

CalciumBehaviorPair.m Manual

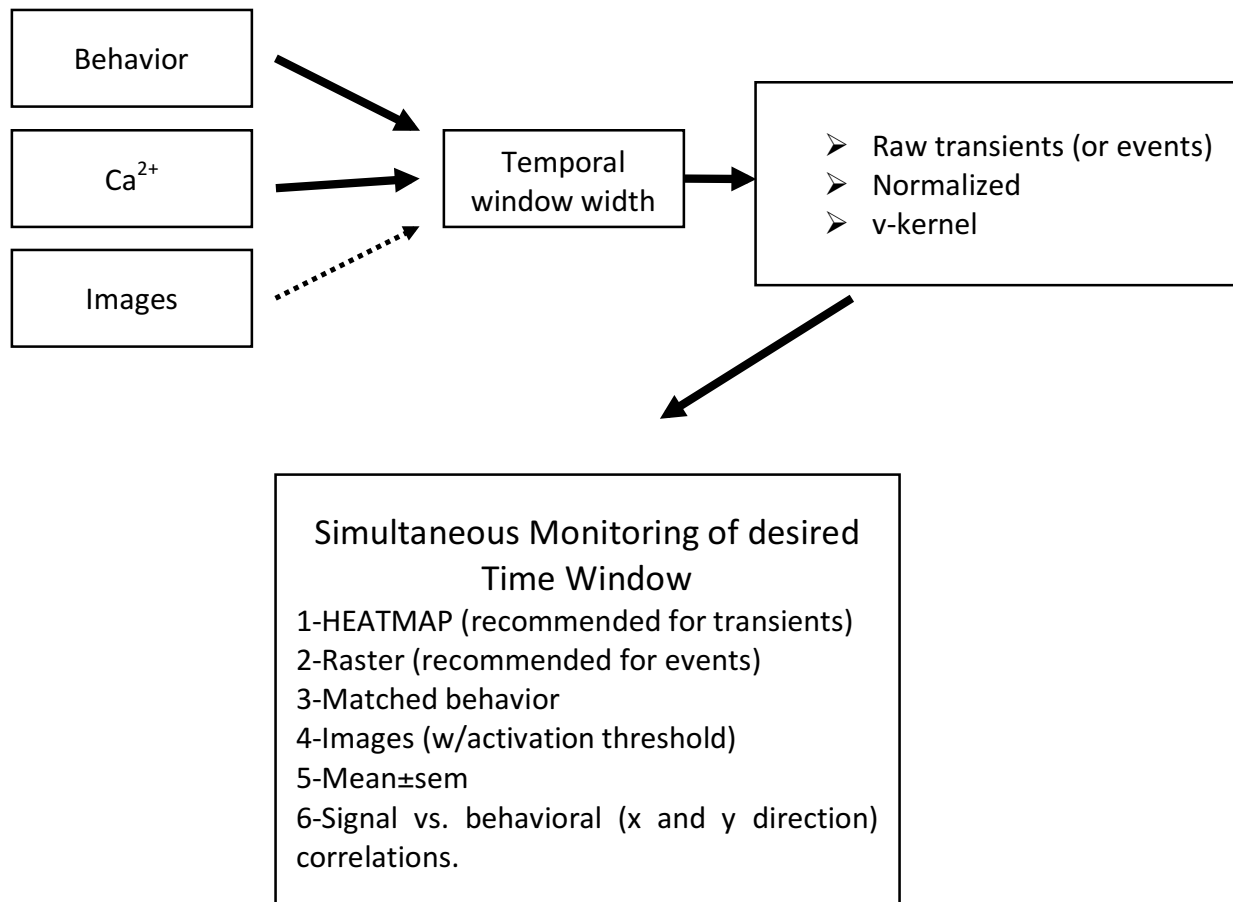
Functional Imaging

‡Dependencies: dataread.m, Conv.kernel.m

‡ A computer with high memory and fast processor is recommended.

User can load a matching behavioral and calcium dataset to analyze desired time window(s) by a 'slide' cursor. Users also have option to load actual images (.tif,.tiff or .jpeg) option for users to monitor active cell(s) in the same time course. In addition to raw format (transients or events), core data can also be analyzed via normalized amplitudes or v-Kernel transformations. Population activity as a function of user-defined time window is served to determine a behavioral relationship with the calcium data.

Example:



STEPS:

- ‡ Make sure you have access to server or your local folder that contains core and dependencies.
- ‡ User must have following datasets:
 - I. Calcium data (transients are recommended)
 - II. Matched behavior (Excel sheet with N(time) X M(different tracking points))
 - III. (Actual cell images are optional)

Stand-alone Usage:

```
>>CalciumBehaviorPair(5,10,1,600,2,100,3,4);  
% CalciumBehaviorPair('Ca2+ sampling rate ', 'Video sampling rate', 'start  
time', 'end time', 'first cell', 'last cell', 'behavior_x', 'behavior_y')
```

GUI Usage:

1. Enter Behavioral parameters in the pop-up window (sampling rate, x and y)
2. Click Load Behavior button → Add-in your matching behavioral data.
3. Enter a bin width (in seconds) in the pop-up window.
4. Select (yes/no) for images deposition.
 - a. Click a single image file in your image file
 - b. ‡ Make sure path of the images are ending without a number!!!
5. Select a desired data format from the tab-down window at the bottom right of the GUI (Raw, normalized or v-kernel)
6. If there is no error;
 - a. Click sliding cursor towards right.
 - b. You should see calcium and behavioral datasets for the set time window by multiple drawings.
 - c. Make sure your sampling rate and analyzed time indicator matches.
 - d. Change your Heatmap to Raster if your calcium data is event data.
 - e. You can also change the data format from raw↔normalized↔v-kernel.
 - f. Pull up your activation threshold cursor(bottom left) if you have images.
7. Monitor the correlation changes between calcium data vs. x-direction (behavior-1) and y-direction (behavior-2).

‡ If all features are included in GUI, an average computation step is <200ms with a high-speed computer.