

# Lick Detection

Lick detection toolbox is used for analysis for reward learning behavior.

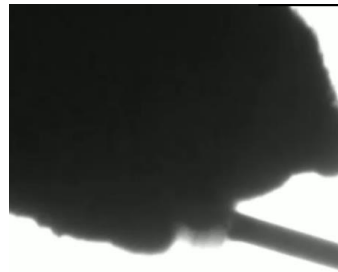
## Procedure:

### (1) Capture video:

Capture mouse licking video using infrared camera (Demo at “*demo/Lick\_demo.mp4*”). Capture a infrared LED signal in the video as trigger if needed.



No licking



Lick

### (2) Change configurations:

Change configuration in python script: “*Python\_scripts/Lick\_cue\_detection.py*” Line 41-43:

```
cue_detect = 1
lick_detect = 1
use_red_ch = 0
```

if you have trigger signal to detect, please set “*cue\_detect=1*”, otherwise, set “*cue\_detect=0*”.

For lick detection, just leave “*lick\_detect=1*”, otherwise, set “*lick\_detect=0*”.

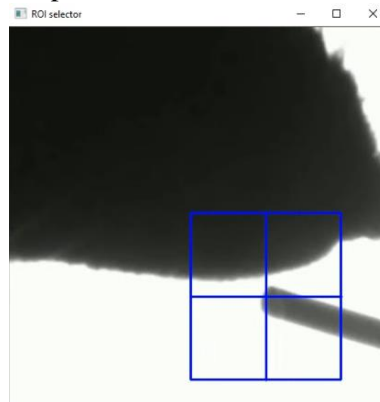
If video is captured as color mode (mouse tongue shows red), set “*use\_red\_ch = 1*” to get better result, otherwise, “*use\_red\_ch = 0*”.

### (3) Run detection code:

Run python code: “*Python\_scripts/Lick\_cue\_detection.py*”

### (4) Select ROI region.

If both “*cue\_detect*” and “*lick\_detect*” set to 1, select Cue ROI first, then Lick ROI. Otherwise, just select one ROI according to the parameters.



### (5) Export index:

The detected *lick\_index* is saved as “*Lick\_demo\_lick.csv*” (or *cue\_index* saved as “*Lick\_demo\_cue.csv*” if *cue\_detect==1*)

**(6) Thresholding and visualize results:**

Open “*matlab\_scripts\lick\_ana.m*”, set configurations:

```
inv_lick=1; % 0: brighter for lick ; 1: darker for lick
smooth_lick=1; % smooth
smooth_range=51;
thre_percent = 80; % automatic thresholding
diff_lick = 1; % 1: difference signal; 0: absolute signal
```

Run the codes, get the lick timestamp (variable: *lick\_timestamp*) and visualization as following:

