

blech_clust

The secrets within
a.k.a.

Some of the lesser known but important features (according to Abu)

As of 1/15/26

Docs + Migration guide

The screenshot displays the GitHub repository page for `katzlabbrandeis/blech_clust`. The repository is in the `master` branch, which is 1852 commits ahead of and 4 commits behind `narendramukherjee/blech_clust:master`. The file list shows the `docs` directory, which is highlighted by a red arrow. Below the repository page, a blue banner for `blech_clust Documentation` is visible, featuring a search bar and navigation links.

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blech_clust

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Getting Started

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Migration Guide from Original blech_clust

This guide documents the changes between the [original blech_clust](#) and the current [katzlabbrandeis fork](#).

Overview of Changes

The katzlabbrandeis fork represents a significant modernization of the original codebase:



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Overview of Changes

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Quick Reference: New Features

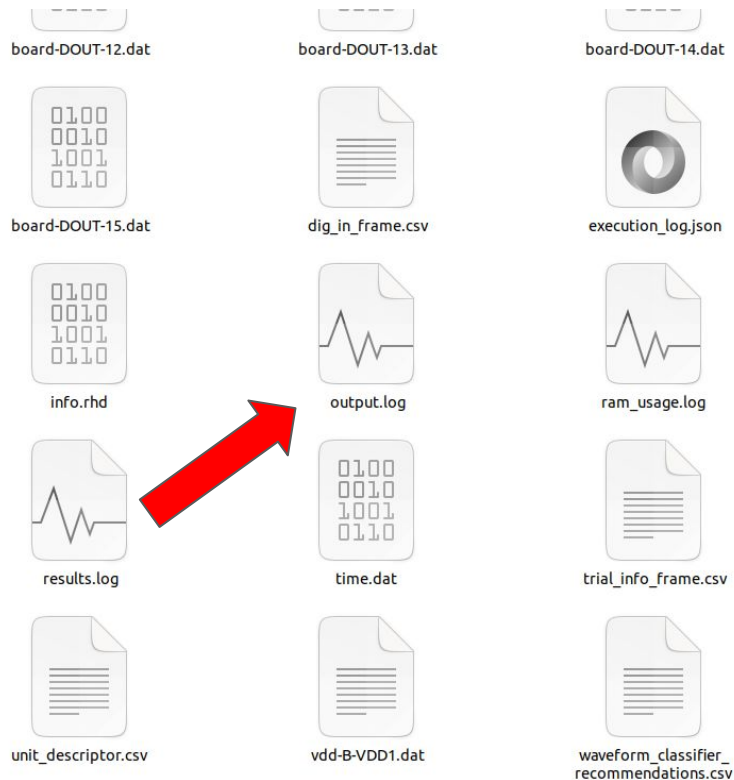
Installation and Environment

Testing Infrastructure

Metadata and Parameter
Recording

Common Average Reference
Improvements

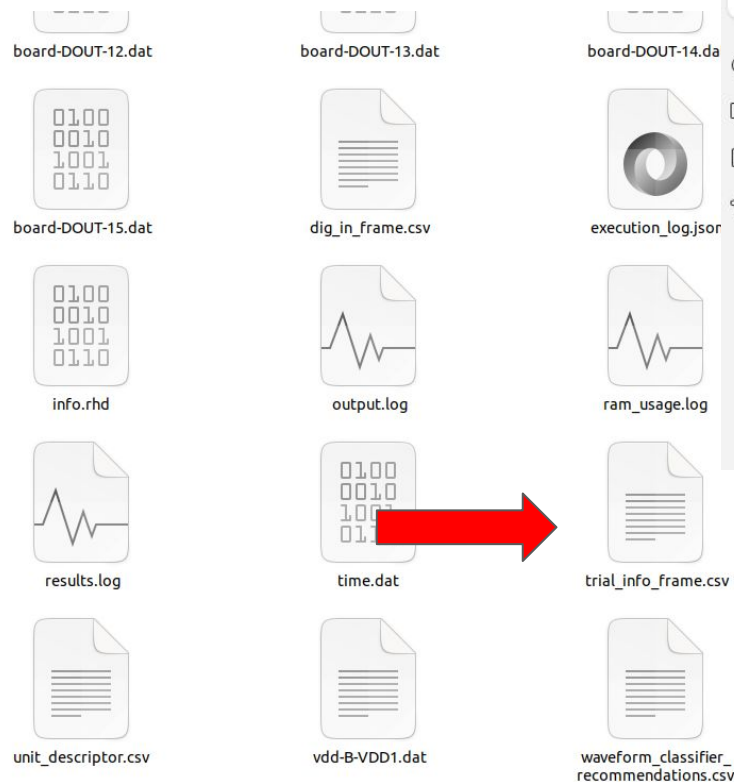
Basic debugging



```
1 =====
2 Attempting blech_exp_info.py, started at 2026-01-13 16:23:47
3 Git branch: master
4 Git commit: 454f07821b5ca186cd6fdc87430a58ca3727d544
5 =====
6 =====
7 Completed blech_exp_info.py, ended at 2026-01-13 16:23:47
8 =====
9 =====
10 Attempting blech_common_avg_reference.py, started at 2026-01-13 16:26:05
11 Git branch: master
12 Git commit: 454f07821b5ca186cd6fdc87430a58ca3727d544
13 =====
14 Processing : /media/storage/abu_resorted/bla_gc/AM11_4Tastes_191030_114043_copy/
15 Number of groups : 11
16 bla-04 :: 9 channels ::
17 ['A_00' 'A_01' 'A_24' 'A_26' 'A_27' 'A_28' 'A_29' 'A_30' 'A_31']
18
19 bla-05 :: 5 channels ::
20 ['A_02' 'A_03' 'A_04' 'A_05' 'A_07']
21
22 bla-00 :: 1 channels ::
23 ['A_06']
24
25 gc-05 :: 5 channels ::
26 ['A_08' 'A_10' 'A_14' 'A_16' 'A_20']
27
28 gc-09 :: 1 channels ::
29 ['A_09']
30
31 gc-06 :: 1 channels ::
32 ['A_11']
33
34 gc-08 :: 1 channels ::
35 ['A_12']
36
37 gc-03 :: 6 channels ::
38 ['A_13' 'A_18' 'A_19' 'A_21' 'A_22' 'A_23']
39
```

Plain Text ▾ Tab Width: 8 ▾ Ln 1, Col 1 ▾ INS

Easy access to trial info



ONLYOFFICE

*trial_info_fra... x

trial_info_frame

File Home Insert Draw Layout Formula Data Collaboration

Calibri 11

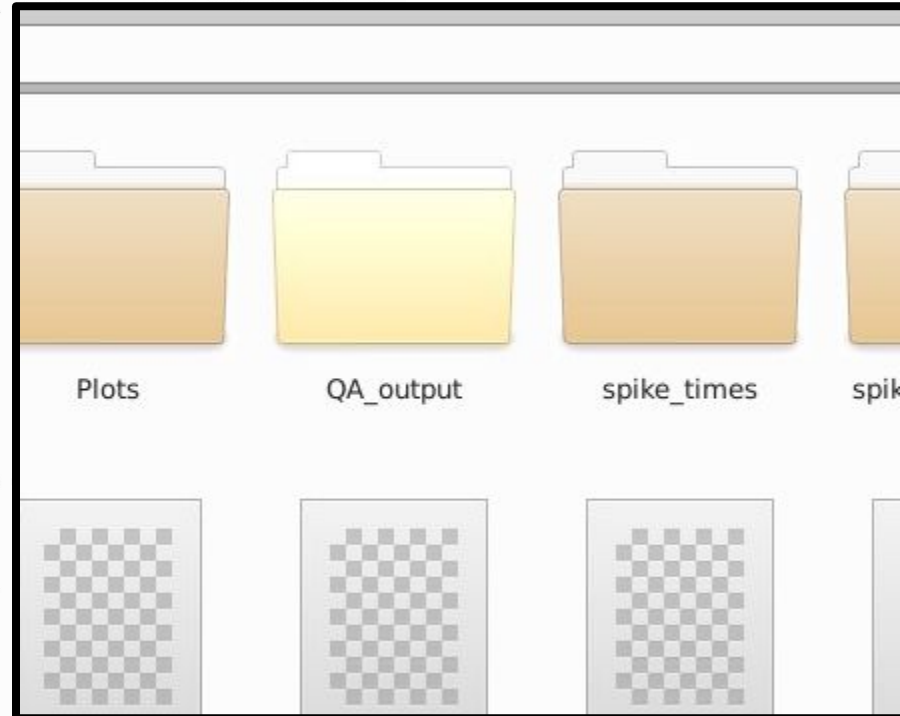
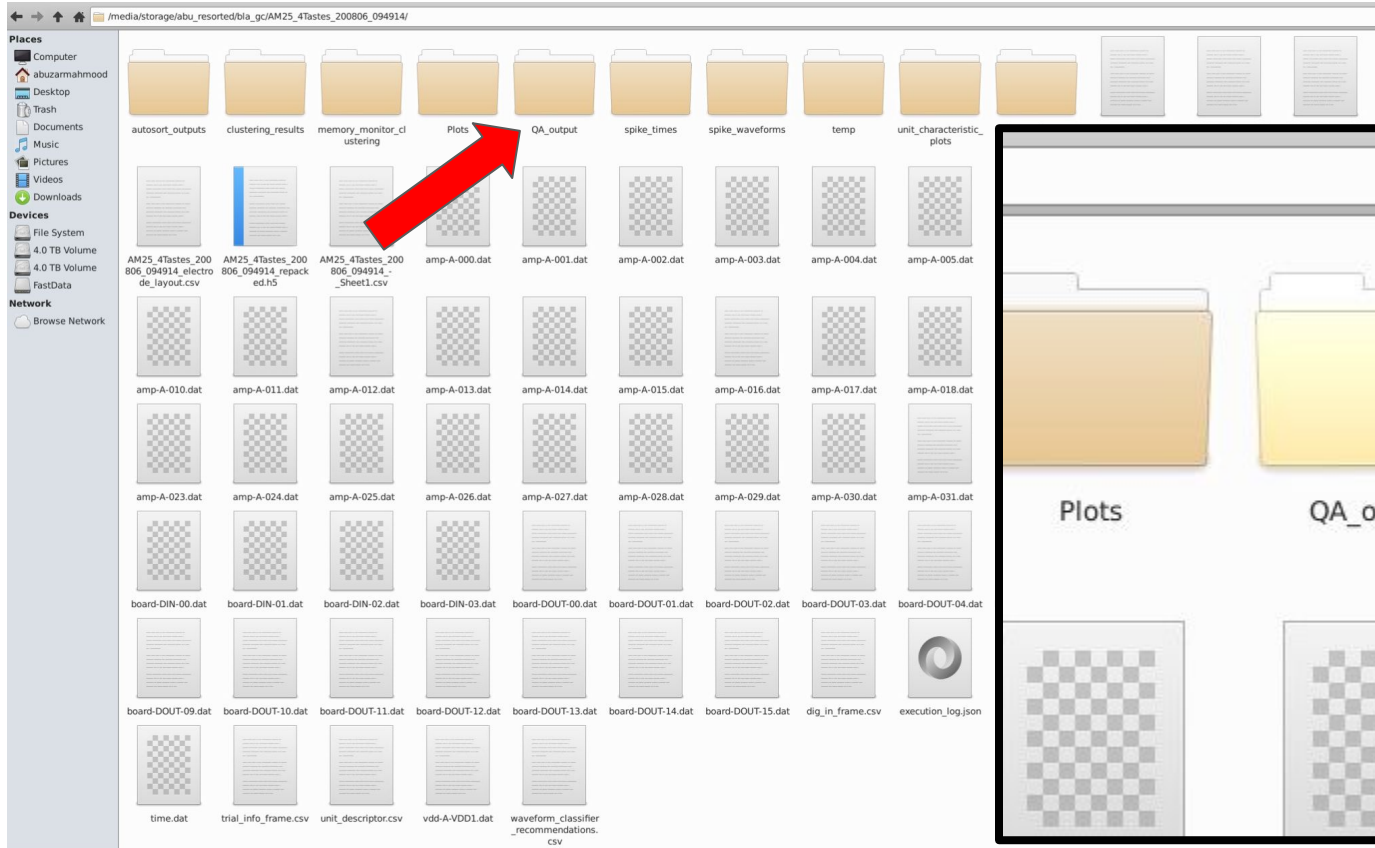
B I U A₁ A₂ A₃

H27 fx

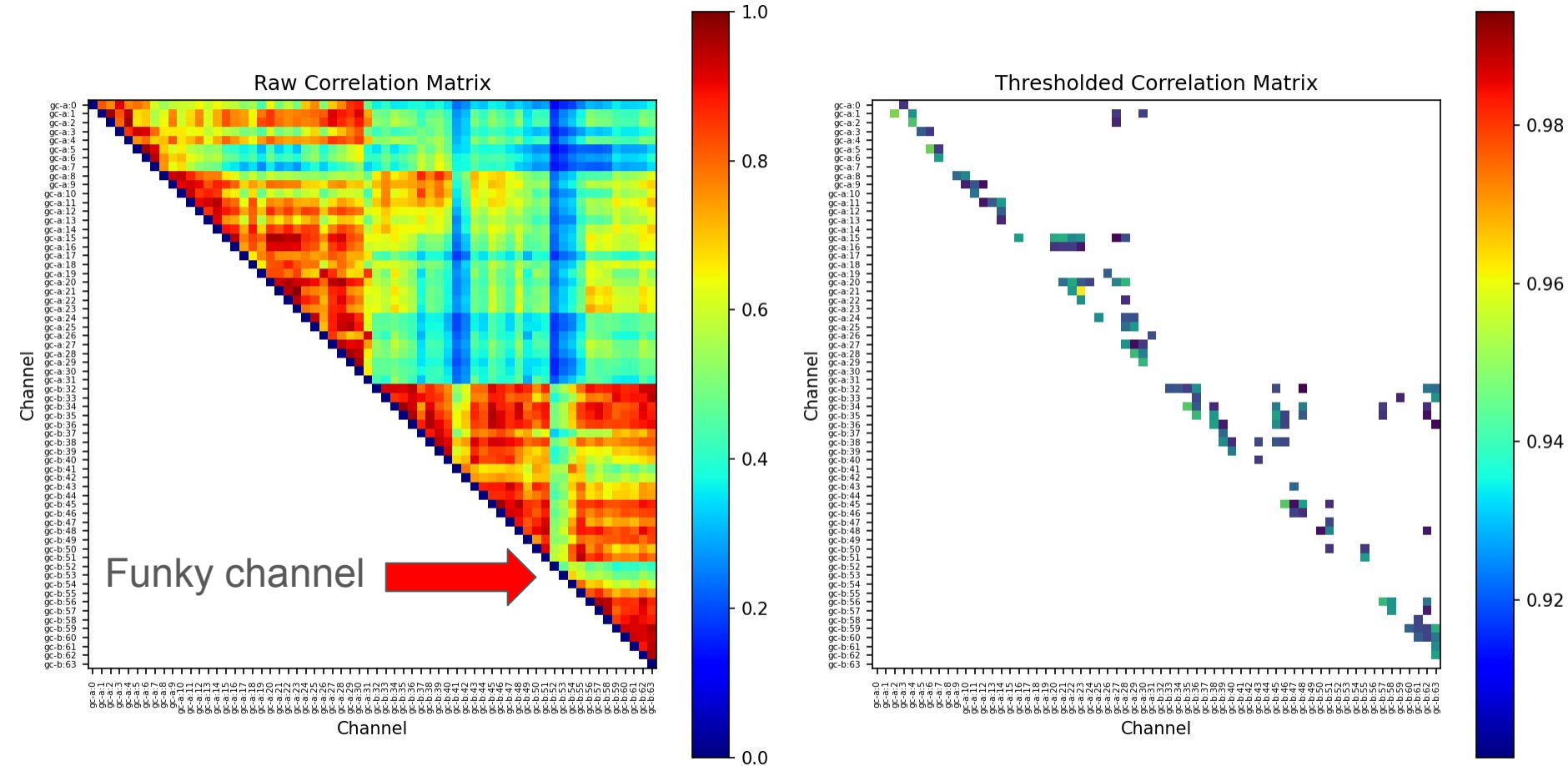
	A	B	C	D	E	F	G
1	dig_in_num	dig_in_name	taste	start_taste	end_taste	abs_trial_n	taste_r
2	2	board-DIN-02	ca	1529342	1534149	0	
3	1	board-DIN-01	suc	2134755	2140163	1	
4	2	board-DIN-02	ca	2740485	2745292	2	
5	3	board-DIN-03	qhcl	3345897	3350704	3	
6	1	board-DIN-01	suc	3951309	3956717	4	
7	3	board-DIN-03	qhcl	4557322	4562129	5	
8	2	board-DIN-02	ca	5162734	5167540	6	
9	0	board-DIN-00	nacl	5768145	5770699	7	
10	0	board-DIN-00	nacl	6370774	6373328	8	
11	3	board-DIN-03	qhcl	6973933	6978739	9	
12	2	board-DIN-02	ca	7579344	7584150	10	
13	0	board-DIN-00	nacl	8184755	8187309	11	
14	2	board-DIN-02	ca	8787609	8792416	12	
15	2	board-DIN-02	ca	9392661	9397467	13	
16	2	board-DIN-02	ca	9998058	1E+07	14	
17	0	board-DIN-00	nacl	1.1E+07	1.1E+07	15	

Dig_in_num_taste,
Dig_in_name_taste,
Taste,start_taste,
End_taste,
Abs_trial_num,
Taste_rel_trial_num,
Dig_in_num_laser,
Dig_in_name_laser,
Laser,
Start_laser,
End_laser,
Laser_duration,
Laser_lag,
Start_taste_ms,
End_taste_ms,
Start_laser_ms,
End_laser_ms,
Laser_duration_ms,
laser_lag_ms

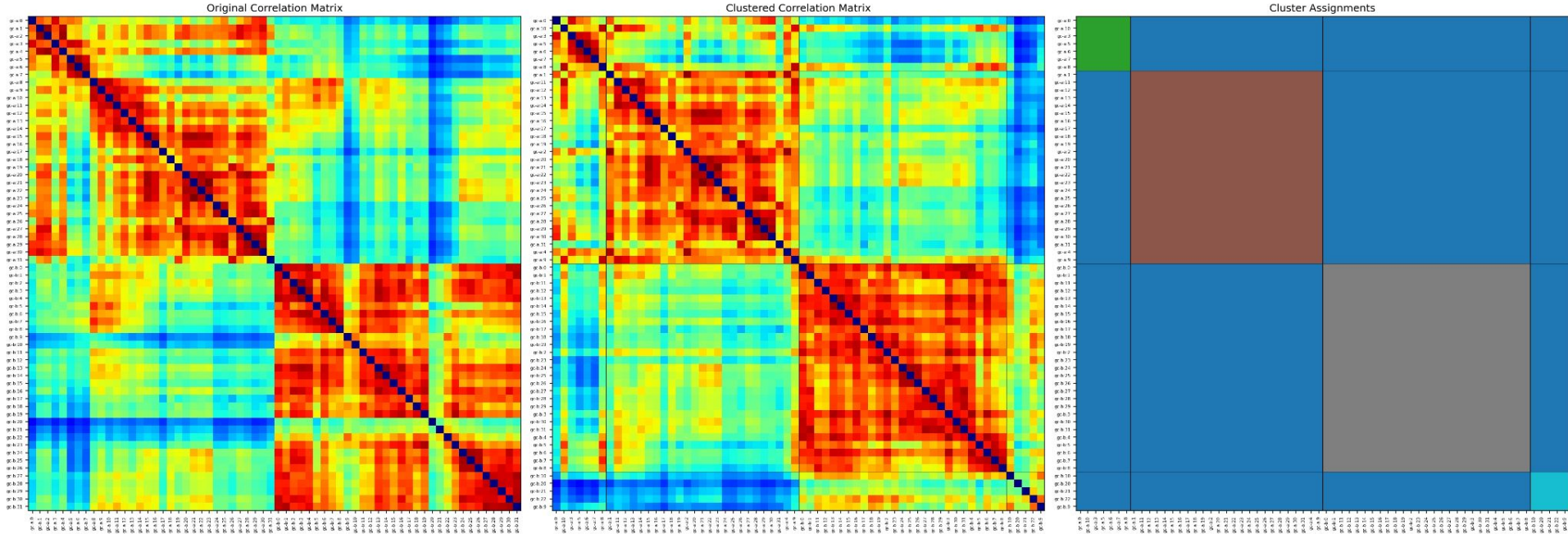
Lots of things in QA_outputs dir



Common Average Reference outputs

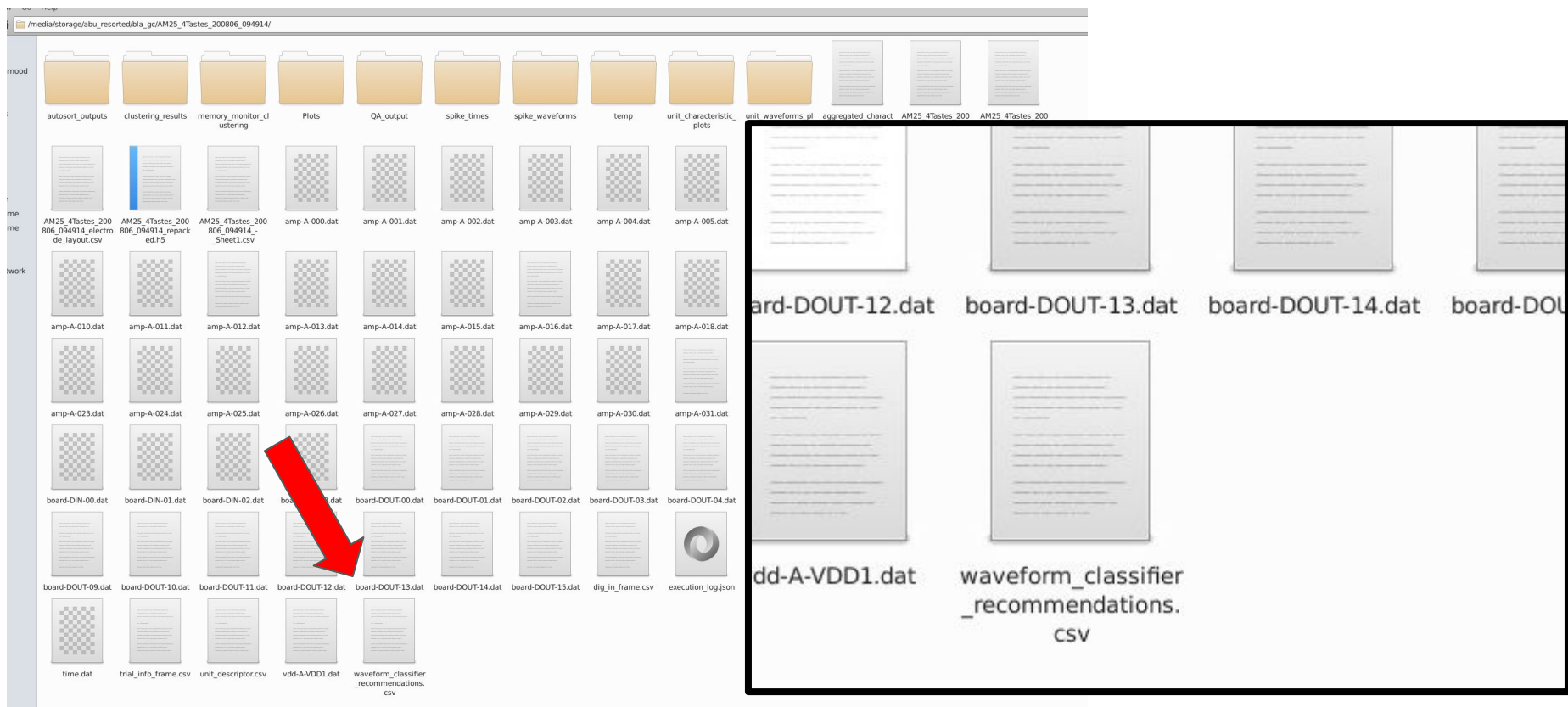


Automated sub-clustering of CAR groups

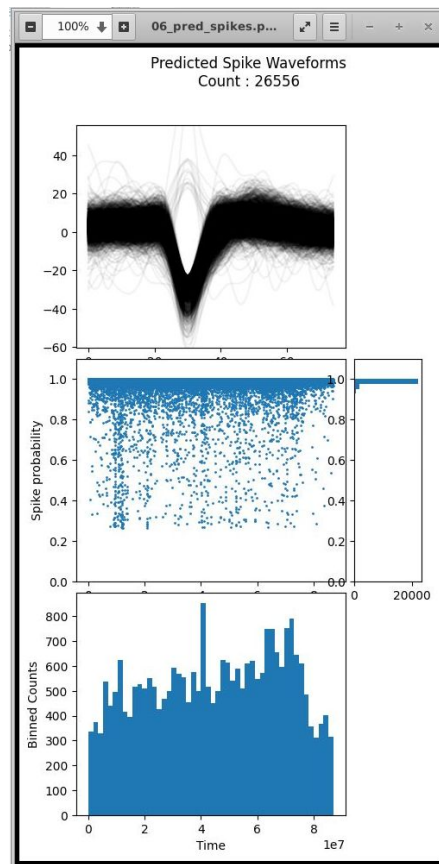


of clusters determined using BIC on K-Means

Classifier recommendations



Classifier recommendations



WPS Office waveform_classification_recommendations

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Calibri 11

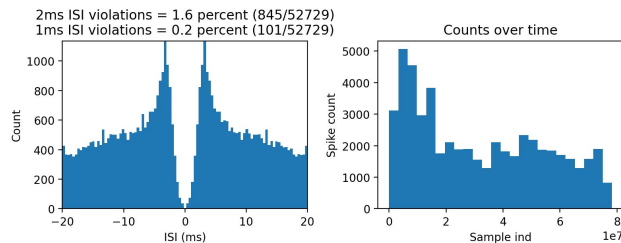
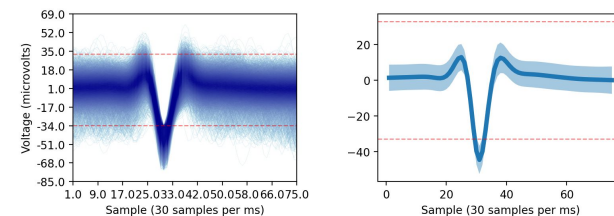
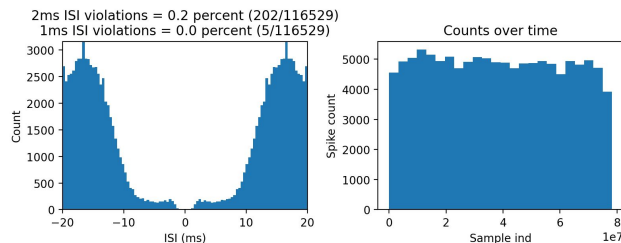
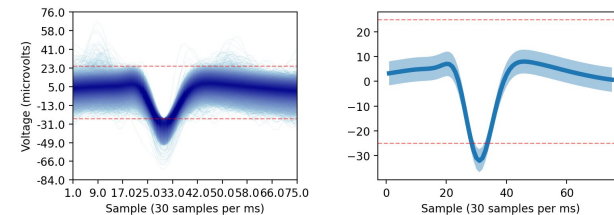
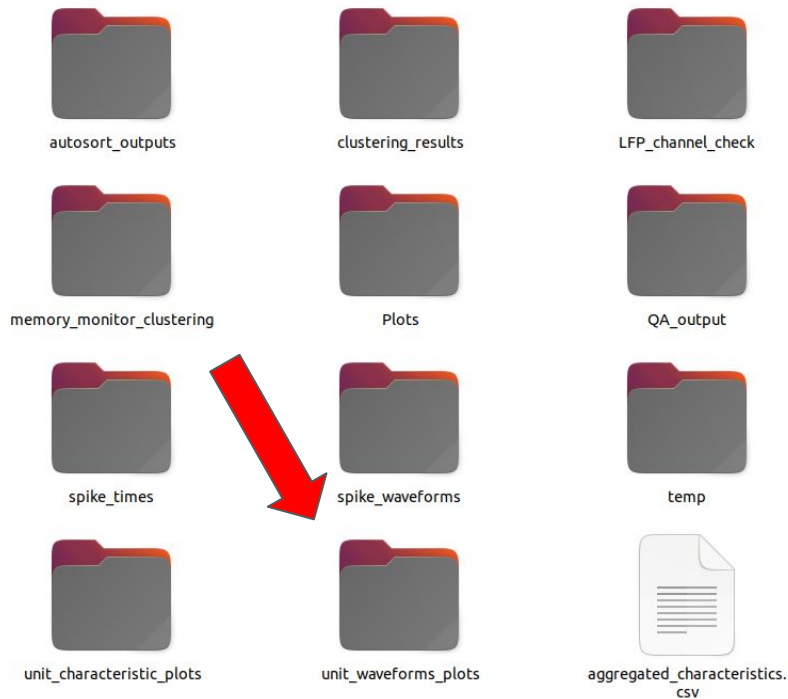
B I U

	A	B	C	D	E	F
1		electrode	count	mean_prob	percentile	percentile
2	1	1	2110	0.878	0.377	0.997
3	3	3	30760	0.965	0.821	0.999
4	6	6	26556	0.971		0.999
5	7	7	7363	0.66	0.288	0.987
6	8	8	2316	0.635	0.286	0.979
7	9	9	4432	0.789	0.313	0.995
8	10	10	14113	0.845	0.359	0.996
9	11	11	12135	0.908	0.375	1
10	12	12	3780	0.739	0.301	0.995
11	13	13	2243	0.647	0.29	0.98
12	14	14	2198	0.654	0.292	0.985
13	16	16	28631	0.96	0.792	0.999
14	19	19	5459	0.648	0.288	0.98
15	21	21	5257	0.654	0.291	0.981
16	22	22	2158	0.83	0.322	0.996
17	23	23	3946	0.687	0.298	0.99
18	25	25	16421	0.967	0.818	1
19	26	26	2245	0.727	0.303	0.996
20	27	27	5631	0.624	0.29	0.968
21	28	28	9271	0.955	0.776	0.998
22	29	29	5088	0.659	0.294	0.985
23	30	30	2583	0.911	0.412	0.999
24	31	31	2219	0.843	0.36	0.996

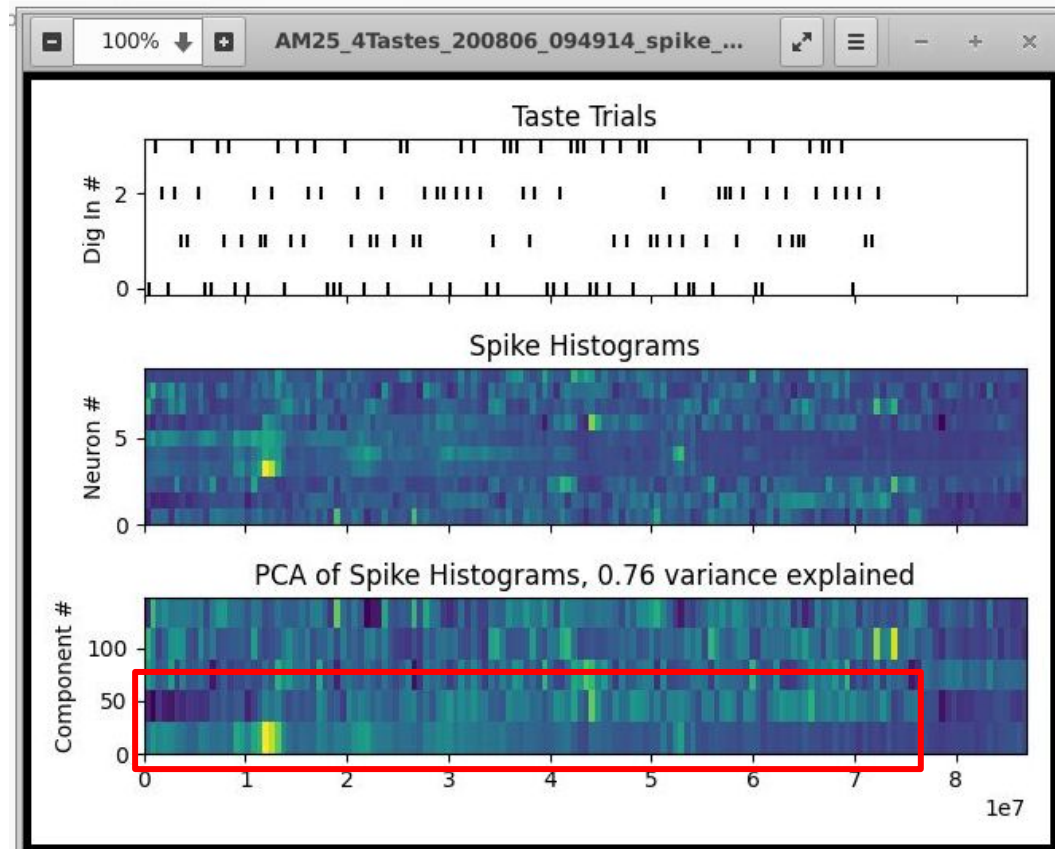
All about unit stability

Sorted units spike-counts

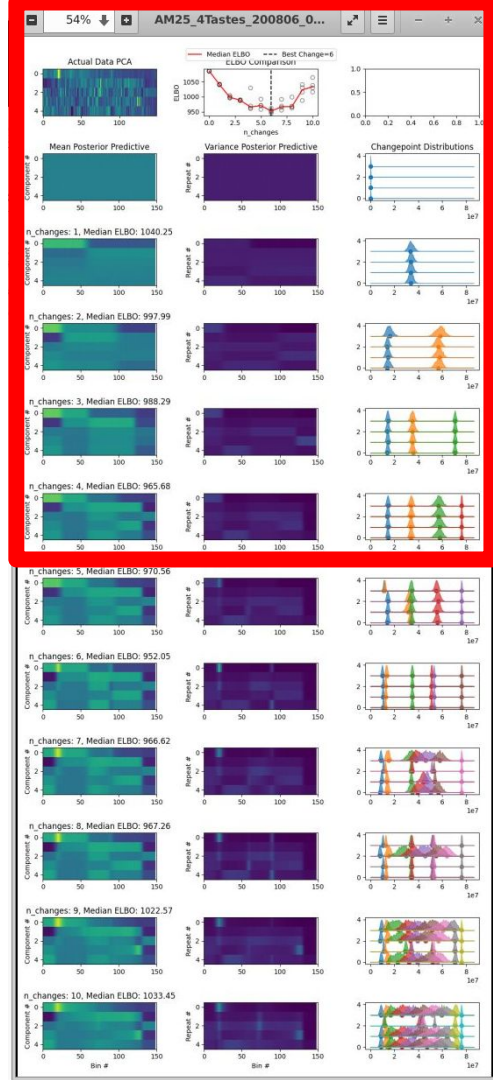
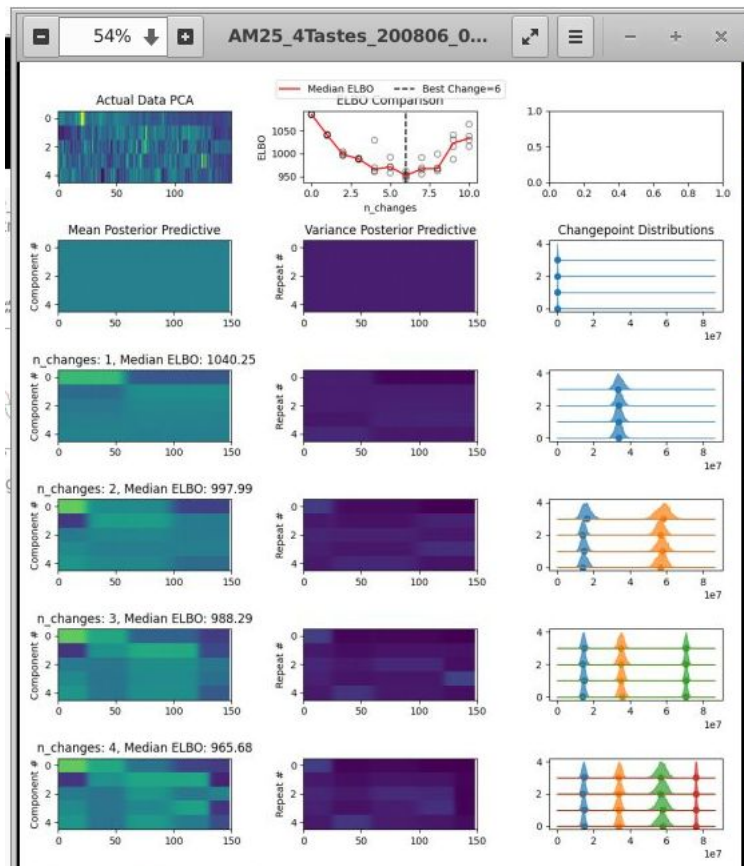
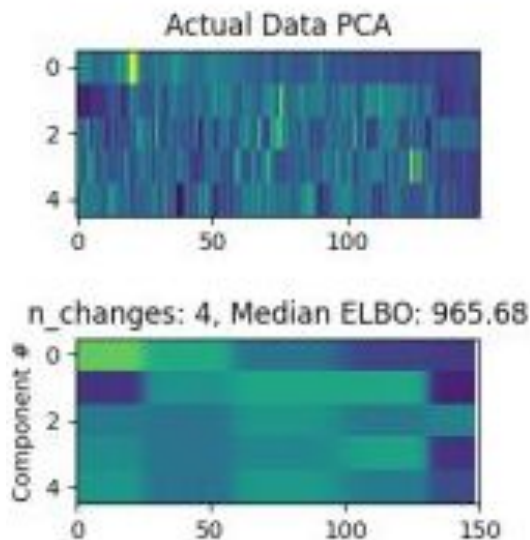
u... rted / bla_gc / AM11_4Tastes_191030_114043_copy



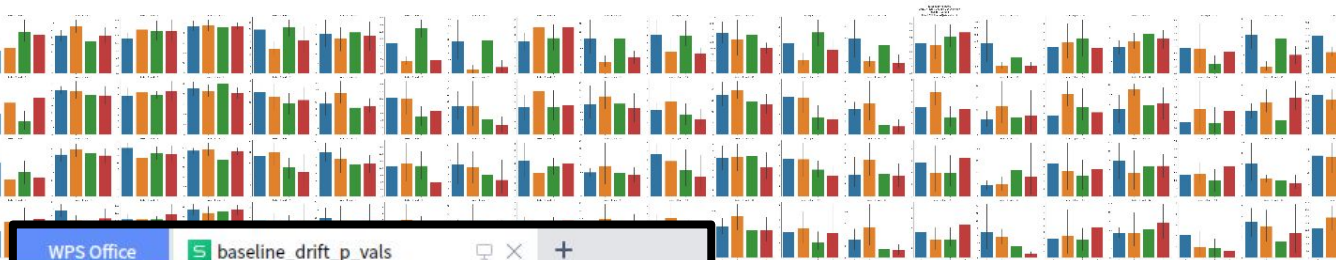
Bulk firing variability over session



Bulk firing variability over session



Changes in baseline rates



WPS Office

baseline_drift_p_vals

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Calibri

11

A⁺

A⁻

B

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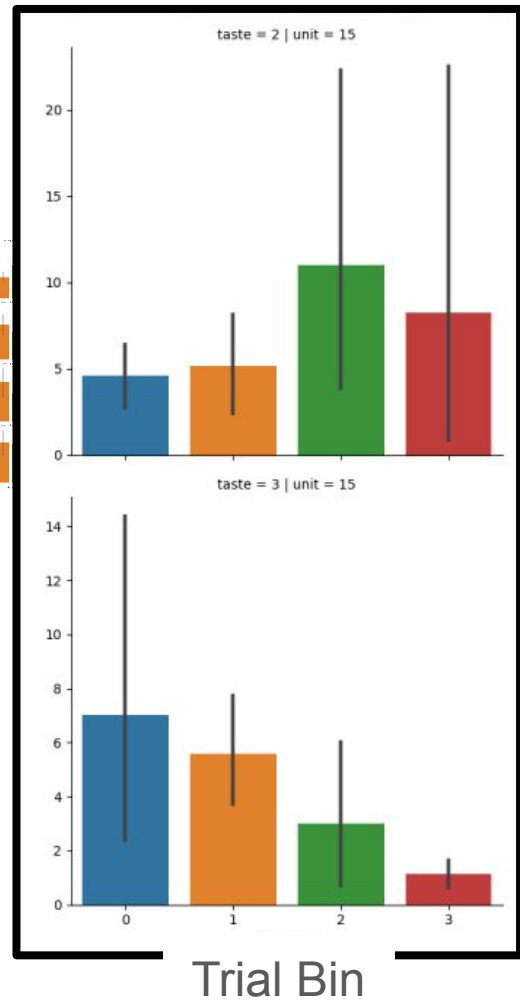
Insert

Page

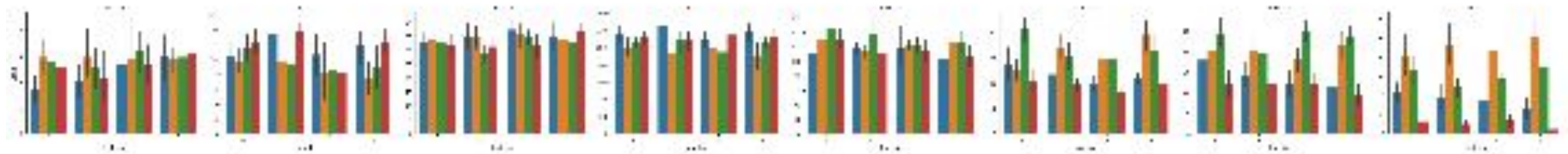
A1

fx

	A	B	C	D	E	F
1		trial_bin	taste	trial_bin *	Residual	unit
2	0	0.67601	0.03115	0.06798		0
3	1	0.10324	0.77822	0.4861		1
4	2	0.68838	0.49648	0.61009		2
5	3	0.84285	0.76545	0.08746		3
6	4	0.22501	0.49345	0.39878		4
7	5	0.23565	0.27651	0.71571		5
8	6	0.0747	0.87517	0.00599		6
9	7	0.03895	0.732	0.26052		7
10	8	0.64293	0.86977	0.36059		8
11	9	0.50257	0.16761	0.2267		9



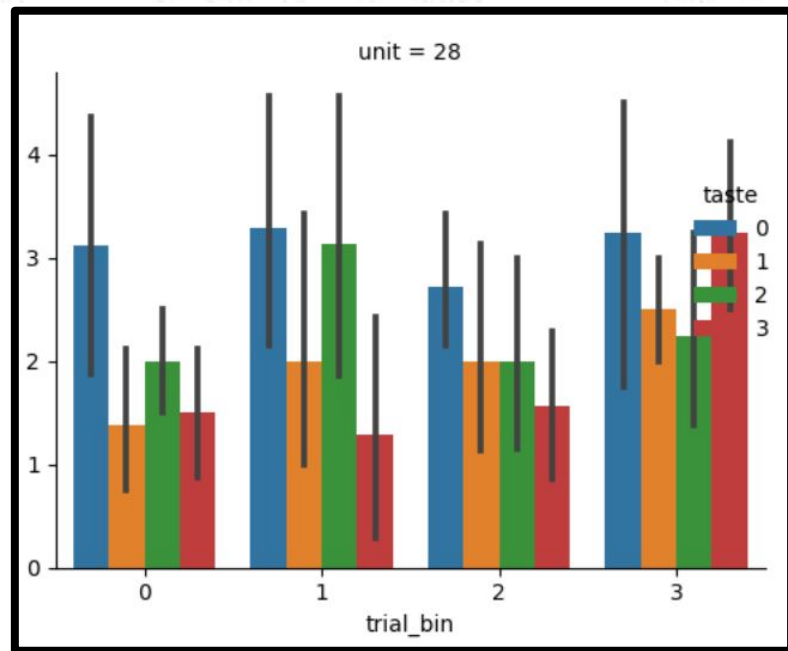
Changes in baseline rates



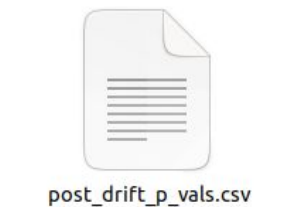
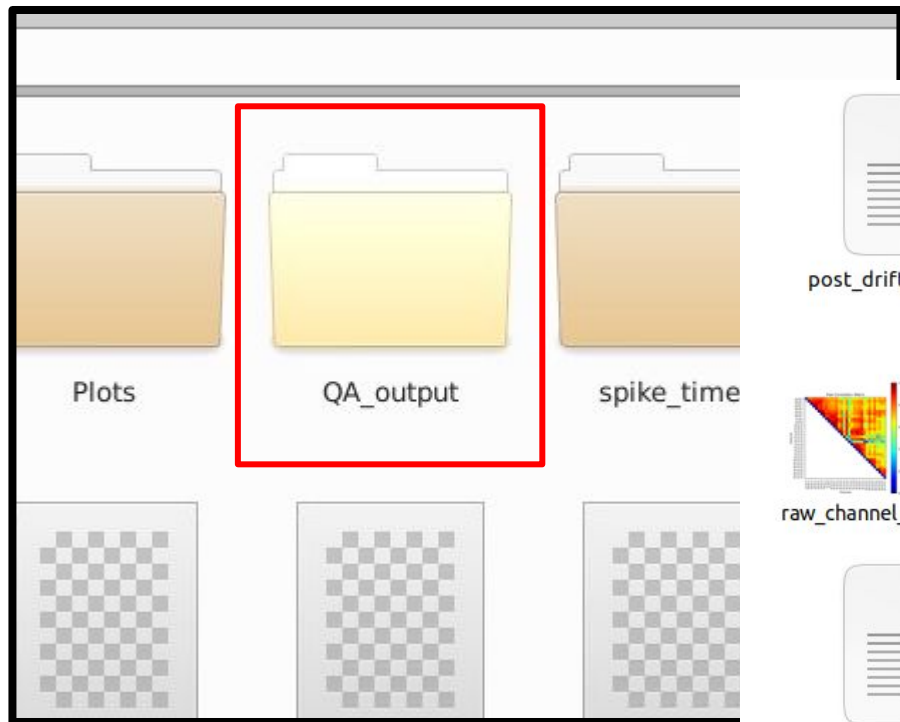
WPS Office | post_drift_p_vals

Menu | Paste | Format Painter | Calibri | 11 | B | I | U |

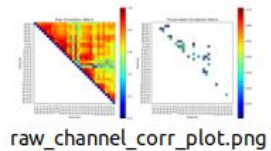
	A	B	C	D
	trial_bin	Error	unit	
1				
2	0	0.08872		0
3	1	0.09235		1
4	2	0.26528		2
5	3	0.68118		3
6	4	0.19955		4
7	5	0.39345		5
8	6	0.4933		6
9	7	0.91557		7
10	8	0.49441		8
11	9	0.0095		9
12	10	0.00247		10



Warnings file



post_drift_p_vals.csv



raw_channel_corr_plot.png



unit_similarity_violations.txt



post_drift_p_vals.png

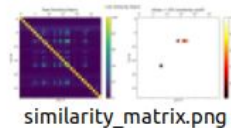


raw_channel_corr_table.txt



warnings.txt

post_firing_rates.png



similarity_matrix.png

Ephys_data submodule

- Data handling and processing
- Visualizing
 - Rasters
 - Firing rate grid plots

```
from utils.ephys_data.ephys_data import ephys_data

# Initialize with data directory

data = ephys_data(data_dir='/path/to/data')
```

Ephys_data submodule

Loading spikes	<code>data.get_spikes()</code>
Extracting LFPs, calculating STFT	<code>data.get_lfps()</code> <code>data.get_stft()</code>
Calculating firing rates + unit properties	<code>data.get_firing_rates()</code> <code>data.calc_palatability()</code>
Separating data by region	<code>data.get_region_units()</code> <code>region_spikes = data.return_region_spikes('region_name')</code> <code>region_firing = data.get_region_firing('region_name')</code> <code>region_lfps, region_names = data.return_region_lfps()</code>
Separating data by laser condition	<code>data.separate_laser_data()</code> <code># Access separated data</code> <code>on_spikes = data.on_spikes</code> <code>off_spikes = data.off_spikes</code> <code>on_firing = data.on_firing</code> <code>off_firing = data.off_firing</code>
Loading experimental + unit metadata	<code>data.get_info_dict()</code> <code>data.get_trial_info_frame()</code> <code>data.get_unit_descriptors()</code>


What to do if you have noise

1. Cry 🥹
2. Try out these folk remedies

Reduce spike detection threshold

- <data_dir>/<session_name>.params
- Set “waveform_threshold” to 3 or 4

```
1 {  
2   "max_parallel_cpu": 16,  
3   "waveform_threshold": 5,  
4   "use_rolling_threshold": true,  
5   "rolling_threshold_window": 5.0,  
6   "rolling_threshold_step": 5.0,  
7   "voltage_cutoff": 10000,  
8   "max_breach_rate": 1,  
9   "max_secs_above_cutoff": 60,  
10  "max_mean_breach_rate_persec": 100,  
11  "wf_amplitude_sd_cutoff": 3,  
12  "bandpass_lower_cutoff": 300,  
13  "bandpass_upper_cutoff": 3000,  
14  "spike_snapshot_before": 1
```



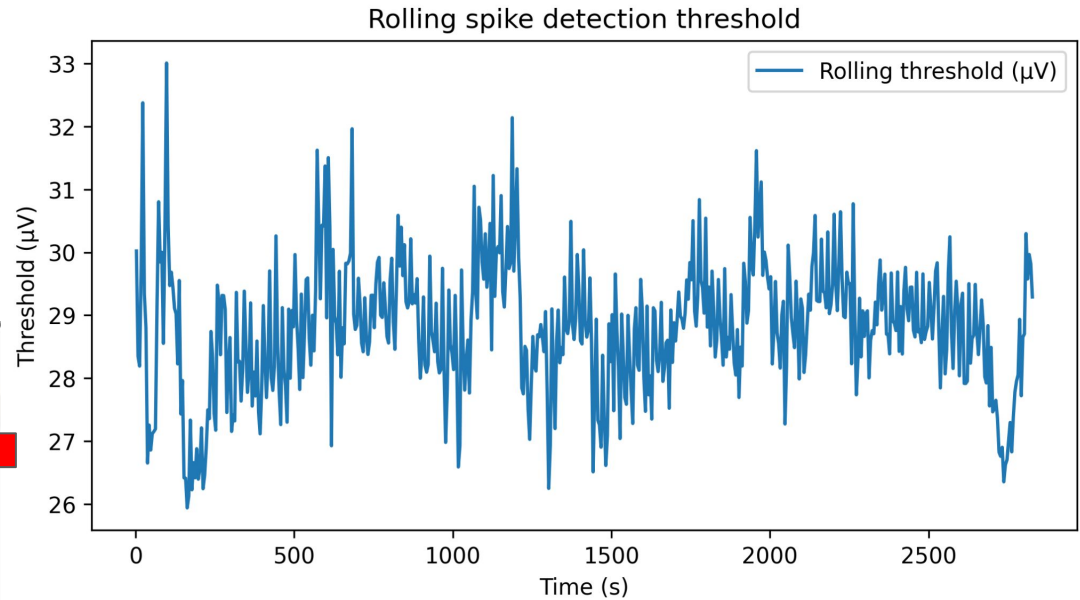
Adjust classifier settings

- `blech_clust/params/waveform_classifier_params.json`
- Set “`throw_out_noise`” to `true`
- Can override classifier threshold by setting “`override`” to `true`
 - This may increase false positive waveforms sorted

```
File: waveform_classifier_params.json
1  {
2      "use_neuRecommend": true,
3      "use_classifier": true,
4      "throw_out_noise": false,
5      "min_suggestion_count": 2000,
6      "classifier_threshold_override": {
7          "override": false,
8          "threshold": 0.8
9      }
10 }
```

Use rolling-window threshold (experimental)

```
1 {  
2   "max_parallel_cpu": 16,  
3   "waveform_threshold": 5,  
4   "use_rolling_threshold": true,  
5   "rolling_threshold_window": 5.0,  
6   "rolling_threshold_step": 5.0,  
7   "voltage_cutoff": 10000,  
8   "max_breach_rate": 1,  
9   "max_secs_above_cutoff": 60,  
10  "max_mean_breach_rate_persec": 100,  
11  "wf_amplitude_sd_cutoff": 3,  
12  "bandpass_lower_cutoff": 300,  
13  "bandpass_upper_cutoff": 3000,  
14  "spike_snapshot_before": 1
```



Housekeeping

- Please upload your code to katzlabbrandeis github
 - You can also have your repository forked (copied) to katzlabbrandeis
 - It DOESN'T have to be clean code...the repository can be kept private