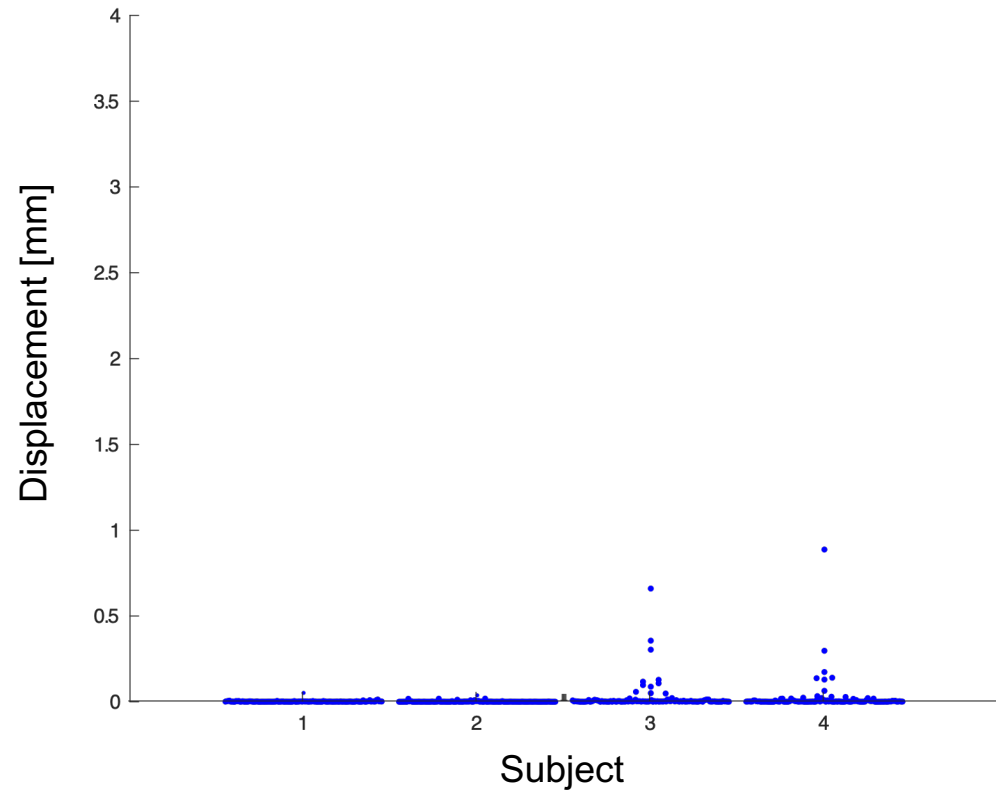


MEG head motion

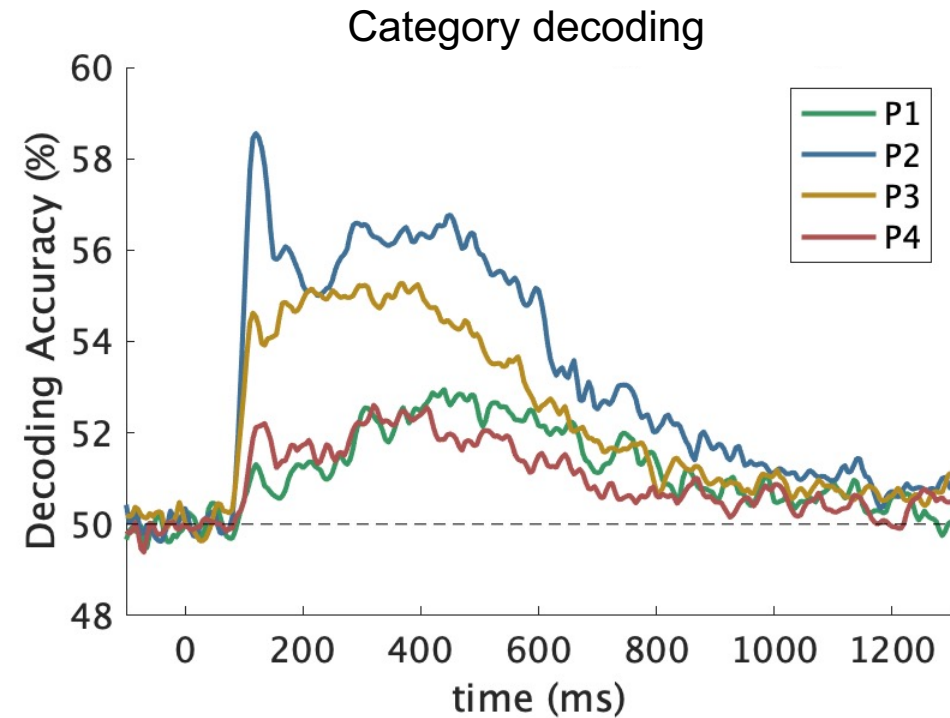
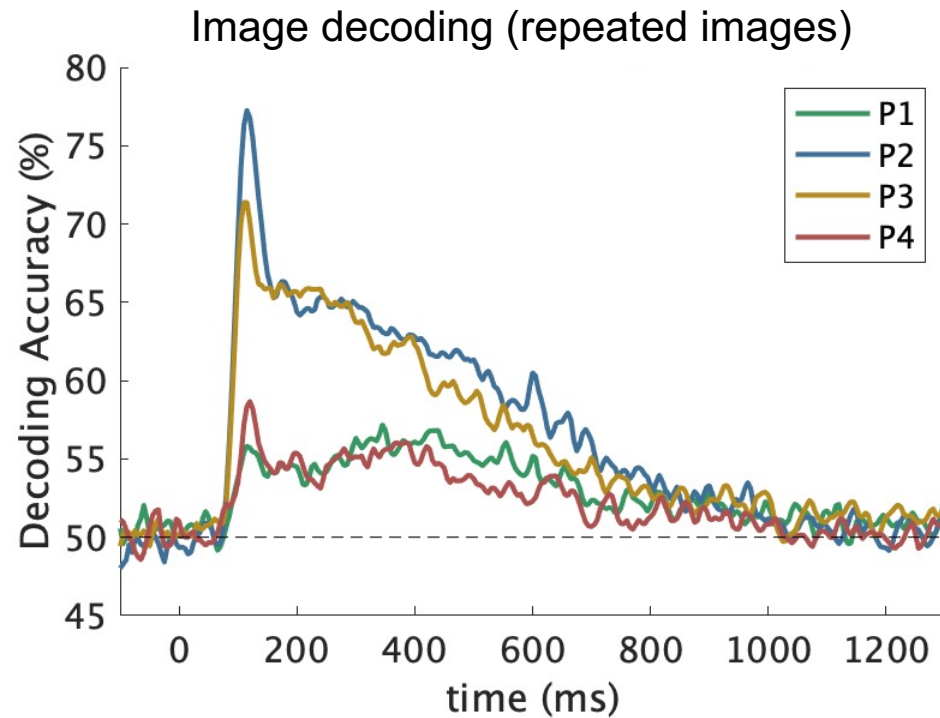
Head displacement between sessions



Head displacement during each session



MEG decoding






THINGS-fMRI/MEG combines

- Extensive and representative sampling of object images
- Large number of measurements per subject
- Multiple modalities → high spatial and temporal resolution

→ Publicly available soon!

Get in touch (also for early access)!

- SfN presentation P483.04
11/11/21 8:30–9:30 a.m. (CST)
- contier@cbs.mpg.de hebart@cbs.mpg.de
-  [@olivercontier](https://twitter.com/olivercontier) [@martin_hebart](https://twitter.com/martin_hebart)

