

!!!!!!!!!!!!!!!!!!!!!!

Running: obj.modelExtractSignalsFromMovie

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Truncating filename to comply with maximum file length limits in MATLAB.

Old: "cnmfeSettings\_20191009\_111650\_2019\_10\_08\_p001\_m01\_exp01\_trial01"

New: "cnmfeSettings\_20191009\_111650\_2019\_10\_08\_p001\_m01\_exp01\_trial"

Copying "settings/cnmfeSettings.m" to

"private/settings/

cnmfeSettings\_20191009\_111650\_2019\_10\_08\_p001\_m01\_exp01\_trial.m"

Close "cnmfeSettings\_20191009\_111650\_2019\_10\_08\_p001\_m01\_exp01\_trial.m" file  
in Editor to continue!

Using settings file: private/settings/

cnmfeSettings\_20191009\_111650\_2019\_10\_08\_p001\_m01\_exp01\_trial.m

Add \_external\_programs/cnmfe

=== manageParallelWorkers ===

# Physical Cores: 4

# Logical Cores: 4

User set cores: 3

Max cores:

# workers to open: 3

Starting parallel pool (parpool) using the 'local' profile ...

Warning: The system time zone setting, 'US/Pacific', does not specify a single  
time zone unambiguously. It will be treated as 'America/Los\_Angeles'. See the  
datetime.TimeZone property for details about specifying time zones.

> In verifyTimeZone (line 34)

    In datetime (line 522)

    In parallel.internal.cluster.DefaultProperties.getNewJobPropStruct (line 17)

    In parallel.internal.cluster.CJSSupport/buildJob (line 158)

    In parallel.cluster.CJSCLuster/buildConcurrentJob (line 471)

    In parallel.Cluster/createConcurrentJob (line 1017)

    In parallel.internal.pool.InteractiveClient>iCreateCommunicatingJob (line 742)

    In parallel.internal.pool.InteractiveClient/start (line 329)

    In parallel.Pool>iStartClient (line 772)

    In parallel.Pool.hBuildPool (line 586)

    In parallel.internal.pool.doParpool (line 18)

    In parpool (line 98)

    In manageParallelWorkers (line 91)

    In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 204)

    In calciumImagingAnalysis/runPipeline (line 1555)

    In calciumImagingAnalysis/display (line 856)

connected to 3 workers.

===

=====

1/1 (1/1): m01 NULL000

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CNMFE

saving temporary: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/  
2019\_10\_08\_p001\_m01\_exp01\_trial01/2019\_10\_08\_p001\_m01\_NULL000\_cnmfeAnal  
ysis.mat

\*\*\*\*\*

options =

struct with fields:

```
        nonCNMF: [1x1 struct]
        runMerge: 1
runRemoveFalsePositives: 1
    memory_size_to_use: 32
    memory_size_per_patch: 1.2000
        patch_dims: [128 128]
            gSig: 3
            gSiz: 11
            ssub: 1
        with_dendrites: 1
        updateA_bSiz: 5
    spatial_algorithm: 'hals_thresh'
        tsub: 1
        Fs: 10
    deconv_smin: -5
        max_tau: 100
        nk: 3
        bg_model: 'ring'
        nb: 1
    ring_radius: 18
        bg_ssub: 1
        merge_thr: 0.6500
    method_dist: 'max'
        dmin: 5
        dmin_only: 2
    merge_thr_spatial: [0.8000 0.4000 -Inf]
        K: []
        min_corr: 0.8000
        min_pnr: 8
        bd: 0
    use_parallel: 1
        show_init: 1
        center_psf: 1
        min_corr_res: 0.7000
        min_pnr_res: 6
    seed_method_res: 'auto'
        update_sn: 1
```

The data has 240 X 376 pixels X 6000 frames.  
Loading all data (double precision) requires 4.034 GB RAM

The FOV is divided into 2 X 3 patches.  
Each patch has 120 X 125 pixels.  
It requires 1.202 GB RAM for loading data related to each patch.

You assigned a smaller memory for each patch.  
We suggest you process data in batch mode.  
Each batch has frames fewer than 5988.

Finished reading images

----- Loading -----

Data is being loaded and distributed into multiple small blocks for easy access.

Finished reading images

block( 1, 1)/(5, 7) done  
block( 1, 2)/(5, 7) done  
block( 1, 3)/(5, 7) done  
block( 1, 4)/(5, 7) done  
block( 1, 5)/(5, 7) done  
block( 1, 6)/(5, 7) done  
block( 1, 7)/(5, 7) done  
block( 2, 1)/(5, 7) done  
block( 2, 2)/(5, 7) done  
block( 2, 3)/(5, 7) done  
block( 2, 4)/(5, 7) done  
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block( 2, 6)/(5, 7) done  
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block( 4, 3)/(5, 7) done  
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block( 4, 6)/(5, 7) done  
block( 4, 7)/(5, 7) done  
block( 5, 1)/(5, 7) done  
block( 5, 2)/(5, 7) done

```
block( 5, 3)/(5, 7) done
block( 5, 4)/(5, 7) done
block( 5, 5)/(5, 7) done
block( 5, 6)/(5, 7) done
block( 5, 7)/(5, 7) done
loaded 6000 out of 6000 frames
```

The data has been saved into  
/Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/  
2019\_10\_08\_p001\_m01\_exp01\_trial01/2019\_10\_08\_p001\_m01\_NULL000\_stripeRemoval\_turboreg\_manualCut\_dfof\_downsampleTime\_1\_source\_extraction/  
data\_128\_128\_18.mat

----- Done -----

estimating the noise level for every pixel.....

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  In Sources2D/getReady (line 251)
  In computeCnmfeSignalExtraction (line 245)
  In calciumImagingAnalysis/modelExtractSignalsFromMovie/runCNMFESignalFinder
(line 1275)
  In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 312)
  In calciumImagingAnalysis/runPipeline (line 1555)
  In calciumImagingAnalysis/display (line 856)
Warning: A value of class "char" was indexed with no subscripts specified.
Currently the result of this operation is the indexed value itself, but in a
future release, it will be an error.
> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
```

In Sources2D/estimate\_noise (line 366)  
In Sources2D/getReady (line 251)  
In computeCnmfeSignalExtraction (line 245)  
In calciumImagingAnalysis/modelExtractSignalsFromMovie/runCNMFESignalFinder  
(line 1275)  
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> In matlab.io.MatFile/subsref (line 442)  
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(line 1275)  
In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 312)  
In calciumImagingAnalysis/runPipeline (line 1555)  
In calciumImagingAnalysis/display (line 856)

Time cost for estimating the noise levels: 33.662

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

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> In matlab.io.MatFile/subsref (line 442)

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

10 neurons have been detected

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

10 neurons have been detected

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

10 neurons have been detected

20 neurons have been detected

30 neurons have been detected

30 neurons have been detected

30 neurons have been detected

Patch ( 1, 2) is done. 2 X 3 patches in total.

40 neurons have been detected

40 neurons have been detected

50 neurons have been detected

50 neurons have been detected

Patch ( 1, 1) is done. 2 X 3 patches in total.

60 neurons have been detected

70 neurons have been detected

80 neurons have been detected

90 neurons have been detected

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

```
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
10 neurons have been detected
100 neurons have been detected
20 neurons have been detected
110 neurons have been detected
30 neurons have been detected
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
10 neurons have been detected
40 neurons have been detected
120 neurons have been detected
20 neurons have been detected
50 neurons have been detected
130 neurons have been detected
30 neurons have been detected
60 neurons have been detected
40 neurons have been detected
Patch ( 2, 3) is done. 2 X 3 patches in total.
140 neurons have been detected
Patch ( 2, 1) is done. 2 X 3 patches in total.
50 neurons have been detected
60 neurons have been detected
70 neurons have been detected
80 neurons have been detected
90 neurons have been detected
100 neurons have been detected
Patch ( 2, 2) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
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> In matlab.io.MatFile/subsref (line 442)
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
10 neurons have been detected
Patch ( 1, 3) is done. 2 X 3 patches in total.
A (space):90240 326 | C (time): 326 6000 | b (background): 2 3
```

-----UPDATE BACKGROUND-----

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
```

error.

> In matlab.io.MatFile/subsref (line 442)

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> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

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Patch ( 1, 2) is done. 2 X 3 patches in total.

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> In matlab.io.MatFile/subsref (line 442)

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In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 3) is done. 2 X 3 patches in total.

Finished updating background using ring model.

A (space):90240 326 | C (time): 326 6000 | b (background): 2 3  
-----MERGE HIGHLY CORRELATED CLOSE-BY NEURONS-----

211 neurons will be merged into 38 new neurons

Deleted 173 neurons: 7, 9, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 55, 57, 61, 63, 65, 72, 74, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 152, 153, 154, 155, 157, 158, 159, 166, 167, 168, 170, 171, 172, 173, 192, 200, 201, 203, 216, 230, 231, 232, 241, 242, 243, 256, 260, 262, 265, 266, 267, 283, 284, 286, 287, 288, 289, 290, 292, 293, 294, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 323, 324, 325, 326,  
-----MERGE HIGHLY CORRELATED NEURONS-----

6 neurons will be merged into 3 new neurons

Deleted 3 neurons: 41, 89, 263,  
A (space):90240 150 | C (time): 150 6000 | b (background): 2 3

-----PICK NEURONS FROM THE RESIDUAL-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

10 neurons have been detected

> In extract\_ac (line 57)

In greedyROI\_endoscope (line 342)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Warning: Matrix is singular to working precision.

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

```
In remoteParallelFunction (line 41)
> In extract_ac (line 57)
  In get_patch_data (line 23)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 1, 2) is done. 2 X 3 patches in total.
  In greedyROI_endoscope (line 342)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Warning: Matrix is singular to working precision.
> In extract_ac (line 57)
  In greedyROI_endoscope (line 342)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Warning: Matrix is singular to working precision.
> In extract_ac (line 57)
  In greedyROI_endoscope (line 342)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Warning: Matrix is singular to working precision.
10 neurons have been detected
20 neurons have been detected
30 neurons have been detected
40 neurons have been detected
> In extract_ac (line 57)
  In greedyROI_endoscope (line 342)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Warning: Matrix is singular to working precision.
50 neurons have been detected
60 neurons have been detected
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
10 neurons have been detected
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
    In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
10 neurons have been detected
```

```
70 neurons have been detected
> In extract_ac (line 57)
20 neurons have been detected
20 neurons have been detected
Patch ( 2, 3) is done. 2 X 3 patches in total.
  In greedyROI_endoscope (line 342)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Warning: Matrix is singular to working precision.
80 neurons have been detected
30 neurons have been detected
40 neurons have been detected
90 neurons have been detected
50 neurons have been detected
100 neurons have been detected
60 neurons have been detected
110 neurons have been detected
Patch ( 2, 1) is done. 2 X 3 patches in total.
70 neurons have been detected
80 neurons have been detected
90 neurons have been detected
100 neurons have been detected
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
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> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 1, 3) is done. 2 X 3 patches in total.
110 neurons have been detected
120 neurons have been detected
Patch ( 2, 2) is done. 2 X 3 patches in total.
A (space):90240 433 | C (time): 433 6000 | b (background): 2 3
```

-----UPDATE SPATIAL-----

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
```

```
> In matlab.io.MatFile/subsref (line 442)
```

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
```

```
> In matlab.io.MatFile/subsref (line 442)
```

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
```

```

> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 1, 1) is done. 2 X 3 patches in total.
  In get_patch_data (line 23)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 1, 2) is done. 2 X 3 patches in total.
  In get_patch_data (line 23)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 2, 1) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
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  In get_patch_data (line 23)
  In parallel_function>make_general_channel/channel_general (line 917)
  In remoteParallelFunction (line 41)
Patch ( 2, 2) is done. 2 X 3 patches in total.
Collect results from all small patches...
Post-process spatial components of all neurons...
Done!
Done!
Update the constant baselines for all pixels..
Done!
A (space):90240 433 | C (time): 433 6000 | b (background): 2 3
-----MERGE HIGHLY CORRELATED NEURONS-----

```

21 neurons will be merged into 10 new neurons

Deleted 11 neurons: 13, 73, 91, 345, 346, 355, 390, 460, 481, 482, 506,  
A (space):90240 422 | C (time): 422 6000 | b (background): 2 3

-----UPDATE TEMPORAL-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

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In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 2) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 3) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 1) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 3) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.





```
|||||
|||||
```

```
..
.....
.....
.....
.....
.....
```

Done!  
Update the constant baselines for all pixels..  
Done!  
Deleted 6 neurons: 226, 244, 322, 341, 494, 574,  
A (space):90240 269 | C (time): 269 6000 | b (background): 2 3  
-----MERGE HIGHLY CORRELATED CLOSE-BY NEURONS-----

6 neurons will be merged into 3 new neurons

Deleted 3 neurons: 470, 571, 572,  
A (space):90240 266 | C (time): 266 6000 | b (background): 2 3

-----UPDATE BACKGROUND-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

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In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 2) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

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Patch ( 2, 1) is done. 2 X 3 patches in total.

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In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 2) is done. 2 X 3 patches in total.

Finished updating background using ring model.

-----UPDATE SPATIAL-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

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In get\_patch\_data (line 23)

```
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
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Patch ( 2, 2) is done. 2 X 3 patches in total.
Collect results from all small patches...
Post-process spatial components of all neurons...
Done!
Done!
Update the constant baselines for all pixels..
Done!
```

-----UPDATE TEMPORAL-----

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
```

```
> In matlab.io.MatFile/subsref (line 442)
```

```
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
```

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> In matlab.io.MatFile/subsref (line 442)
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result of this operation is the indexed value itself, but in a future release, it will be an
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```
> In matlab.io.MatFile/subsref (line 442)
```

```
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 1, 1) is done. 2 X 3 patches in total.
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 1, 2) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 2, 3) is done. 2 X 3 patches in total.
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 2, 1) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 1, 3) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
In get_patch_data (line 23)
In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 2, 2) is done. 2 X 3 patches in total.
Collect results from all small patches...
Deconvolve and denoise all temporal traces again...
|||||
|||||
|||||
.....
.....
..
.....
.....
..
```

Done!

Update the constant baselines for all pixels..

Done!

A (space):90240 266 | C (time): 266 6000 | b (background): 2 3

Deleted 19 neurons: 15, 25, 69, 193, 282, 291, 329, 333, 348, 361, 365, 370, 484, 510, 519, 532, 567, 595, 608,

A (space):90240 247 | C (time): 247 6000 | b (background): 2 3

-----MERGE HIGHLY CORRELATED CLOSE-BY NEURONS-----

22 neurons will be merged into 9 new neurons

Deleted 13 neurons: 182, 196, 239, 252, 362, 375, 491, 493, 497, 502, 504, 523, 561,

-----MERGE HIGHLY CORRELATED NEURONS-----

2 neurons will be merged into 1 new neurons

Deleted 1 neurons: 463,

A (space):90240 233 | C (time): 233 6000 | b (background): 2 3

-----UPDATE SPATIAL-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

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In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 2) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 1) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 3) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 3) is done. 2 X 3 patches in total.

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 2, 2) is done. 2 X 3 patches in total.

Collect results from all small patches...

Post-process spatial components of all neurons...

Done!

Done!

Update the constant baselines for all pixels..

Done!

-----UPDATE TEMPORAL-----

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

Warning: A value of class "char" was indexed with no subscripts specified. Currently the result of this operation is the indexed value itself, but in a future release, it will be an error.

> In matlab.io.MatFile/subsref (line 442)

In get\_patch\_data (line 23)

In parallel\_function>make\_general\_channel/channel\_general (line 917)

In remoteParallelFunction (line 41)

Patch ( 1, 1) is done. 2 X 3 patches in total.

In get\_patch\_data (line 23)

```

In parallel_function>make_general_channel/channel_general (line 917)
In remoteParallelFunction (line 41)
Patch ( 1, 2) is done. 2 X 3 patches in total.
Warning: A value of class "char" was indexed with no subscripts specified. Currently the
result of this operation is the indexed value itself, but in a future release, it will be an
error.
> In matlab.io.MatFile/subsref (line 442)
  In get_patch_data (line 23)
    In parallel_function>make_general_channel/channel_general (line 917)
      In remoteParallelFunction (line 41)
        Patch ( 2, 3) is done. 2 X 3 patches in total.
          In get_patch_data (line 23)
            In parallel_function>make_general_channel/channel_general (line 917)
              In remoteParallelFunction (line 41)
                Patch ( 2, 1) is done. 2 X 3 patches in total.
                  Warning: A value of class "char" was indexed with no subscripts specified. Currently the
                    result of this operation is the indexed value itself, but in a future release, it will be an
                    error.
                    > In matlab.io.MatFile/subsref (line 442)
                      In get_patch_data (line 23)
                        In parallel_function>make_general_channel/channel_general (line 917)
                          In remoteParallelFunction (line 41)
                            Patch ( 1, 3) is done. 2 X 3 patches in total.
                              Warning: A value of class "char" was indexed with no subscripts specified. Currently the
                                result of this operation is the indexed value itself, but in a future release, it will be an
                                error.
                                > In matlab.io.MatFile/subsref (line 442)
                                  In get_patch_data (line 23)
                                    In parallel_function>make_general_channel/channel_general (line 917)
                                      In remoteParallelFunction (line 41)
                                        Patch ( 2, 2) is done. 2 X 3 patches in total.
                                          Collect results from all small patches...
                                          Deconvolve and denoise all temporal traces again...
                                          |||
                                          |||
                                          |||
                                          .....
                                          .....
                                          .....
                                          ..
                                          .....
                                          ....

Done!
Update the constant baselines for all pixels..
Done!
Deleted 8 neurons: 6, 122, 191, 255, 275, 405, 416, 509,

```

A (space):90240 225 | C (time): 225 6000 | b (background): 2 3  
----- SAVE THE WHOLE WORKSPACE -----

The current workspace has been saved into file  
/Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/  
2019\_10\_08\_p001\_m01\_exp01\_trial01/2019\_10\_08\_p001\_m01\_NULL000\_stripeRemoval\_turboreg\_manualCut\_dfof\_downsampleTime\_1\_source\_extraction/frames\_1\_6000/  
LOGS\_09-Oct\_11\_20\_04/09-Oct\_11\_58\_37.mat

saving: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/  
2019\_10\_08\_p001\_m01\_exp01\_trial01/2019\_10\_08\_p001\_m01\_NULL000\_cnmfeAnalysis.mat  
ans =  
0  
\*\*\*\*\*

Deleting temporary folder: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/  
data/  
2019\_10\_08\_p001\_m01\_exp01\_trial01/2019\_10\_08\_p001\_m01\_NULL000\_stripeRemoval\_turboreg\_manualCut\_dfof\_downsampleTime\_1\_source\_extraction  
\*\*\*\*\*

status =  
logical  
1  
runtimeTable =  
1x22 table  
runtime\_seconds date daytime folder algorithm frames width height  
parallel workers minlters maxlters maxSqSize maxDeltaParams gridSpacing  
gridWidth initMethod sqSizeX sqSizeY numSignalsDetected versionAlgorithm  
selectRandomFrames

runtime_seconds	date	daytime	folder	algorithm	frames	width	height	parallel	workers	minlters	maxlters	maxSqSize	maxDeltaParams	gridSpacing	gridWidth	initMethod	sqSizeX	sqSizeY	numSignalsDetected	versionAlgorithm	selectRandomFrames
0	'0000.00.00'	'00:00'	'tmp'	'tmp'	0	0	0	0	0	0	0	0	0	0	0	'tmp'	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	'tmp'	0	0	0	0	0

Warning: The assignment added rows to the table, but did not assign values to all of the table's existing variables. Those variables have been extended with rows containing default values.

> In tabular/subsasgnDot (line 457)  
In tabular/subsasgn (line 67)  
In calciumImagingAnalysis/modelExtractSignalsFromMovie/saveRunTimes (line 428)  
In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 313)  
In calciumImagingAnalysis/runPipeline (line 1555)  
In calciumImagingAnalysis/display (line 856)

###

Getting movie info for 1\1: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/

```
data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_stripeRemo
val_turboreg_manualCut_dfof_downsampleTime_1.h5
loading chunk | offset: 0 0 1 | block: 240 376 1
movie size: 0.34424Mb | 240 376 | single
checking movies: 100|
Elapsed time is 0.154382 seconds.
###
saving private/data//database_processing_runtimes_20191009_111511_385.csv
Elapsed time is 2435.016615 seconds.
#####
loading files...
=====
1/1 (1/1): m01 NULL000
loading: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_cnmfeAnal
ysis.mat
signalTraces: 225 6000
signalImages: 240 376 225
calculating signal peaks...
1|4|7|11|14|18|21|25|28|32|36|39|43|46|50|53|57|60|64|68|71|75|78|82|85|89|92|96|100|
100
thresholding images...
1|10|20|31|41|51|61|72|82|92|100
finding centroids...
traces dims: 225 6000
images dims: 240 376 225
filtering images...
thresholding images...
1|10|20|31|41|51|61|72|82|92|100
Computing image features...
1|5|10|15|20|24|29|34|39|44|49|54|59|64|68|73|78|83|88|93|98|100
Adding regionprops features to output...
1|5|10|15|20|24|29|34|39|44|49|54|59|64|68|73|78|83|88|93|98|100
Computing alternative image features...
1|5|10|15|20|24|29|34|39|44|49|54|59|64|68|73|78|83|88|93|98|100
Median filtering before peak statistics
SNR type: mean(signal)/std(noise)
1|4|7|11|14|18|21|25|28|32|36|39|43|46|50|53|57|60|64|68|71|75|78|82|85|89|92|96|100|
100
Median filtering before peak statistics
Getting peak statistics:
Warning: The DrawMode property will be removed in a future release. Use the
SortMethod property instead.
> In newplot (line 73)
  In filterImages (line 149)
  In calciumImagingAnalysis/modelVarsFromFiles (line 362)
```

```

In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 332)
In calciumImagingAnalysis/runPipeline (line 1555)
In calciumImagingAnalysis/display (line 856)
done!
saving img: private/pics/20191009//objSize/_binAmount1_/
2019_10_08_p001_m01_NULL000_plane0
saving img: private/pics/20191009//objFeatures/_binAmount1_/
2019_10_08_p001_m01_NULL000_plane0
ans =
    1    225
adding valid{1}.CNMFE.auto identifications...
=====
1/1: m01 NULL000
No region analysis to load!
    rowSubP: 2
    colSubP: 4
    onlyShowMapTraceGraph: 0
    mapTraceGraphNo: 43
    signalCutIdx: []
    signalCutXline: []
    movAvgFiltSize: 3
    medianFilterLength: 201
    incrementAmount: 0.1000
    filterShownTraces: 0
    scaleBarLengthMicron: 50
    cellOutlines: 1
    dilateOutlinesFactor: 0
    medianFilterImages: 'none'
    plotSignalsGraphColor: 'red'
=====
1/1: m01 NULL000
Search: _cnmfeAnalysis.mat
using valid.CNMFE.auto identifications...
loading: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_cnmfeAnal
ysis.mat
@@@@@@@
No appropriate method, property, or field 'signalExtractionTraceOutputType' for class
'calciumImagingAnalysis'.
Error in calciumImagingAnalysis/modelGetSignalsImages (line 321)
    switch obj.signalExtractionTraceOutputType
Error in calciumImagingAnalysis/viewObjmaps (line 154)
    [inputSignals, inputImages, signalPeaks, signalPeakIdx, valid,
validType] = modelGetSignalsImages(obj,'returnType','raw');
Error in calciumImagingAnalysis/modelExtractSignalsFromMovie (line 336)
    obj.viewObjmaps();
Error in calciumImagingAnalysis/runPipeline (line 1555)

```

```
obj.(thisFxn{1});
Error in calciumImagingAnalysis/display (line 856)
      obj.runPipeline;
@@@@@@@
###
Getting movie info for 1\1: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/
data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_stripeRemo
val_turboreg_manualCut_dfof_downsampleTime_1.h5
loading chunk | offset: 0 0 1 | block: 240 376 1
movie size: 0.34424Mb | 240 376 | single
checking movies: 100|
Elapsed time is 0.049681 seconds.
###
###
Getting movie info for 1\1: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/
data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_stripeRemo
val_turboreg_manualCut_dfof_downsampleTime_1.h5
loading chunk | offset: 0 0 1 | block: 240 376 1
movie size: 0.34424Mb | 240 376 | single
checking movies: 100|
-----
pre-allocating single NaN matrix...
-----
loading 1/1: /Users/Bing/Documents/GitHub/calciumImagingAnalysis/data/
2019_10_08_p001_m01_exp01_trial01/2019_10_08_p001_m01_NULL000_stripeRemo
val_turboreg_manualCut_dfof_downsampleTime_1.h5
loading movie as contiguous chunk: 0 0 0 | 240 376 500
loading chunk | offset: 0 0 0 | block: 240 376 500
movie size: 172.1191Mb | 240 376 500 | single
movie class: single
movie size: 240 376 500
x-dims: 240
y-dims: 376
z-dims: 500
movie size: 172.1191Mb | 240 376 500 | single
Elapsed time is 1.326664 seconds.
###
@@@@@@@
Undefined function or variable 'rMap'.
Error in calciumImagingAnalysis/viewObjmaps/subfxnDisplayMovie (line 379)
      movieFrameProc = cast(movieFrameProc,class(rMap));
Error in calciumImagingAnalysis/viewObjmaps (line 352)
      subfxnDisplayMovie()
Error in calciumImagingAnalysis/modelExtractSignalsFromMovie (line 336)
      obj.viewObjmaps();
```

Error in calciumImagingAnalysis/runPipeline (line 1555)  
obj.(thisFxn{1});

Error in calciumImagingAnalysis/display (line 856)  
obj.runPipeline;

@@@@@@

Warning: The DrawMode property will be removed in a future release. Use the SortMethod property instead.

> In suptitle (line 55)

In calciumImagingAnalysis/viewObjmaps (line 361)

In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 336)

In calciumImagingAnalysis/runPipeline (line 1555)

In calciumImagingAnalysis/display (line 856)

Warning: The DrawMode property will be removed in a future release. Use the SortMethod property instead.

> In suptitle (line 55)

In calciumImagingAnalysis/viewObjmaps (line 361)

In calciumImagingAnalysis/modelExtractSignalsFromMovie (line 336)

In calciumImagingAnalysis/runPipeline (line 1555)

In calciumImagingAnalysis/display (line 856)

Run processing pipeline by typing below (or clicking link) into command window (no semi-colon!):

obj

>>