

**Trial Parameters:**

**target\_side\_left**: The side where the target stimulus is presented [0: right, 1: left]

**modality**: The modality condition that was presented; [0: visual only, 1: tactile only, 2: visual+tactile]

**Response\_left**: The Answer of the animal; [-1: no-response, 0: right, 1: left]

**auto\_reward**: If the reward was automatically delivered [0: normal trial, 1: auto-rewarded]

**both\_spouts**: If both water-spouts were presented [0: only target spout moved in, 1: normal trial]

**enable\_reward**: If a reward is enabled [0: disabled, 1: normal trial]

**cues\_left\_visual, cues\_left\_tactile, cues\_right\_visual, cues\_right\_tactile**:

Each an Array of 6 element indicating the presents of a stimulus cue: [0, 1, 0, 0, 1, 1]

For tactile -> [None, 500ms, None, None, 2000ms, 2500ms]

For visual: portions of the texture moving over the monitor

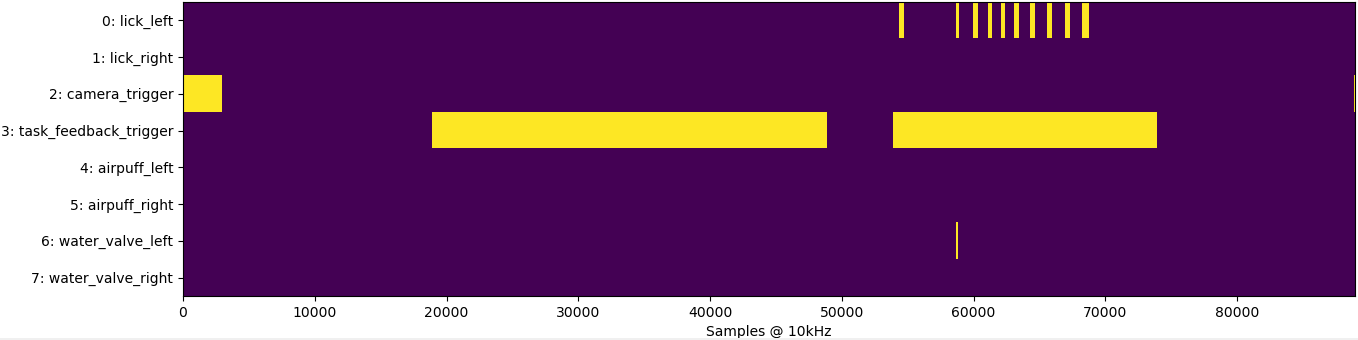
**response\_delay**: The duration of the delay period in ms. Usually 500ms

Not relevant for us now:

**valve\_left\_duration**, **valve\_right\_duration**: Durations in us for the valves

**Digital signals:**

DI:



Camera\_trigger: when rising-edge is detected the next recorded camera frame is assigned to the next trial. Represented in ‘frameCnt’ in ‘Vc.mat’

Task\_feedback: consists of two signals, the first: stimulus period 3sec, the second reward-periode 2sec

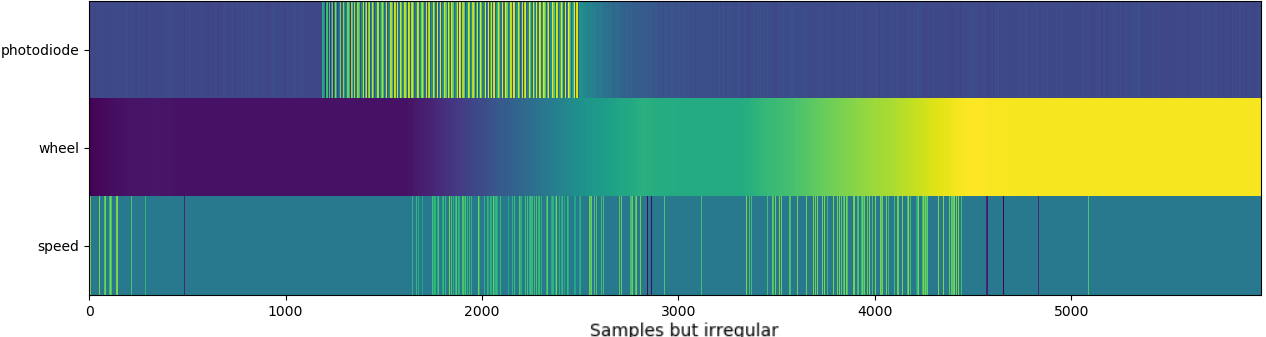
photodiode: Indicates when precisely the monitor displayed the stimulus frames; sampled according to

‘n\_DI\_samples\_since\_last\_wheel\_update’

Wheel: wheel-position; sampled according to ‘n\_DI\_samples\_since\_last\_wheel\_update’

n\_DI\_samples\_since\_last\_wheel\_update: number of 10kHz samples since last update of the photodiode and wheel

example:



Speed can be derived as:

np.diff(np.array(wheel)) / np.array(n\_DI\_samples\_since\_last\_wheel\_update)[1:]

* should be binned over longer time periods to be informative

**Settings of the software:**

Not relevant for us now:

visual\_trial\_probability

both\_spouts\_probability

discrimination\_probability

target\_cue\_probability\_tactile

target\_cue\_probability\_visual

distractor\_cue\_probability\_tactile

distractor\_cue\_probability\_visual

max\_modality\_imbalance\_factor

reward\_probability