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Data Article

Real-time fMRI data for testing OpenNFT functionality

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ABSTRACT

Here, we briefly describe the real-time fMRI data that is provided for testing the functionality of the open-source Python/Matlab framework for neurofeedback, termed Open NeuroFeedback Training (*OpenNFT*, Koush et al. [1]). The data set contains real-time fMRI runs from three anonymized participants (i.e., one neurofeedback run per participant), their structural scans and pre-selected ROIs/masks/weights. The data allows for simulating the neurofeedback experiment without an MR scanner, exploring the software functionality, and measuring data processing times on the local hardware. In accordance with the descriptions in our main article, we provide data of (1) periodically displayed (intermittent) activation-based feedback; (2) intermittent effective connectivity feedback, based on

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dynamic causal modeling (DCM) estimations; and (3) continuous classification-based feedback based on support-vector-machine (SVM) estimations. The data is available on our public GitHub repository:
https://github.com/OpenNFT/OpenNFT_Demo/releases.
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Specifications Table

Subject area	*Neurosciences*
More specific subject area	*Neuroimaging, Real-time fMRI, Neurofeedback*
Type of data	*Data repository*
How data was acquired	*Siemens 3 T MR scanners Trio and Prisma*
Data format	*Raw, anonymized DICOMs, NIFTIs*
Experimental factors	*Approved by the local ethics committee*
Experimental features	*Real-time functional MRI*
Data source location	*Geneva, Switzerland*
Data accessibility	*The data is available under public GitHub repository:* https://github.com/OpenNFT/OpenNFT_Demo/releases

Value of the data

- The data allows for testing software functionality of *OpenNFT* and other neurofeedback software.
- The data allows for assessing the timing of (pre)processing steps for different feedback estimation schemes.
- The data can be used for testing the own neurofeedback setting.

1. Data

The three real-time fMRI data runs were acquired using (1) intermittent activation-based feedback; (2) intermittent effective connectivity feedback; and (3) continuous classification-based feedback. The interested reader can download the anonymized experimental data and re-run it using *OpenNFT* [1]. All participants gave written informed consent to participate in the experiment, which was approved by the local ethics committee. In addition to the data, we also provide files containing the *OpenNFT* settings, experimental protocol and experimental design modelled in SPM (http://www.fil.ion.ucl.ac.uk/spm).

2. Experimental design, materials and methods

2.1. Case study 1: intermittent activation-based feedback

The participant performed one fMRI localizer run to delineate bilateral primary visual cortices and a subsequent neurofeedback run to learn control over these ROIs. The localizer run consisted of eight

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