Data structure of Koz6_TTC (30 channel electrode):

path: iwebdav/RoJygC1XqiXhwI7dWxL3/Koz/Koz6_TTC/

Inside the folder “Koz6_TTC”, there are four subfolders. Each subfolder contains the data from the respective training day in MAT-file format. The data structure is, in principle, the same as for former datasets, except that instead of a sequence or train of FM-tones, ***only one or two FM-tones were played,*** separated by an interstimulus interval of 3s (see below).

Koz6_140819_TTC_lfp_ch 1-16:

- Three-dimensional variable that contains information about LFP channels 1 to 16 (for channel assignment see “Channel map.docx”)
- 1st dimensions: raw LFP data from channels 1 to 16 (hardware filtered at 0.1 and 300 Hz)
- 2nd dimension: sample rate (the “weird” non-integer value of our SR is due to the intrinsic maximum SR of the Tucker Davis recording system)
- 3rd dimension: channel list (list of numbers from 1-16 for offline channel mapping if needed)

Koz6_140819_TTC_lfp_ch 17-32:

- Same as for “Koz4_140429_lfp_ch 1-16” but for LFP channels 17 to 32
- (for channel assignment see “Channel map.docx”)

Koz6_140819_TTC_info_Tria:

- Three-dimensional variable that contains information about the trial onset

- 1st dimensions: name
- 2nd dimension: timestamps indicating the start of each trial in seconds
- 3rd dimension: trial list

Koz6_140819_TTC_info_Stro:

- Three-dimensional variable that contains information about tone onset and Go/NoGo trials
- 1st dimensions: name
- 2nd dimension: timestamps indicating the onset of each FM-tone in seconds*

  Please note: For this dataset, timestamps sometimes incorrectly indicate that three tones were played per trial. This was not the case, timestamps for the 3rd tone were incorrectly send to the recording system due to some millisecond overlap before the stimulus file was terminated. So for all trials which have more than two "Stro" timestamps, please ignore the 3rd timestamp.
- 3rd dimension: list of 0s and 1s matching the list of tone onsets ("0" indicates that the respective tone was played during a Go trial, "1" indicates that the tone was played during a NoGo trial)

Koz6_140819_TTC_info_Shoc:

- Three-dimensional variable that contains information about the onset and offset of shocks
- 1st dimensions: name
- 2nd dimension: timestamps indicating the onset and end of each shock in seconds
- 3rd dimension: list of 0s and 1s matching the list of shock onset and end ("1" indicates the start of the shock, "0" indicates end of the shock)

The experiment:

The gerbil is in the shuttle box. A rectangular electrode array with 20 electrodes has been implanted above the auditory cortex on top of the dura mater (for the spatial arrangement of surface array electrodes see “Channel map.docx”). In addition, a wire bundle of 8 depth electrodes + one reference wire has been implanted into the striatum.

The gerbil is exposed to two different types of tones: linear **rising** frequency modulated tones (FM 2-4 kHz, duration 200 ms) and **falling** FM (FM 4-2 kHz, duration 200 ms). ***For this dataset, FM tones were presented as single tones with an interstimulus interval (onset to onset) of 3 s, i.e. FM (200 ms)-pause (2800 ms)-FM (200 ms)-pause (2800 ms)***

The gerbil is supposed to learn to move from one side of the box (by crossing a small hurdle) to the other side of the box when the **FM rise** occurs (which is why we call it **Go tone** or **Go trial**). If the animal crosses the hurdle within a time period of 6 s after trial onset (**Hit**), the trial ends and after an inter-trail interval of 25 to 30 s, the next trial starts. If the animal misses to jump within the 6 s window (**Miss**), it receives a mild to moderate electrical foot shock via the metallic grid floor of the shuttle-box. This results in a forced escape response to the other side of the box after which the shock is switched off (end of trial). One can see the foot shock in the LFP-signal.

For the **FM fall** the animal is supposed to stay within the presently occupied compartment of the box for at least 6 s (which corresponds to a **Correct Rejection** and ends the trial). If it does change compartments during such a **NoGo trial** (**False Alarm**), it will receive a foot shock after crossing the hurdle and the trials ends with the end of the foot shock.

This means that in both Go and NoGo trials, either one or two tones were played, depending on the behavior of the animal (e.g. if, in a Go trial, the animal crosses the hurdle within 3 s after onset of the first tone, the trial will be terminated and no second tone will be played).

One training session (which corresponds to one full training day) consist of **96 trials** (48 Go and NoGo 48 trials). The trial sequence is the same for every day and is coded in an offline list (based on a Gellermann sequence).

So we present 96 trials, but, however, there are 97 time stamps. This is due to the fact that the last trial timestamp only serves to indicate the end of the training session and can thus be ignored.