

8478188 function calls in 1180.265 seconds

Ordered by: cumulative time

| ncalls  | totttime | percall | cumtime  | percall  | filename:lineno(function)          |
|---|----------|---------|----------|----------|------------------------------------|
| 1   | 3.086    | 3.086   | 1180.320 | 1180.320 | svEM.py:10(maximize)               |
| 120   | 0.005    | 0.000   | 1176.006 | 9.800    | svEM.py:119(_setupAndMaximizeStep) |
| 120   | 1.329    | 0.011   | 1176.001 | 9.800    | svEM.py:127(_maximizeStep)         |
| 1964  | 45.055   | 0.023   | 1121.983 | 0.571    | lbfgs.py:282(step)                 |
| 9575  | 14.471   | 0.002   | 1083.900 | 0.113    | svEM.py:133(closure)               |
| 30  | 0.001    | 0.000   | 752.841  | 25.095   | svEM.py:110(_mStepIndPoints)       |
| 9575  | 0.127    | 0.000   | 475.683  | 0.050    | tensor.py:138(backward)            |
| 9575  | 0.149    | 0.000   | 475.556  | 0.050    | __init__.py:44(backward)           |
| 9575  | 474.806  | 0.050   | 474.806  | 0.050    | {method 'run_backward' of          |
| 'torch._C._EngineBase' objects}                                       |          |         |          |          |                                    |
| 5400  | 0.072    | 0.000   | 397.285  | 0.074    | svEM.py:112(evalFunc)              |
| 7435  | 4.388    | 0.001   | 392.423  | 0.053    | svLowerBound.py:13(eval)           |
| 9575  | 1.226    | 0.000   | 313.079  | 0.033    |                                    |
| expectedLogLikelihood.py:66(evalSumAcrossTrialsAndNeurons)            |          |         |          |          |                                    |
| 19150   | 0.334    | 0.000   | 302.359  | 0.016    |                                    |
| svEmbedding.py:14(computeMeansAndVars)                                |          |         |          |          |                                    |
| 30  | 0.001    | 0.000   | 198.248  | 6.608    | svEM.py:84(_eStep)                 |
| 9605  | 0.391    | 0.000   | 180.879  | 0.019    |                                    |
| svPosteriorOnLatents.py:142(computeMeansAndVars)                      |          |         |          |          |                                    |
| 9605  | 82.163   | 0.009   | 180.258  | 0.019    |                                    |
| svPosteriorOnLatents.py:152(__computeMeansAndVarsGivenKernelMatrices) |          |         |          |          |                                    |
| 30  | 0.001    | 0.000   | 173.551  | 5.785    | svEM.py:90(_mStepModelParams)      |
| 7435  | 1.591    | 0.000   | 149.267  | 0.020    |                                    |
| klDivergence.py:13(evalSumAcrossLatentsAndTrials)                     |          |         |          |          |                                    |
| 22305   | 41.821   | 0.002   | 131.638  | 0.006    |                                    |
| klDivergence.py:25(_evalSumAcrossTrials)                              |          |         |          |          |                                    |
| 5796  | 0.091    | 0.000   | 124.989  | 0.022    |                                    |
| svLowerBound.py:24(buildKernelsMatrices)                              |          |         |          |          |                                    |
| 5796  | 0.124    | 0.000   | 124.870  | 0.022    |                                    |
| expectedLogLikelihood.py:95(buildKernelsMatrices)                     |          |         |          |          |                                    |
| 11592   | 0.093    | 0.000   | 124.674  | 0.011    |                                    |
| svEmbedding.py:26(buildKernelsMatrices)                               |          |         |          |          |                                    |
| 2140  | 0.014    | 0.000   | 75.716   | 0.035    | svEM.py:93(<lambda>)               |
| 2140  | 1.308    | 0.001   | 75.702   | 0.035    |                                    |
| svLowerBound.py:19(evalELLSumAcrossTrialsAndNeurons)                  |          |         |          |          |                                    |
| 5796  | 0.043    | 0.000   | 75.126   | 0.013    |                                    |
| svPosteriorOnLatents.py:183(buildKernelsMatrices)                     |          |         |          |          |                                    |
| 5796  | 5.573    | 0.001   | 75.058   | 0.013    |                                    |
| kernelMatricesStore.py:93(buildKernelsMatrices)                       |          |         |          |          |                                    |
| 223050  | 69.726   | 0.000   | 69.726   | 0.000    | {method 'slogdet' of               |
| 'torch._C._TensorBase' objects}                                       |          |         |          |          |                                    |
| 9605  | 0.398    | 0.000   | 64.386   | 0.007    |                                    |
| svPosteriorOnLatents.py:79(computeMeansAndVars)                       |          |         |          |          |                                    |
| 9605  | 13.458   | 0.001   | 63.779   | 0.007    |                                    |
| svPosteriorOnLatents.py:89(__computeMeansAndVarsGivenKernelMatrices)  |          |         |          |          |                                    |
| 81144   | 43.971   | 0.001   | 61.139   | 0.001    | kernels.py:96(buildKernelMatrix)   |
| 342045  | 57.115   | 0.000   | 57.115   | 0.000    | {built-in method cholesky_solve}   |
| 332670  | 56.318   | 0.000   | 56.318   | 0.000    | {built-in method matmul}           |
| 26645   | 7.976    | 0.000   | 54.297   | 0.002    |                                    |
| svPosteriorOnIndPoints.py:25(buildQSigma)                             |          |         |          |          |                                    |
| 30  | 0.001    | 0.000   | 52.487   | 1.750    | svEM.py:101(_mStepKernelParams)    |
| 395   | 0.104    | 0.000   | 52.384   | 0.133    | adam.py:49(step)                   |
| 9575  | 42.860   | 0.004   | 51.141   | 0.005    |                                    |
| svEmbedding.py:87(_getMeansAndVarsGivenSVPosteriorOnLatentsStats)     |          |         |          |          |                                    |
| 5796  | 0.128    | 0.000   | 49.389   | 0.009    |                                    |
| svPosteriorOnLatents.py:122(buildKernelsMatrices)                     |          |         |          |          |                                    |
| 5796  | 2.141    | 0.000   | 32.455   | 0.006    |                                    |
| kernelMatricesStore.py:46(buildKernelsMatrices)                       |          |         |          |          |                                    |
| 395   | 0.006    | 0.000   | 30.800   | 0.078    | svEM.py:103(evalFunc)              |

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79935      4.807      0.000      28.450      0.000
utils.py:67(build3DdiagFromDiagVector)
17388      12.374      0.001      20.829      0.001 utils.py:82(chol3D)
962714     20.545      0.000      20.545      0.000 {method 'dot' of
'torch._C._TensorBase' objects}
40572      15.621      0.000      20.474      0.001 kernels.py:41(buildKernelMatrix)
79935      10.075      0.000      19.141      0.000
utils.py:59(getDiagIndicesIn3DArray)
5796       1.517      0.000      16.732      0.003
kernelMatricesStore.py:81(buildKernelsMatrices)
971374     16.548      0.000      16.548      0.000 {method 'add_' of
'torch._C._TensorBase' objects}
287790     14.926      0.000      14.926      0.000 {built-in method sum}
131291     10.052      0.000      10.052      0.000 {built-in method exp}
144075      9.238      0.000      9.238      0.000 {built-in method mm}
86940      8.047      0.000      8.047      0.000 {built-in method cholesky}
364840      7.350      0.000      7.350      0.000 {built-in method squeeze}
69552      3.445      0.000      7.339      0.000
kernels.py:108(buildKernelMatrixDiag)
81144      7.138      0.000      7.138      0.000 {built-in method sin}
413685      6.956      0.000      6.956      0.000 {method 'reshape' of
'torch._C._TensorBase' objects}
9575       1.537      0.000      6.566      0.001
svEmbedding.py:73(_getMeansAndVarsGivenSVPosteriorOnLatentsStats)
150696     4.771      0.000      4.771      0.000 kernels.py:113(_getAllParams)
9575       3.508      0.000      4.689      0.000
expectedLogLikelihood.py:162(_getELinkValues)
207666     4.304      0.000      4.304      0.000 {method 'transpose' of
'torch._C._TensorBase' objects}
159870     3.392      0.000      3.392      0.000 {built-in method arange}
9605       0.309      0.000      3.375      0.000
svPosteriorOnLatents.py:156(<listcomp>)
9180       0.275      0.000      3.216      0.000 lbfgs.py:247(_gather_flat_grad)
103119     3.180      0.000      3.180      0.000 {built-in method zeros}
34776      1.687      0.000      3.150      0.000
kernels.py:53(buildKernelMatrixDiag)
79935      3.066      0.000      3.066      0.000 {method 'sort' of
'torch._C._TensorBase' objects}
111525     3.022      0.000      3.022      0.000 {built-in method trace}
18755      2.978      0.000      2.978      0.000 {built-in method cat}
143625     2.912      0.000      2.912      0.000 {method 'tolist' of
'torch._C._TensorBase' objects}
159870     2.811      0.000      2.811      0.000 {method 'flatten' of
'torch._C._TensorBase' objects}
7574       0.984      0.000      2.177      0.000 lbfgs.py:259(_add_grad)
115260     2.177      0.000      2.177      0.000 {built-in method empty}
104328     2.074      0.000      2.074      0.000 {built-in method ones}
9575       0.163      0.000      1.831      0.000
expectedLogLikelihood.py:167(_getELogLinkValues)
356941     1.740      0.000      1.740      0.000 module.py:571(__getattr__)
75348      1.588      0.000      1.588      0.000 kernels.py:58(_getAllParams)
89510      1.530      0.000      1.530      0.000 {built-in method transpose}
30         0.023      0.001      1.086      0.036
svLowerBound.py:27(computeSVPosteriorOnLatentsStats)
30         0.001      0.000      1.063      0.035
expectedLogLikelihood.py:99(computeSVPosteriorOnLatentsStats)
60         0.001      0.000      1.062      0.018
svEmbedding.py:23(computeSVPosteriorOnLatentsStats)
65263      1.000      0.000      1.000      0.000 {method 'squeeze' of
'torch._C._TensorBase' objects}
34790     0.909      0.000      0.994      0.000 module.py:587(__setattr__)
9575       0.104      0.000      0.991      0.000
expectedLogLikelihood.py:168(<listcomp>)
16286      0.726      0.000      0.726      0.000 {method 'mul' of

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|   |       |       |       |       |                                   |
|---|-------|-------|-------|-------|-----------------------------------|
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 218830  | 0.304 | 0.000 | 0.720 | 0.000 | {built-in method builtins.len}    |
| 35240   | 0.613 | 0.000 | 0.613 | 0.000 | {method 'view' of                 |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 9575  | 0.158 | 0.000 | 0.583 | 0.000 | __init__.py:20(_make_grads)       |
| 32028   | 0.574 | 0.000 | 0.574 | 0.000 | {method 'view_as' of              |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 9575  | 0.206 | 0.000 | 0.551 | 0.000 | optimizer.py:159(zero_grad)       |
| 9070  | 0.551 | 0.000 | 0.551 | 0.000 | {built-in method mul}             |
| 7598  | 0.316 | 0.000 | 0.491 | 0.000 | tensor.py:364(__rdiv__)           |
| 22305   | 0.481 | 0.000 | 0.481 | 0.000 | {method 'permute' of              |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 17388   | 0.475 | 0.000 | 0.475 | 0.000 | {built-in method eye}             |
| 19150   | 0.440 | 0.000 | 0.440 | 0.000 | {built-in method t}               |
| 16486   | 0.422 | 0.000 | 0.422 | 0.000 | {method 'abs' of                  |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 89510   | 0.364 | 0.000 | 0.416 | 0.000 | tensor.py:408(__len__)            |
| 9575  | 0.377 | 0.000 | 0.377 | 0.000 | {built-in method ones_like}       |
| 16396   | 0.374 | 0.000 | 0.374 | 0.000 | {method 'max' of                  |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 2600  | 0.325 | 0.000 | 0.325 | 0.000 | {built-in method builtins.print}  |
| 36408   | 0.267 | 0.000 | 0.267 | 0.000 | {method 'zero_' of                |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 9070  | 0.253 | 0.000 | 0.253 | 0.000 | {method 'sub' of                  |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 9575  | 0.232 | 0.000 | 0.232 | 0.000 | {built-in method reshape}         |
| 9160  | 0.217 | 0.000 | 0.217 | 0.000 | {method 'neg' of                  |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 7598  | 0.175 | 0.000 | 0.175 | 0.000 | {method 'reciprocal' of           |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 9070  | 0.116 | 0.000 | 0.116 | 0.000 | {method 'copy_' of                |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 42023   | 0.083 | 0.000 | 0.083 | 0.000 | {method 'numel' of                |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 36408   | 0.079 | 0.000 | 0.079 | 0.000 | {method 'detach_' of              |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 2370  | 0.075 | 0.000 | 0.075 | 0.000 | {method 'mul_' of                 |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 1   | 0.000 | 0.000 | 0.064 | 0.064 |                                   |
| svLowerBound.py:36(setMeasurements)             |       |       |       |       |                                   |
| 1   | 0.000 | 0.000 | 0.064 | 0.064 |                                   |
| expectedLogLikelihood.py:107(setMeasurements)   |       |       |       |       |                                   |
| 1   | 0.001 | 0.001 | 0.064 | 0.064 |                                   |
| expectedLogLikelihood.py:115(__stackSpikeTimes) |       |       |       |       |                                   |
| 48950   | 0.063 | 0.000 | 0.063 | 0.000 |                                   |
| kernelMatricesStore.py:62(getKzzChol)           |       |       |       |       |                                   |
| 99145   | 0.063 | 0.000 | 0.063 | 0.000 |                                   |
| svPosteriorOnIndPoints.py:22(getQMu)            |       |       |       |       |                                   |
| 89840   | 0.062 | 0.000 | 0.062 | 0.000 | {built-in method                  |
| builtins.isinstance}                            |       |       |       |       |                                   |
| 5796  | 0.032 | 0.000 | 0.061 | 0.000 |                                   |
| kernelMatricesStore.py:96(<listcomp>)           |       |       |       |       |                                   |
| 41515   | 0.061 | 0.000 | 0.061 | 0.000 | kernelMatricesStore.py:59(getKzz) |
| 120082  | 0.055 | 0.000 | 0.055 | 0.000 | {method 'get' of 'dict' objects}  |
| 5796  | 0.027 | 0.000 | 0.053 | 0.000 |                                   |
| kernelMatricesStore.py:97(<listcomp>)           |       |       |       |       |                                   |
| 90010   | 0.052 | 0.000 | 0.052 | 0.000 | {method 'dim' of                  |
| 'torch._C._TensorBase' objects}                 |       |       |       |       |                                   |
| 26645   | 0.046 | 0.000 | 0.046 | 0.000 |                                   |
| svPosteriorOnIndPoints.py:28(<listcomp>)        |       |       |       |       |                                   |
| 9744  | 0.043 | 0.000 | 0.043 | 0.000 | tensor.py:427(<lambda>)           |
| 69968   | 0.041 | 0.000 | 0.041 | 0.000 | {method 'append' of 'list'        |
| objects}  |       |       |       |       |                                   |
| 9605  | 0.032 | 0.000 | 0.032 | 0.000 |                                   |

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svPosteriorOnLatents.py:159(<listcomp>)
    5      0.007      0.001      0.029      0.006
expectedLogLikelihood.py:130(<listcomp>)
    9575     0.027     0.000     0.027     0.000 svEmbedding.py:89(<listcomp>)
    5      0.004     0.001     0.027     0.005
expectedLogLikelihood.py:125(<listcomp>)
    1185     0.026     0.000     0.026     0.000 {method 'sqrt' of
'torch._C._TensorBase' objects}
    19210     0.025     0.000     0.025     0.000 kernelMatricesStore.py:76(getKtt)
    19210     0.024     0.000     0.024     0.000 kernelMatricesStore.py:73(getKtz)
    1185     0.022     0.000     0.022     0.000 {method 'addcmul_' of
'torch._C._TensorBase' objects}
    1185     0.022     0.000     0.022     0.000 {method 'addcddiv_' of
'torch._C._TensorBase' objects}
    5796     0.020     0.000     0.020     0.000
kernelMatricesStore.py:84(<listcomp>)
    9605     0.018     0.000     0.018     0.000
svPosteriorOnLatents.py:160(<listcomp>)
    9575     0.015     0.000     0.015     0.000 svEmbedding.py:90(<listcomp>)
    7574     0.014     0.000     0.015     0.000 lbfgs.py:242(_numel)
    7167     0.014     0.000     0.014     0.000 {method 'pop' of 'list' objects}
    120      0.004     0.000     0.014     0.000 optimizer.py:32(__init__)
    5796     0.014     0.000     0.014     0.000
kernelMatricesStore.py:48(<listcomp>)
    90       0.002     0.000     0.013     0.000 lbfgs.py:214(__init__)
    5796     0.009     0.000     0.009     0.000
kernelMatricesStore.py:49(<listcomp>)
    9575     0.009     0.000     0.009     0.000 {built-in method
torch._C.is_grad_enabled}
    3839     0.006     0.000     0.008     0.000 tensor.py:429(__hash__)
    7216     0.008     0.000     0.008     0.000 {built-in method builtins.abs}
    120      0.005     0.000     0.007     0.000 optimizer.py:176(add_param_group)
    10       0.006     0.001     0.006     0.001 {built-in method tensor}
    30       0.002     0.000     0.005     0.000
svLowerBound.py:45(getSVPosteriorOnIndPointsParams)
    30       0.001     0.000     0.004     0.000
svLowerBound.py:54(getKernelsParams)
    4708     0.004     0.000     0.004     0.000 {method 'setdefault' of 'dict'
objects}
    90       0.004     0.000     0.004     0.000 {built-in method builtins.min}
    30       0.001     0.000     0.004     0.000 adam.py:30(__init__)
    180      0.003     0.000     0.003     0.000 {built-in method zeros_like}
    30       0.000     0.000     0.003     0.000
expectedLogLikelihood.py:55(getKernelsParams)
    500      0.002     0.000     0.003     0.000 tensor.py:413(__iter__)
    30       0.000     0.000     0.003     0.000
svEmbedding.py:52(getKernelsParams)
    30       0.000     0.000     0.003     0.000
expectedLogLikelihood.py:46(getSVPosteriorOnIndPointsParams)
    90       0.002     0.000     0.002     0.000 {method 'sum' of
'torch._C._TensorBase' objects}
    30       0.000     0.000     0.002     0.000
svPosteriorOnLatents.py:43(getKernelsParams)
    30       0.001     0.000     0.002     0.000
svLowerBound.py:51(getIndPointsLocs)
    3839     0.002     0.000     0.002     0.000 {built-in method builtins.id}
    120      0.002     0.000     0.002     0.000 {built-in method
torch._C._log_api_usage_once}
    30       0.000     0.000     0.002     0.000
svEmbedding.py:46(getSVPosteriorOnIndPointsParams)
    30       0.001     0.000     0.002     0.000
kernelMatricesStore.py:34(getKernelsParams)
    90       0.001     0.000     0.002     0.000 {built-in method
_funcertools.reduce}

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    90    0.002    0.000    0.002    0.000 {method 'clone' of
'torch._C._TensorBase' objects}
    30    0.000    0.000    0.002    0.000
svPosteriorOnLatents.py:40(getSVPosteriorOnIndPointsParams)
    30    0.000    0.000    0.002    0.000
expectedLogLikelihood.py:52(getIndPointsLocs)
    30    0.001    0.000    0.001    0.000
svLowerBound.py:48(getSVEmbeddingParams)
   1185    0.001    0.000    0.001    0.000 {built-in method math.sqrt}
    30    0.001    0.000    0.001    0.000
svPosteriorOnIndPoints.py:15(getParams)
    30    0.000    0.000    0.001    0.000
svEmbedding.py:49(getIndPointsLocs)
   420    0.001    0.000    0.001    0.000 lbfgs.py:244(<lambda>)
    30    0.000    0.000    0.001    0.000
expectedLogLikelihood.py:49(getSVEmbeddingParams)
   500    0.001    0.000    0.001    0.000 {built-in method
torch._C._get_tracing_state}
    30    0.000    0.000    0.000    0.000
svPosteriorOnLatents.py:46(getIndPointsLocs)
   500    0.000    0.000    0.000    0.000 {method 'size' of
'torch._C._TensorBase' objects}
    90    0.000    0.000    0.000    0.000 kernels.py:17(getParams)
   33    0.000    0.000    0.000    0.000 {built-in method time.time}
    1    0.000    0.000    0.000    0.000
svLowerBound.py:30(setInitialParams)
    1    0.000    0.000    0.000    0.000
expectedLogLikelihood.py:144(setInitialParams)
    30    0.000    0.000    0.000    0.000 svEmbedding.py:68(getParams)
    2    0.000    0.000    0.000    0.000
svEmbedding.py:62(setInitialParams)
   500    0.000    0.000    0.000    0.000 {built-in method builtins.iter}
   120    0.000    0.000    0.000    0.000 {method 'isdisjoint' of 'set'
objects}
   120    0.000    0.000    0.000    0.000 {method 'items' of 'dict' objects}
    30    0.000    0.000    0.000    0.000
svPosteriorOnIndPoints.py:17(<listcomp>)
    1    0.000    0.000    0.000    0.000
svPosteriorOnLatents.py:130(setInitialParams)
    90    0.000    0.000    0.000    0.000 {method 'extend' of 'list'
objects}
    2    0.000    0.000    0.000    0.000 svEmbedding.py:39(setTimes)
    3    0.000    0.000    0.000    0.000
kernelMatricesStore.py:20(setInitialParams)
    30    0.000    0.000    0.000    0.000
kernelMatricesStore.py:28(getIndPointsLocs)
    30    0.000    0.000    0.000    0.000
svPosteriorOnIndPoints.py:18(<listcomp>)
    2    0.000    0.000    0.000    0.000
svPosteriorOnLatents.py:33(setTimes)
    30    0.000    0.000    0.000    0.000
svPosteriorOnIndPoints.py:19(<listcomp>)
    2    0.000    0.000    0.000    0.000
kernelMatricesStore.py:70(setTimes)
    1    0.000    0.000    0.000    0.000 svLowerBound.py:42(setQuadParams)
    1    0.000    0.000    0.000    0.000
expectedLogLikelihood.py:149(setQuadParams)
    1    0.000    0.000    0.000    0.000
svPosteriorOnIndPoints.py:10(setInitialParams)
    9    0.000    0.000    0.000    0.000 kernels.py:20(setParams)
    1    0.000    0.000    0.000    0.000
svPosteriorOnLatents.py:191(setInitialParams)
    1    0.000    0.000    0.000    0.000 {method 'format' of 'str' objects}
    1    0.000    0.000    0.000    0.000

```

```
svEmbedding.py:84(setNeuronForSpikeIndex)
      1      0.000      0.000      0.000      0.000
expectedLogLikelihood.py:121(<listcomp>)
      1      0.000      0.000      0.000      0.000
expectedLogLikelihood.py:122(<listcomp>)
      1      0.000      0.000      0.000      0.000 {method 'disable' of
'_lsprof.Profiler' objects}
```