NMRC NWB Standardized Structure

Release 1.0

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ONE

ABOUT NWB

Neurodata Without Borders (NWB) format is unified data format designed in the Neurodata Without Borders: Neurophysiology (NWB:N) to incorporate several types of data, including electrophysiological and optical physiology data, stimuli and behavior data et.al.

The official website of NWB:N project can be found here.

CHAPTER

TWO

PRE-INSTALLED TOOLBOXES

Contents

Important: Please installed the following toolboxes before using NWB standardized processing codes.

2.1 MatNWB

MatNWB is the Matlab interface for reading and writing NWB file. To generate and use NWB structure, MatNWB should be inside the folder /util/.

1. Download the MatNWB .

2. From the Matlab command line, generate matlab m-files:

```
generateCore('schema/core/nwb.namespace.yaml');
```

3. Copy the folder matnwb into /util/

2.2 TDTMatlabSDK

TDTMatlabSDK is the Matlab TDT data import tool. TDTMatlabSDK should be inside the folder /util/ when converting tdt data to NWB structure.

1. Download the zipped TDTMatlabSDK tool.

2. Extrac the zip files into /util/ folder

CHAPTER

THREE

INPUT SYSTEMS

3.1 TDT System

3.1.1 Structure of TDT System

tdt filed	sub-field	chair	gait	description	user def.
.epocs	.Cam1	yes	yes	Cam1/2: onset and offset time of each frame	n/a
	.Cam2	no	yes		n/a
	.Spd_	no	yes	Spd_: onset and offset time of gait mat	Spdg
.steams	.BUGG	yes	yes	BUGG: store the neural data [n_chns, n_temporal] start_time = 0	Neur
	.EYEa	yes	no	x,y positions of eyes [2, n_temporal] start_time = 9.5367e-07	EYEa
	.EYEt	yes	no	sync data from eye tracking system [1, n_temporal] start_time = 9.5367e-07	EYEt
	.Stpd	yes	no	Stpd: synchronization signal from the touch pad. [1, n_temporal] start_time = 9.5367e-07	Stpd
	.Para	yes	no	For what? [4, n_temporal] start_time =	Para

Example dataset:

- setup-chair: Bug-190111 -> Block-1
- setup-gait: Bug-181130 -> Block-1

3.1.2 NWB Structure Storing TDT data

3.2 Motion Analysis System

3.3 Eye Tracking System

3.4 Gait Mat System

CHAPTER

FOUR

FUNCTIONS

4.1 Convert to NWB Functions

4.2 Read from NWB Structure