

All data from 1 mouse (wfC318)

1. Data is from two separate experimental days.
2. data→ wfC318→ “Day_0”: 1 trial type for all trials, no odor cues. 30 trials.
3. data→ wfC318→ “Day_4”: 2 trial types. 1 = Limonene, 2 = Pinene odor cues. Random order. Presented for 1s at both 1m and 3m distance. 60 trials.
4. Water reward is delivered at the end of the virtual track at 4m.
5. After 4s at 4m water reward location the virtual track resets to 0m.

Data and Code Files

1. Raw behavior file (data→ wfC318→ Day_x→ Raw_files_cvs→ “_behavior.csv”) is aligned to raw neural traces file (data→ wfC319→ Day_x→ Raw_files_cvs→ “S.csv”) using the matlab code (code → Imaging + behavior alignment → “combine_behavior_and_S_matlab.m”).

Testing this alignment may be useful for learning how to align imaging data to behavior data.

2. If you just want to analyze neural data that is already aligned to behavior use the data in data→ subset_30_trials_mat→ “WS1_subset30/60.mat”
3. Use code in code→ spatial binning to plot data that is spatially binned according to virtual distance.
4. code→ spatial binning → “CNMF_behavior__xtrial_x” is for spatially binning licking and speed data
5. code→ spatial binning → “Spatial_Bin_Neurons_xtrial” is for spatially binning neural activity
6. code→ data plots→ “plots_behavior_xtrial” is for plotting the mean speed and licking across trials and also on individual trials using a heatmap.
7. code→ cbrewer & code→ DrosteEffect-Colormaps are good available colormaps for Matlab. The default Matlab colormaps are not great!

Data Legend

A. Rows: Time points (20Hz, 50ms)

B. Columns (1-12): Behavior

- 1 = Imaging frame #
- 2 = Time (ms)
- 3 = Odor Valve Open: 1 = Limonene; 2 = Pinene
- 4 = Lick (cumulative)
- 5 = Water rewards received (cumulative)
- 6 = Trial #
- 7 = Water reward valve open (0/1)
- 8 = Virtual distance
- 9 = Total distance run (m)
- 10 = Lap #
- 11 = Trial type (1/2)
- 12 = Speed (cm/s)

C. Columns (13-n): Neuronal Activity

Day_0 = 255 neurons

Day_4 = 459 neurons